

Palaeoeskimo Seal Hunters at Port au Choix, Northwestern Newfoundland

M.A.P. Renouf

Volume 9, Number 2, Fall 1993

URI: https://id.erudit.org/iderudit/nflds9_2art03

[See table of contents](#)

Publisher(s)

Faculty of Arts, Memorial University

ISSN

1198-8614 (print)

1715-1430 (digital)

[Explore this journal](#)

Cite this article

Renouf, M. (1993). Palaeoeskimo Seal Hunters at Port au Choix, Northwestern Newfoundland. *Newfoundland Studies*, 9(2), 185–212.

Palaeoeskimo Seal Hunters at Port au Choix Northwestern Newfoundland

M.A.P. RENOUF

THE ARCHAEOLOGICAL HERITAGE OF PORT AU CHOIX

PORT AU CHOIX, on Newfoundland's northwest coast (Figure 1), is an important area for understanding the long prehistory of human occupation of Newfoundland and Labrador. Information from a number of well preserved Indian and Palaeoeskimo sites demonstrates that Port au Choix has been occupied almost continuously for over four thousand years. The earliest site in the area is the Maritime Archaic Indian cemetery, dating from approximately 4400-3300 B.P. (before present), which in 1967-69 was excavated by James A. Tuck of Memorial University of Newfoundland (Tuck 1970, 1971, 1976). This excavation put Port au Choix on the archaeological map, when over 100 well preserved burials were found (see Jerkic, this volume), each accompanied by fine grave goods.

Maritime Archaic Indian is the archaeological designation given to prehistoric Indians living in the coastal areas of Maine and the Atlantic Provinces approximately 9000-3500 years ago (Tuck 1970, 1975; see Hood, this volume). The various Maritime Archaic groups, whose actual ethnicity will never be known, shared the same Palaeoindian ancestry, which refers to the earliest well demonstrated human occupation of North America, at around 11,500 B.P. As the name suggests, these Maritime Archaic groups were similarly adapted to the coastal environment, and this adaptation is the basis for functional similarities amongst their tool assemblages. Stylistic likenesses of tool elements, occasional use of Ramah chert from northern Labrador, and similarities in burial ceremonialism suggest that some level of communication was maintained amongst these Maritime Archaic groups. Maritime Archaic Indians reached their northernmost distribution in Ramah Bay, Labrador (Fitzhugh 1980a).

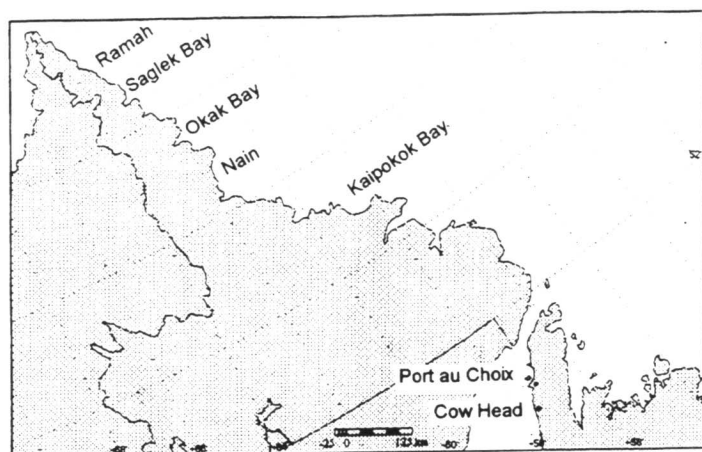


Fig. 1 Location of places in Newfoundland and Labrador mentioned in the text.

At Port au Choix, the Maritime Archaic Indians are followed in time by one and a half thousand years of Palaeoeskimo occupation, from 2800 to 1300 B.P. "Palaeoeskimo" is the term archaeologists give to prehistoric Inuit-like people who occupied the Arctic from approximately 4500 to 600 years ago. Like the Maritime Archaic, the Palaeoeskimos were marine oriented; however, the relative scarcity of terrestrial resources in the far north meant that they were more intensively marine focused than were the Maritime Archaic, who had access to a wider array of herbivores and small game.

Palaeoeskimos extended their distribution southward into the Subarctic when they moved into central and southern Labrador. They reached their southernmost extent on the island of Newfoundland, where they spread throughout the coastal areas, except for the Avalon Peninsula, which it appears they never occupied. The fact that Labrador is the northern terminus of the Maritime Archaic Indians, while Newfoundland is the southernmost limit of the Palaeoeskimos illustrates the pivotal position that the province of Newfoundland and Labrador holds in the prehistory of both the Atlantic Provinces and the eastern Arctic.

As soon as the Palaeoeskimos left Port au Choix some time around 1300 years ago, prehistoric Indian groups returned, staying on a regular or intermittent basis until approximately 800 years ago. This period of Indian prehistory is called Recent Indian, and dates from 2000-300 B.P. in the Province. Although the Recent Indians on the island of Newfoundland can convincingly be linked to the historic Beothuk, which are recognized archaeologically at around 300 years ago (Pastore 1992; this volume), at this stage of archaeological research, a direct link with the earlier Maritime Archaic cannot be demonstrated (Tuck 1982).

This long lineage of aboriginal occupation of Port au Choix appears to end at around 800 years ago, although it is possible that future site surveys will discover

younger Indian occupations. As it is, the next cultures to leave their archaeological imprint on the landscape are European rather than aboriginal; namely, the French and English who fished from Port au Choix in the eighteenth and nineteenth centuries, and possibly earlier.

WHO WERE THE PALAEOESKIMOS?

This paper focuses on culture change within the Palaeoeskimo segment of the Port au Choix prehistoric sequence. Palaeoeskimo origins are found in the Bering Strait region of Alaska where hunting and fishing groups occupied the coastal regions from around 4500 years ago (Giddings 1964). At this time, when the climate was warmer than at present, some of these groups moved eastward, reaching the eastern Arctic in about 500 years (Maxwell 1985; McGhee 1990). Archaeologists can only speculate on the reasons behind such a move, and the most reasonable suggestions involve a combination of pressures and incentives. Maxwell (1985) speculates that the warm temperatures of 5000-4000 B.P. led to lighter landfast ice conditions in the Bering Sea. The ringed seal, which are dependent on landfast ice and which were a major resource for the Palaeoeskimo, would have been fewer in number, present for shorter periods of time, and unpredictable in the timing and location of their appearance. This decline in hunting conditions would have placed pressure on Palaeoeskimo populations, whereupon some would have begun an eastward move to more favourable hunting areas, along the coast of the Beaufort Sea, eventually reaching the rich marine environment of the eastern Arctic. At the same time, both land and sea mammals east of the Bering Sea would have been unwary of human predation, making them initially easy prey. It is suggested that this approximately 5500 kilometre west-to-east migration was probably accomplished as a series of events in which families shifted several km to the east, as generations splintered off and moved into these better hunting areas (Maxwell 1985; McGhee 1990).

Whatever the reasons behind this migration, when these small groups reached the eastern Arctic sometime around 4000 years ago, they spread throughout the region, where they adapted to particular locales. These adaptations changed in greater and lesser ways over the next three millennia in response to a variety of social and environmental conditions which archaeologists have yet to sort out. This Palaeoeskimo occupation lasted until approximately 1100 years ago in most areas of the eastern Arctic, extending until 600 years ago in northern Labrador.

Little is known about the Palaeoeskimo physical type, aside from the fact that it seems to be a derivative of an ancient northeast Asian population (see Jerkic, this volume). Although we assume that these prehistoric groups were Inuit-like in their adaptation to the Arctic environment, archaeology and physical anthropology indicate that they are not the direct ancestors of the modern Inuit.

The Inuit are descendants of a second west-to-east movement of people. At around 1000 years ago, in another warm climatic period, direct descendants of Bering Sea whale hunting Palaeoeskimos began another migration. Archaeologists call these people the Thule, and they are also referred to as Neo-Eskimo, or Neo-Inuit. The Thule crossed the Arctic in a more rapid migration than that of the Palaeoeskimos three millennia earlier. They reached Baffin Island and the High Arctic by around 900 B.P. and extended their eastward distribution to northern Labrador by 500 years ago; they never reached the island of Newfoundland. These whale hunters settled into their new homelands, eventually becoming sealers and caribou and musk-oxen hunters, adapting their economy and technology to the local conditions.

NEWFOUNDLAND AND LABRADOR PALAEOESKIMOS

Archaeological sites in northern Labrador record the earliest Palaeoeskimo occupations of the province by approximately 3800 years ago (Tuck 1975). Until approximately 3600 years ago these earliest Palaeoeskimos appear to have been restricted to northern Labrador (Figure 1), in such areas as Ramah Bay (Fitzhugh 1980a), Saglek Bay (Tuck 1975), Okak Bay (Cox 1977, 1978, 1987, 1988), and Nain (Fitzhugh 1978, 1980a; see also Hood 1994). From 3600-3000 years ago, Palaeoeskimo sites in northern Labrador are few (Cox 1987, 1988), although at the end of this time period their geographical distribution increased to include one site as far south as Cow Head at the base of Newfoundland's Great Northern Peninsula (Tuck 1978). Not long after, at around 2800 years ago, a general southward expansion of Palaeoeskimos occurred, and sites are found in northern Labrador (Cox 1978; Fitzhugh 1980a), central Labrador (Fitzhugh 1972; Loring and Cox 1986) and southern Labrador (McGhee and Tuck 1975), including the Quebec North Shore (Fitzhugh 1980b; Pintal 1994; Plumet *et al.* 1994). At this time they also extended throughout the island of Newfoundland, excluding the Avalon Peninsula. There are a few small sites in interior areas, a small number in Gambo Pond (Schwarz 1989) and one at the Exploits River (Devereaux 1965). This southernmost expansion of Palaeoeskimo occupation took place at around 2800 years ago, and it is best represented at Port au Choix, northwestern Newfoundland. This Palaeoeskimo distribution changed at around 2000 years ago, a period from which few sites have been found from southern Labrador, and again at around 1100 years ago, a period during which sites are found only in northern Labrador.

PALAEOESKIMOS AT PORT AU CHOIX

There are 20 known Palaeoeskimo sites at Port au Choix. Many of them are small find-spots, others have been heavily disturbed by recent construction, and four are large and undisturbed. The trio of Phillip's Garden sites (Phillip's Garden

East, Phillip's Garden West, and Phillip's Garden) and the Point Riche site together span the entire period of Palaeoeskimo occupation at Port au Choix (Figure 2). Not only do these sites provide the basis for reconstructing Palaeoeskimo habitation of Port au Choix, but they illustrate aspects of Palaeoeskimo occupation of the island of Newfoundland, as well as encapsulating some of the issues that beset the archaeology of the eastern Arctic. Thus, a discussion of these sites is a basis for understanding prehistory at a larger scale.

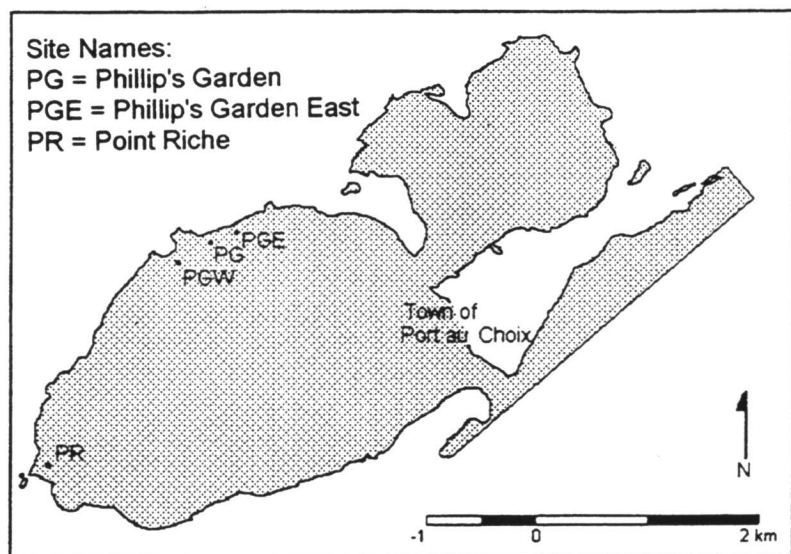


Fig. 2 Location of the Groswater Palaeoeskimo sites of Phillip's Garden East and Phillip's Garden West, and the Dorset Palaeoeskimo sites of Phillip's Garden and Point Riche.

Figure 3 places these sites in chronological order, and also provides their archaeological nomenclature. Thus, "Palaeoeskimo" is subdivided into Groswater Palaeoeskimo (c. 2800-2100 B.P.) and Dorset Palaeoeskimo (c. 2000-900 B.P.), based on differences in subsistence, settlement type, and material culture. The relationship of Groswater to Dorset is not clear. Tuck and Fitzhugh (1986), and Kennett (1990) argue that they represent two separate culture groups and that differences in material culture are largely the result of cultural distinctions. However, an alternative view is that the differences are the direct result of changing adaptations, and that the Groswater people are ancestral to the later Dorset.

Fig. 3

Archaeological nomenclature	Date B.P. (before present)	Archaeological site
Groswater Palaeoeskimo	2800-2100 B.P. (with some dates as recent as 1900 B.P. from Port au Choix)	Phillip's Garden East Phillip's Garden West
Dorset Palaeoeskimo	2000-900 B.P. (2000-1300 B.P. at Port au Choix)	Phillip's Garden Point Riche

GROSWATER PALAEOESKIMOS: NOMADIC HUNTER-GATHERERS¹

One of the major Groswater Palaeoeskimo sites at Port au Choix is Phillip's Garden East, which is a 1300m² site located on a terrace at approximately 12 metres above sea level (Figure 4). It is interpreted as a camp from which one or two families hunted the harp seal in the early spring, returning to that same location year after year. Port au Choix is well known today for good harp seal hunting. Large herds of harp pass by in December on their southward migration from Greenland to their breeding grounds deep in the Gulf of St. Lawrence (Sergeant 1991). At this time, the seals are in open water, travelling ahead of the pack ice. On their return

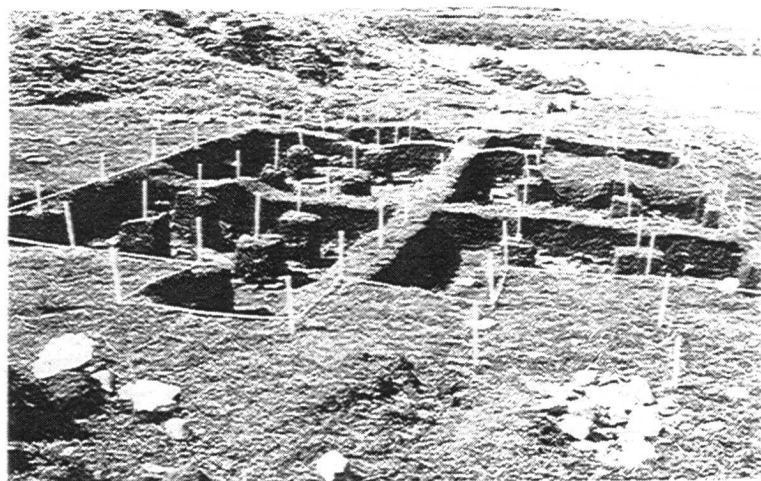


Fig. 4 Phillip's Garden East in foreground with excavation grid; the two hectare meadow which is the Phillip's Garden site, is in the background.

northward journey, they pass by Port au Choix in March-April (Figure 5). At this time they are more easily hunted as they bask on the drift ice, and the juveniles (young of the year) are particularly unwary.

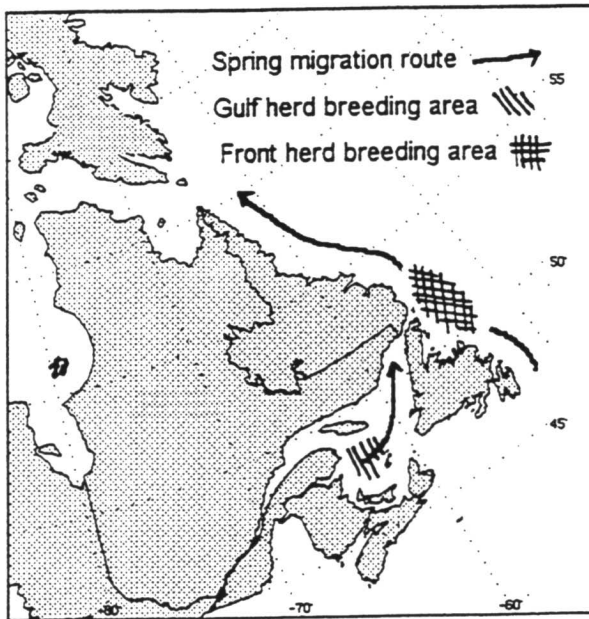


Fig. 5 Harp seal pupping area, and route of the harp seal spring migration.

Phillip's Garden East is the oldest of the Palaeoeskimo sites at Port au Choix. Charcoal-based radiocarbon dates span 2760 \pm 90 B.P. to 1930 \pm 140 B.P., indicating use of this location over several centuries. We excavated almost one third of the site, and we uncovered the remains of two different kinds of dwellings. One was a small, circular depression three metres in diameter and dug 20-25 cm into the ground (Figure 6). The depression was surrounded by a low earthen bank, which was the remains of a low wall or foundation, with a break indicating a northeastern entrance-way. The house was virtually free of debris, in contrast to the abundance of artifacts, flakes (debris from making and sharpening stone tools), charcoal, and fire-cracked rocks in the walls and in the area outside the depression. Fire-cracked rock is characteristic of Groswater Palaeoeskimo sites and results from their method of heating. Stones were put in a fire and when they were hot they were placed in a container of water, such as a skin bag, to bring it to a boil, or else the rocks were spread within a dwelling to radiate heat. Once heated, the stones became pink, and when they cooled they cracked and began to disintegrate, becoming ubiquitous garbage around a camp or settlement. The ancient inhabitants

either re-cycled this debris, left it lying around, or swept it up and threw it in a midden, or garbage dump.

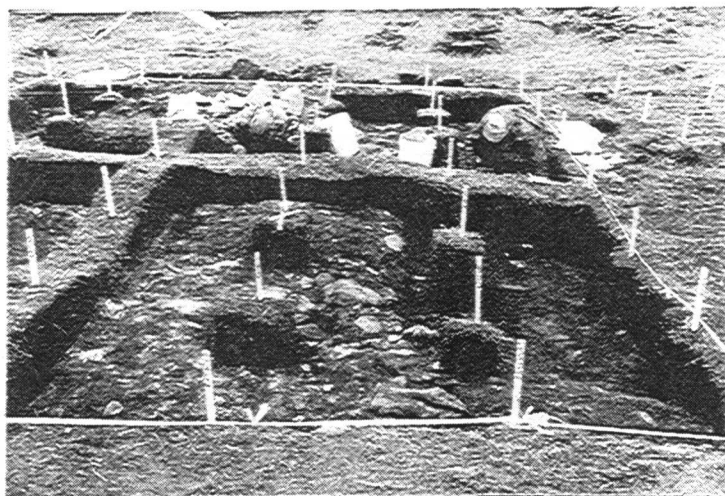


Fig. 6 House depression in process of excavation at Phillip's Garden East. Approximately one half of the depression was exposed at this stage of the excavations. Scale: each white peg is one metre apart.

The structure's small size, along with the absence of any hearth or fire-cracked rocks suggests warm-weather occupation; however, this contrasts with the fact that it was recessed into the ground which normally indicates cold-weather use, the recession serving as a draft catcher. An alternative interpretation is that the depression was not a dwelling at all, but a large pit of some sort.

The remains of a second dwelling were located seven metres south of the first, and this was very different. It was larger, was filled with debris, and was constructed on the surface of the ground rather than dug into it. It was roughly circular, measuring approximately five metres in diameter, and its outline was traced by a slight mound of debris which consisted mainly of fire-cracked rock, along with lesser amounts of stone flakes and bone (Figure 7). Although this mound could have been a low wall, there were a number of gaps in it. Also, it consisted of smaller rather than larger fire-cracked rocks and contained a lot of small pieces of stone flakes and bone, all of which suggest that the build-up was the result of sweeping rather than construction. If the structure had been a tent, not rigidly anchored at all points, the debris could have been swept out underneath areas of a skin wall, which would result in the irregular outline of small, broken-up material. On the other hand, it could represent small material that was left-over from clearing the floor, unintentionally swept up against the inside of a firmly anchored tent wall which, when

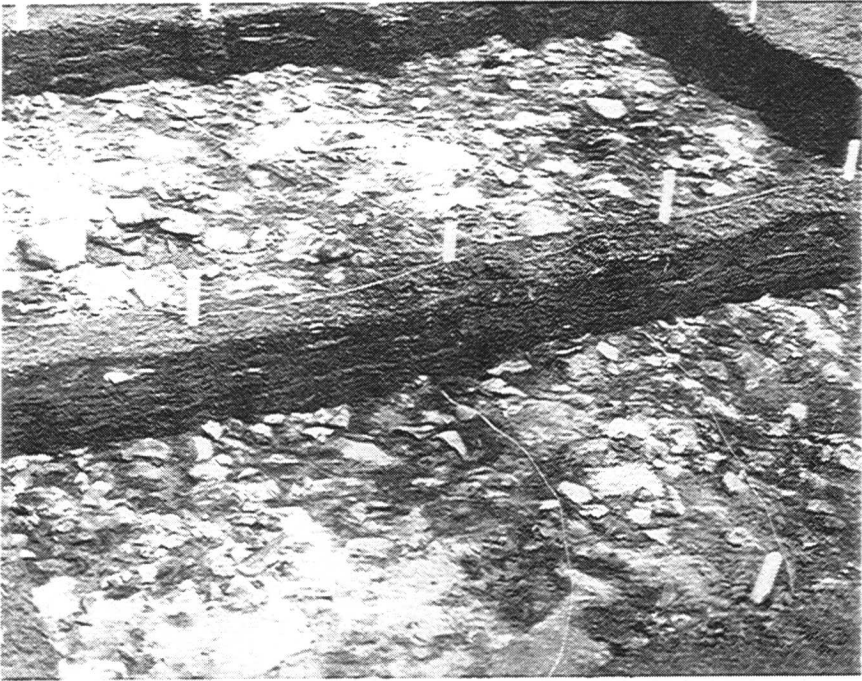


Fig. 7 Excavation area of Phillip's Garden East in which traces of the tent structure were found. The string outlines the concentration of small debris which traces the tent walls. Note the many small and crushed fire-cracked rocks which are plentiful everywhere in this site.

dismantled, left a ring of debris behind. Inside the tent, and to one side, was a sitting or sleeping platform, which consisted of large rocks that raised people off the damp ground. This would have been covered with boughs or skins to make it comfortable, which is why there are very few artifacts found in and around the platform rocks.

Within the house, there was one rock-capped storage pit containing seal cranial elements and some bird bone (Figure 8). Three rock-capped pits lay outside the house, each containing abundant seal bone along with lesser amounts of fish and bird.

As with all the Port au Choix sites, bone preservation is excellent. Although Phillip's Garden East is not the only Groswater site with bone preservation (see Auger 1986), it yielded by far the largest collection of bone material, at approximately 75,000 pieces. A large sample of this material has been identified by Darlene Balkwill and Anne Rick of the Zooarchaeological Analysis Program of the Canadian Museum of Nature, and although not all the fragments of skeletal elements were identifiable to species, there were sufficient to enable us to infer site function and season of occupation. Seal dominates a species list that includes beaver, red fox, marten, caribou, species of gulls and ducks, and traces of cod, herring and



Fig. 8 Pit that was filled with seal and bird bone, inside tent structure shown in Figure 7.

plaice (Renouf 1991:42). Bearded, harbour, ringed, and hooded seal are represented by a few bones each, and harp seal is many times more common, represented by over two hundred fragments. Since seal can be speciated on the basis of only a few skeletal elements, most of the seal bone is not identified beyond "Phocidae"; however, since harp seal greatly overshadows other seal species in the collection of seal bone that can be identified to species, the assumption is that most of the unidentified seal bone is harp as well. This is important since newborn and juveniles are well represented amongst the seal bones, indicating the spring seal hunt. A December hunt, in addition to the spring hunt, is also possible. However, this is difficult to demonstrate since there are no obvious skeletal signposts of a December population, all of which are mature seals. A December hunt is more difficult than a spring cull, since the harp seals are in open water and are therefore less easy to hunt. However, this is still a logical possibility for the Groswater Palaeoeskimos who occupied Phillip's Garden East, who probably had boats and may even have had nets (Renouf 1993:18).

The good bone preservation at Port au Choix meant that we were the first, and so far only, to find Groswater harpoon heads (see Figure 14). Harpoon heads are made of bone, antler and ivory, and are particularly important for understanding Arctic prehistory because they appear to be important stylistic markers of chrono-

logical periods, geographical areas and cultural groups. We found nine harpoon heads from the site and although they share certain attributes which are consistent with their age, stylistically almost no two are alike. Since the different harpoon head forms are dated to the same approximate time period, these differences are not chronological. The differences could be functional; however, this is unlikely in view of the fact that the faunal material indicates a narrow range of activities, namely harp seal hunting. Possibly the wide range of styles reflects individual ownership of the harpoon, important in any claim to a successful harpoon strike.

Lithics, bones and fire-cracked rock are jumbled throughout the site. This is a result of the small terrace's repeated use, each season's occupation disturbing the remains from previous years, and contributing new disturbances. In one area there was stratigraphic evidence of two distinct periods of occupation. Although group size is impossible to reconstruct, the small size of the site and the fact that only two dwelling features are so far found suggests one or two family groups at a time, or possibly a single non-domestic task group. A task-specific occupation is suggested in the high proportion of seal bones, as well as the relatively narrow range of functional tool categories, with a high proportion of easily made and expendable tools, a low proportion of items related to tool manufacture, and a relatively high proportion of hunting and processing tools (Kennett 1990; Renouf 1994a).

The interpretation of Phillip's Garden East as a seasonal camp focused on the exploitation of a single resource is consistent with the current interpretations of the Groswater Palaeoeskimo pattern of settlement and subsistence in Newfoundland and Labrador. These interpretations are based mainly on site location, since faunal material is not preserved outside the limestone bedrock areas of Newfoundland's northwest coast. Fitzhugh (1972) first defined Groswater material on the basis of his site surveys and excavations in Groswater Bay, central Labrador. He suggested that the Groswater Palaeoeskimos were a small, dispersed population, since most Groswater sites were small and the artifacts on them were very few. He later suggested, in concert with Tuck (Tuck and Fitzhugh 1986), that Groswater Palaeoeskimos had a dual inland-marine economy, in contrast to the later Dorset Palaeoeskimos who appeared to be more specialized on marine resources. According to this view of Groswater Palaeoeskimo, small groups are presumed to have moved from season to season in a planned strategy of resource acquisition that involved a demonstrated marine (small sea mammals) and a presumed interior (caribou and small game) component.

This interpretation was reinforced by excavations at the Postville Pentecostal site in central Labrador. Located in the inner area of Kaipokok Bay (Figure 1), there were indications of several occupational episodes by small groups, perhaps one or two families. Loring and Cox (1986) note that the inner bay location of the site is ideal for collecting fuel and building material, as well as for providing good access to both interior game and marine resources. Although they lament the lack of faunal material, they marshal circumstantial evidence to argue for a late fall and early winter occupation, focused on caribou and harp seal hunting.

The only other relatively large Groswater site which is substantially published is Factory Cove, at Cow Head (Auger 1986, 1984). This site is located at the Cow Head chert beds, from which the Groswater and some of the Dorset Palaeoeskimos obtained the raw material for their stone tools. Factory Cove appears to be a special seasonal encampment for obtaining the fine grained Cow Head chert and working it into harpoon endblades (stone tips), knives, scrapers, and so forth. The faunal material, which includes harp seal, harbour seal, caribou, and lesser amounts of small game and sea birds, suggests late winter to early summer occupation (Auger 1986). Auger suggests more than one period of site occupation.

The emerging picture of Groswater Palaeoeskimos as nomadic hunter-gatherers who lived in small groups as they moved from site to site throughout the course of a year is further reinforced at a second Groswater site at Port au Choix, called Phillip's Garden West. This site is located on a small terrace at approximately 13 metres above sea level (Figure 9), which affords a spectacular ocean view. A series of seven charcoal-based radiocarbon dates places it between 2540 \pm 160 B.P. and 2090 \pm 70 B.P., putting the site at the end of the Groswater period.

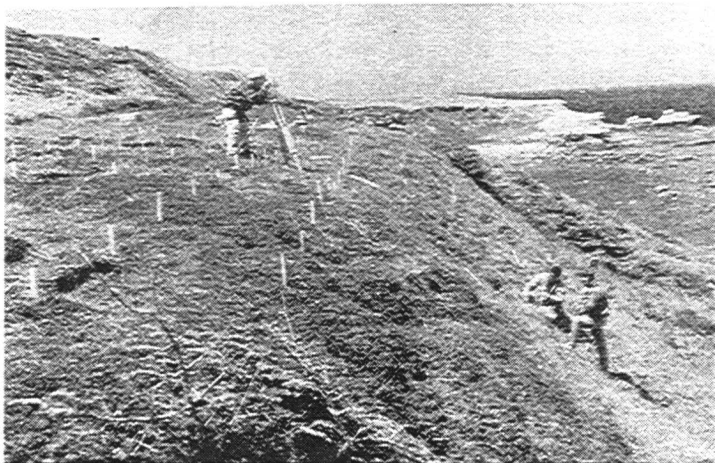


Fig. 9 Putting in an excavation grid at the Phillip's Garden West site.

The top of the terrace is very small, approximately 500 m². On it there is very little debris and no fire-cracked rock, in stark contrast to Phillip's Garden East, and this indicates brief occupation during the warmer months when fire-cracked rocks were not heavily in use. Warm weather occupation, possibly in summer, is also indicated by the remains of a tent structure, three metres in diameter, which could be traced by means of a series of five post-holes which surrounded a hearth. Two outdoor hearths lay immediately north of this structure, and anyone who sat there would have enjoyed the ocean panorama.

Most of the garbage from the occupation, such as flakes and bone, was thrown over the terrace edge to form a series of midden deposits that tumbled down the slope. Although identification of this faunal material is not complete, preliminary field identification by Darlene Balkwill shows that seal dominates the bone assemblage, which also includes cetacean, wolf, and walrus (Balkwill pers. comm.). There is a large number of cut bone pieces, indicating that one of the activities carried out from this site was the manufacture of bone tools; however, very few finished bone tools were found. There was minimal evidence of stone tool manufacture, with few cores (from which stone tools are produced), relatively few flakes, and few preforms (stone tools in the process of manufacture).

Phillip's Garden West's location on an exposed terrace, along with evidence of a tent structure, the near absence of fire-cracked rocks, and minimal evidence of lithic tool manufacturing, indicate that this was probably a short term summer site. We are unsure of the exact resources that would have been the focus of the summer season; harbour seals and walrus that would have hauled out in the summer are a possibility, as are small toothed whales, and the few harp seal stragglers that inevitably occur throughout the summer months. In addition to hunting activities we know that bone tools were made in this area. The overlapping dump episodes in the midden and the wide range of radiocarbon dates demonstrate that the location was used on a number of occasions over a minimum of 200 and a maximum of 600 years. The terrace was intensively tested and almost completely excavated, and the absence of a winter house suggests that, like Phillip's Garden East, the sequential site occupations took place at roughly the same time each year. Perhaps one of the most unusual features about Phillip's Garden West is the beautifully crafted harpoon endblades (Figure 10). These are smaller and considerably finer versions of typical Groswater endblades (see Figure 14), and they have tiny and uniformly spaced edge serrations, and a ground facet on one face. To date, these endblades



Fig. 10 Two unique harpoon endblades from Phillip's Garden West. These are made on colourful Cow Head cherts. Drawn by Dawn Nelson.

are unique to Port au Choix, found only at Phillip's Garden West and one corner of the more recent site of Phillip's Garden (Harp 1964).

DORSET PALAEOESKIMOS: MARINE SPECIALISTS

The Dorset Palaeoeskimo site of Phillip's Garden adjoins the earlier site of Phillip's Garden East and is just around the corner from Phillip's Garden West (Figure 11). Compared with both sites, Phillip's Garden is much larger; in fact, this



Fig. 11 Phillip's Garden seen from the air. The white areas in the photograph are ongoing excavations: two at Phillip's Garden and one to the side, at Phillip's Garden East.

is the largest Dorset Palaeoeskimo site known in the province of Newfoundland, and it is one of the largest and most intensively occupied in the eastern Canadian Arctic. The remains of at least 50 house depressions are spread out along two raised terraces, which range from 8 to 11 metres above sea level (Figure 12). An unknown number of other house depressions have been infilled by midden deposits after abandonment, and do not show up on the surface of the ground. Not all the houses would have been occupied at one time, and population size estimates are not attempted beyond suggesting that the size of the living group at Phillip's Garden was more than one or two families.

In recent field seasons the remains of four dwellings have been excavated at the site (Renouf 1986, 1987, 1991, 1993), following earlier field seasons in which 20 houses were either fully excavated or partially tested by Elmer Harp, Jr., of Dartmouth College (Harp 1964, 1976). The basics of house construction were in all cases the same, although details differ. As shown schematically in Figure 13, the basal limestone rubble beach was cleared of rocks which were stacked to the side to form either low walls or a sitting bench. An interior area, ranging from approximately 3.5 to 5.5 metres on a side, was slightly dug down into the sandy

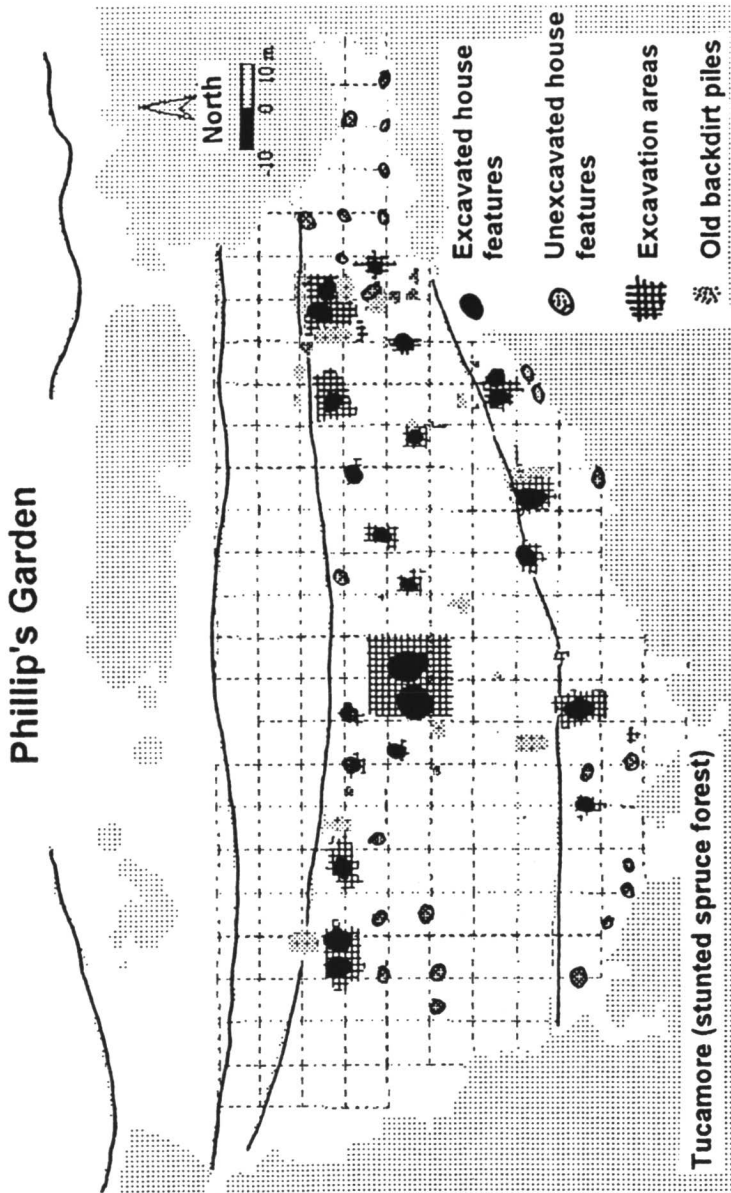
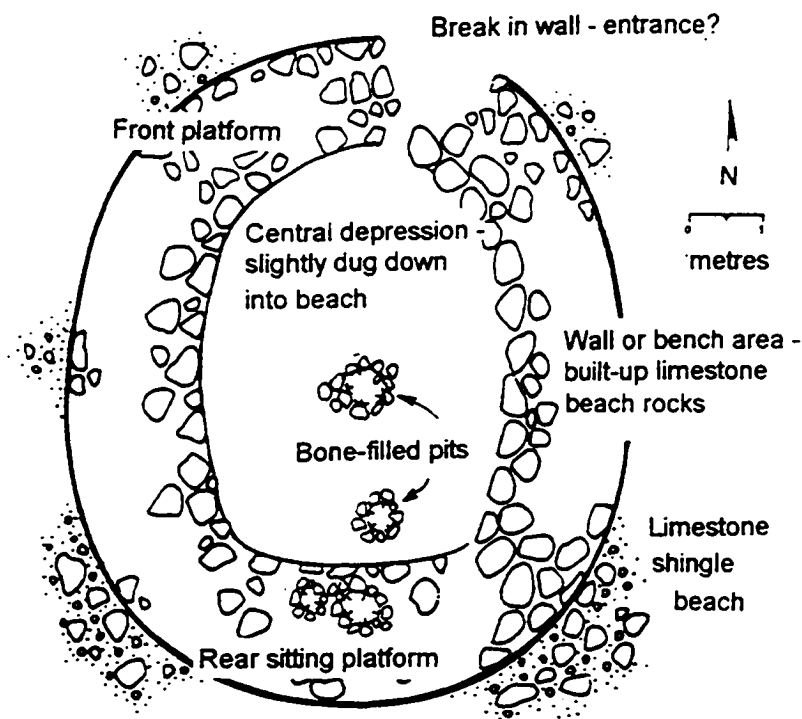


Fig. 12 Sketch of Phillip's Garden showing excavation areas and unexcavated house depressions.



PHILLIP'S GARDEN HOUSE CONSTRUCTION
SCHEMATIC VIEW

Fig. 13 Schematic rendition of a Dorset Palaeoeskimo dwelling at Phillip's Garden.

sub-beach. At each side of this depression, or else only at the back, an area was kept high and was levelled to form a sitting and sleeping platform. Bisecting the house was a line of rocks or pits which formed its domestic focus. Here food was processed and was cooked in a large soapstone pot, fired by sea mammal oil rather than fire-heated rocks. Little was known about the superstructure of these houses until one house was completely dismantled during our 1992 excavations (Renouf 1993). Undemeath the lowest level of rocks, at which point excavation usually stops, we found a series of large and deep post-holes outlining the perimeter of the house. These appeared to have held a whale rib frame, and together the ribs would have converged towards the centre of the house, forming a dome, which could have been covered by skins. A sitting platform ringed the inside of the house, defined by an area of raised limestone shingles. This is similar to the raised areas of limestone beach rocks which we had previously interpreted as walls in some of the

other Phillip's Garden houses; it is likely that at least some of them were sitting benches.

Harp (1976:132) interpreted the Phillip's Garden houses as winter-spring dwellings. Winter was indicated by the fact that the basements were dug into the ground in order to ameliorate winter drafts, and spring was demonstrated by the overwhelming proportion of seal (presumably harp) which he found in the faunal material from one house. Harp interpreted one dwelling as a summer structure because it was smaller and flimsier than the winter-spring houses and because it had no internal pits or hearth. Further work at the site has stressed considerable intra-site variability in house form, with no two alike (Renouf 1994b). We have interpreted one house as an intermediate-season structure, either spring-summer or late fall-early winter (Murray 1992), another is clearly a summer windbreak (Renouf 1992), and two others are very different versions of what are probably winter-spring houses (Renouf 1987;1993).

There is also considerable variability in house contents, although we do not yet know what this means. For example, one house has an unusually high proportion of sled runners and stone cores, and an unusually low proportion of soapstone pot fragments. Four houses have unusually high proportions of harpoon foreshafts and another has a strikingly high number of harpoon heads. Yet another house has an unusually high proportion of needles, ivory plugs for needle cases, and decorated bone.

Although Phillip's Garden and Phillip's Garden East were both spring sealing sites, the nature of settlement at each site was very different, and these differences reflect the distinct ways in which Groswater and Dorset Palaeoeskimo people organized themselves for hunting and fishing throughout the year. Whereas the earlier Groswater site was a short term occupation by a few people for a specific purpose, the Phillip's Garden occupation was longer term, more broadly focused, had sporadic occupations outside the prime seal hunting season, and it seems that larger groups of people were involved. This contrast between Groswater and Dorset sites is consistent throughout the coastal areas of Newfoundland. Although people from the earlier and later period often used the same locations, the Dorset sites tend to be larger (cf. Pastore 1986). At Port au Choix, the contrast is reinforced by the Point Riche site, which is similar to, but a smaller version of, Phillip's Garden. Here at least a dozen house depressions are spread out on either side of a beach ridge, at 10.50-13 metres above sea level. Faunal material identified by Anne Rick of the Zooarchaeological Analysis Program of the Canadian Museum of Nature is predominantly seal, presumably harp and including juveniles, and there are traces of beaver, marten, duck and cod. Although this suggests the spring harp seal hunt, the site itself is an ideal summer location, with a stiff breeze always present to keep down the flies; we have excavated two house depressions, one of which was undoubtedly a warm weather structure (Renouf 1992).

TRANSITIONS TO DORSET

The difference between Groswater and Dorset in Newfoundland is paralleled by differences between Dorset and transitional period sites in Labrador and the eastern Arctic as a whole. The term "transitional period" is shorthand for those periods just prior to the appearance of the Dorset Palaeoeskimo which are, at least chronologically, transitional between Dorset (c. 2500-900 B.P.) and the earliest Palaeoeskimo (c. 4500-2800 B.P.) occupations. Transitional period sites date from approximately 2800-2100 B.P., the youngest dates coming from Newfoundland sites. This period is given various regional names, such as "Independence II" in northeastern Greenland and some areas of the High Arctic, "Dorset I" in southern Greenland, "transitional pre-Dorset to Dorset" in Baffin Island, and "Groswater" in Newfoundland and Labrador (cf. McGhee 1981; Maxwell 1985). This period is flagged by the appearance of certain stylistic and technological changes in stone tools and bone harpoon heads (Figure 14). All transitional period sites are small, and appear to have been briefly occupied by small groups. These small, mobile populations expand into some areas (central and southern Labrador, the Quebec Lower North Shore, Newfoundland, and the High Arctic) and appear to retract from others (southern Baffin Island). Archaeologists characterize their subsistence as generalized, with an emphasis on both land and sea mammals, and reconstruct a highly mobile annual round. This characterization is largely impressionistic, in the near total absence of faunal material from these sites and, as is the case for Labrador, it is based on site location and site size.

Then, at around 2500 B.P. in most areas, such as northern Labrador, Baffin Island, and the High Arctic, and at 1900 B.P. in Newfoundland, the nature of the Palaeoeskimo sites changes. This change is called Dorset. The tool kit alters in style (Figure 15), and the addition of certain items indicates increased marine specialization, including sea ice hunting. Dorset tool kits include innovations such as ice picks, ice creepers which acted as treads for footwear, sled runners and oil burning soapstone lamps and pots which would not smoke up a snow house. The inference of an increased marine focus is reinforced by the abundance of sea mammal bones which are found on Dorset sites, although this is somewhat misleading, since in general Dorset sites happen to have better bone preservation than the earlier sites. Most Dorset sites are larger than earlier ones and seem to reflect longer, more intensive occupation, by larger groups of people. There are a greater number of more substantial house features, a greater number of artifacts and larger midden deposits. Art flourishes in the later period Dorset sites, with abstract and realistic representations of humans and animals rendered in bone, ivory and from one site in northern Labrador (Thomson 1981), soapstone. What then are the factors that underlie this sort of change?

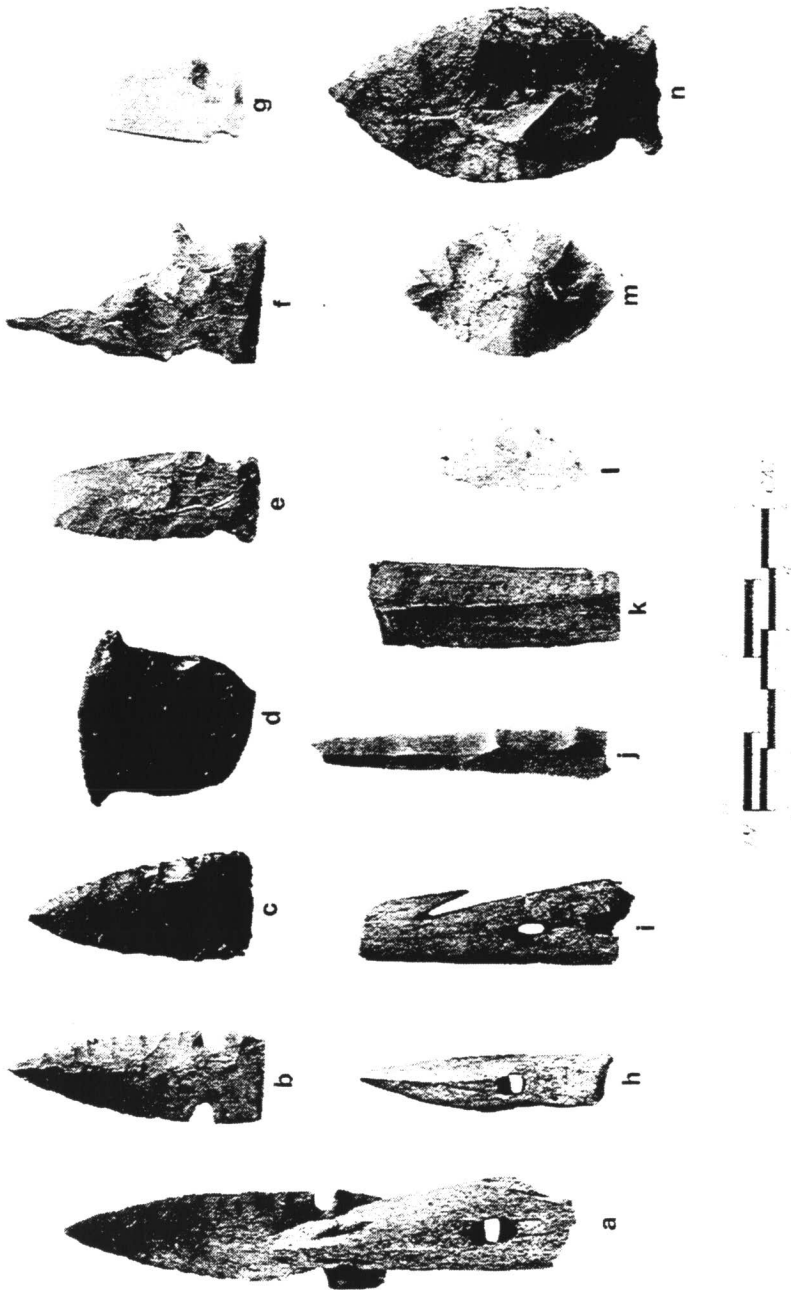


Fig. 14 Artifacts from the Groswater Palaeoeskimo site of Phillip's Garden East: a. endblade fitted onto harpoon head; b-c. endblades (harpoon tips); d. bevelled-edge scraper; e-g. chipped and ground chert burin-like tools (engraving tools); h-i harpoon heads (the only Groswater harpoon heads found to date come from this site); j-k. microblades (all-purpose cutting tools); l-m. side blades (inset near tip of harpoon head to increase cutting power or inset in bone handle to make a small knife); n. biface (knife). Photograph by M.U.N. *Photographic Services*.

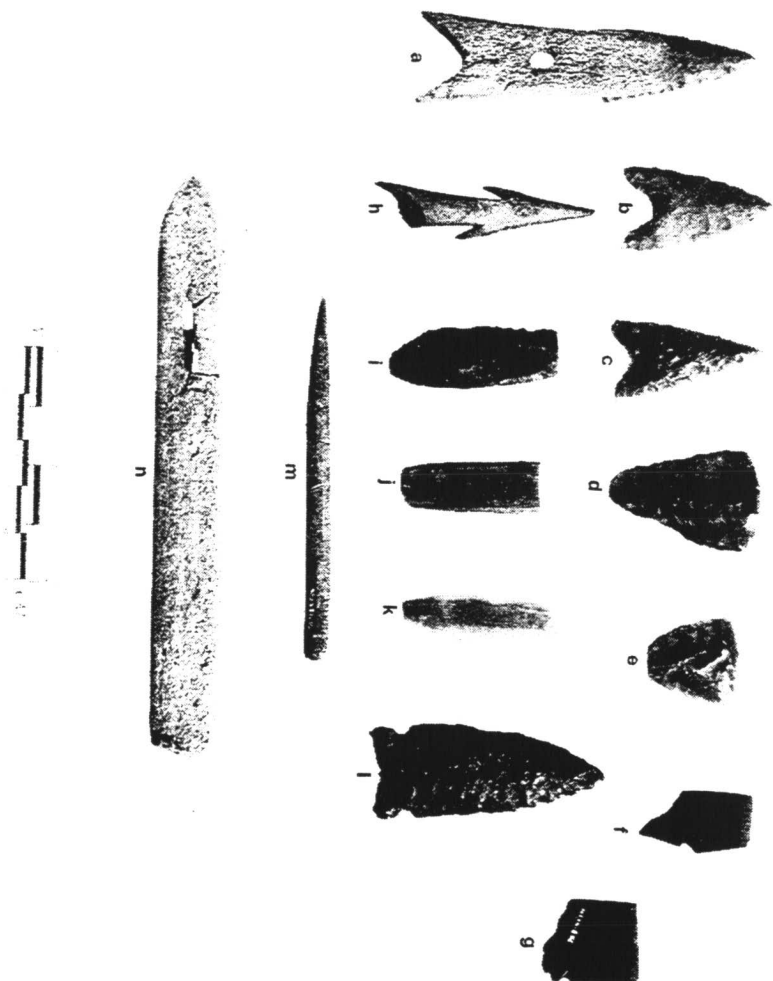


Fig. 15 Artifacts from the Dorset Palaeoskimo site of Phillip's Garden: a. endblade slotted into harpoon head; b-c. endblades (harpoon tips); d-e. bevelled-edge scrapers; f-g. nephrite burn-like tools (engraving tools); h. bone point; i-k. microblades (all purpose cutting tools); l. biface (spear point); m. awl; n. segment of a sled runner with counter-sunk lashing holes. *Photograph by M.U.N. Photographic Services.*

CULTURE CHANGE AND CLIMATE CHANGE

One of the challenges of archaeology is to try to understand the causes of culture change. Change takes place at (at least) two different temporal scales. At the scale of the individual or the generation, conscious decision-making precipitates events. For example, an entrepreneurial individual might decide to facilitate or control the flow of a desired raw material. Or a group of families may decide to abandon commonly used hunting locations when a series of poor summers renders the hunt unpredictable. This contrasts with transformation at a larger time scale, which occurs beyond an individual's lifetime, or the lifetime of even several generations, although it is culminatively made up of a series of individual actions. An example is the peopling of the New World, which was a process which took place some time before 11,500 years ago, as small groups of people slowly hunted their way eastward across Beringia (the name given to the exposed bed of the Bering Sea, which was dry land during glacial periods). Another example is the change in hunting patterns that took place from the transitional to the Dorset periods in the eastern Arctic. Causes for change at the smaller time scale tend to come from within the society (e.g.: conscious decision making), while causes for change at the larger time scale tend to come from outside the society (e.g.: environmental change). Culture change occurs as a result of a number of factors which operate at both time scales, and occurs both from within and outside the society.

Most archaeological data are relevant to the larger rather than the smaller scale. It is rare to see the individual in prehistory, although the recent find of a mummified 5200 year old man in an Alpine glacier (Barfield 1994) and preservation of a set of clothes, including hat and shoes, in one of the burials at the sixteenth century Basque whaling site at Red Bay, Labrador (Tuck 1985) are notable exceptions. One of the most significant factors that operates at the larger scale is climate. This is especially the case for hunter-gatherers living in northern areas where the low temperatures, long dark winters, and highly seasonal resources are severe limiting factors to human adaptation.

In Newfoundland and Labrador, and throughout the eastern Arctic, palaeotemperature sequences inferred from fossil pollen, point to increasingly cold conditions beginning somewhere between 3000 and 2200 B.P., reaching a cold peak around 2600-2500 B.P. (Diaz *et al.* 1985; Macpherson 1981; Short *et al.* 1985; Williams and Bradley 1985). This cold period also shows up in ice cores taken from High Arctic glaciers (Dansgaard *et al.* 1971; Hammer *et al.* 1980; Koerner and Fisher 1985; Mayewski *et al.* 1993). With the high resolution of ice cores, in which annual layers can be distinguished and temperature proxies established, a series of fluctuating temperatures shows up from about 3000-2200 B.P. This suggests that the Groswater period in Newfoundland and Labrador, and the transitional period elsewhere in the eastern Arctic, was a time not only of cold but of unstable

environmental conditions. In other words, the overall cold appears to have been broken by brief periods of significantly warmer climate (Mayewski pers. comm.).

Temperature affects landfast and drift ice conditions, which in turn affect marine mammal populations. To oversimplify, cold conditions are conducive to ice-dependent species such as the ringed seal, whereas warmer temperatures are conducive to open water species such as harbour and harp seal. However, the effects of temperature and ice conditions are variable, depending on factors such as ocean currents, wind direction and local topography. For example, a bay or fjord could be obstructed by ice far into the summer as a result of wind direction or currents rather than colder climate, giving that locality a colder micro-climate than a neighbouring fjord or bay. Or a warm winter in Baffin Bay could result in early break-up of ice that would sweep down the Labrador coast, making it a summer of heavy drift ice conditions, with local cooling effects.

As an example of trying to assess how changing temperatures might have affected resources, Fitzhugh (1972) suggested that in Labrador the past distribution of marine species might have shifted along the coast in line with ice conditions which in turn changed in response to fluctuating climate. He suggested that in cold periods a southern expansion of pack ice would have compressed marine mammal productivity and extended southward the distribution of northern species such as walrus and ringed seal. Conversely, under warming conditions pack ice would have contracted northwards and the distribution of marine mammals would have expanded over a wider area, with open-water or ice-edge species such as harp seal, harbour seal, and porpoise extending farther north. He further suggested that the size of caribou herds might have been reduced during warm periods as a result of winter icing, deeper snow and a higher incidence of forest fires.

Although increasing or decreasing temperatures are important, the fluctuations themselves are also critical. It is possible that on the time scale of the individual, the warmer/colder fluctuations of 3000-2200 B.P. were translated into an increase in the unpredictability of year-to-year temperatures and ice conditions. This in turn would have meant an increased unpredictability in the distribution, timing, and accessibility of various sea mammal species.

Managing unpredictability is and was an integral part of hunter-gatherer societies around the world. It occurs at the level of everyday, for example with the gatherers of plant foods (a predictable resource) sharing the results of their gathering efforts with the hunters of game (a less predictable resource). Hunter-gatherers factor in unpredictability when they make decisions about which species to hunt, at what time, and at what location. When uncertainty is great, a number of options are kept open and maximum flexibility of group movement from site to site is maintained. When unpredictability of crucial resources is the norm over generations, various mechanisms for sharing within and between groups become an essential part of the cultural pattern (cf. Lee 1979; Balikci 1970; Halstead and O'Shea 1989).

If unpredictability of sea mammal resources was indeed the norm for the period approximately 3000-2200 B.P., the Groswater Palaeoeskimos would have developed cultural means to meet that challenge. Two strategies are likely, although many more are possible. The first is to generalize rather than to specialize the subsistence base. This maximizes the array of resource possibilities, spreading the risk and increasing security. The second strategy is related to the first, and that is to keep the size of the living group sufficiently small so that moves to new resource locations can be made quickly in response to changing circumstances. On the ground, this flexible, generalist strategy would leave small archaeological sites with relatively little build-up of cultural deposit, similar to what we see at Groswater Palaeoeskimo locations.

At around 2200 B.P. temperatures began to warm and temperature fluctuations lessened (cf Dansgaard *et al.* 1971; Diaz *et al.* 1985; Hammer *et al.* 1980; Koerner and Fisher 1985; Williams and Bradley 1985). At around 1900 B.P. in Newfoundland, although earlier in Labrador and the eastern Arctic (at around 2500-2400 B.P.), the Dorset Palaeoeskimo are recognized in the archaeological record, characterized by what appears to be a narrowing in on, and a more intensive use of, marine resources. Such an economic option would not have been adaptive in the earlier period of greater uncertainty.

Dorset Palaeoeskimo appeared to have abandoned Port au Choix at around 1300 years ago. This may be connected to the re-appearance of Indian populations in the area at around the same time, although conceivably the Indians returned because the Dorset left. The retreat from Port au Choix is more likely a part of the general abandonment of the island by Palaeoeskimos at around this time. Most Dorset dates from the island of Newfoundland cluster around 1900-1400 B.P., with a few dates at 1300 B.P. and the youngest date coming from Placentia Bay, at 1090 \pm 100 B.P. (Robbins 1986). The period of island abandonment overlaps with the beginning of another warm interval, called the Medieval Warm Period and dated to 1000-700 B.P. Ice core data from Greenland indicate a warm peak just before this time, at around 1250 B.P. (Mayewski *et al.* 1993). This co-occurrence of a Dorset retreat and a warm period may be related. After all, the island of Newfoundland was the southern terminus of a Palaeoeskimo expansion which took place during a period of maximum cold. Retraction took place during a period of maximum warmth when Newfoundland was perhaps no longer suitable for an essentially Arctic and Subarctic adapted culture. Either the Newfoundland Dorset populations did not survive the change in climate (Tuck and Pastore 1985), or else they retreated to northern Labrador where late Dorset populations continued until 600 years ago.

PORT AU CHOIX SEAL HUNTERS

As the nineteenth and twentieth century residents of Port au Choix hunted the seals that were plentiful in this area in the winter and early spring, so did the aboriginal Palaeoeskimos who preceded them by over two thousand years. These small scale societies, in one case of European descent, in the other of western Arctic lineage, lived self-sufficiently and successfully on the rich marine resources that the area had to offer. Arctic adapted, the Palaeoeskimos did not appear to rely on the abundant marine fish, and instead were hunters of large land and sea game. Newfoundland was the southernmost extension of these Arctic hunter-gatherers, and this penetration so far south of their normal Arctic range is a direct reflection of the flexibility of their culture pattern. Indeed, elasticity is a characteristic of Arctic societies throughout the circumpolar region and is a key element to their long term success. However, elasticity can only stretch so far, and thus when temperature began to warm up around 1200 years ago the Palaeoeskimo left the island of Newfoundland, which has never again been the home of an Arctic people.

Acknowledgements

Appreciation is given to the many funding sources which made this project possible: Social Sciences and Humanities Research Council of Canada; Historic Resources, Department of Tourism and Culture, Government of Newfoundland and Labrador; Department of Employment and Immigration, Government of Newfoundland and Labrador; Institute of Social and Economic Research, Memorial University of Newfoundland; Vice-President's Research Fund, Memorial University of Newfoundland; Office of Research, Memorial University of Newfoundland; Office of the Dean of Arts, Memorial University of Newfoundland; Town Council, Port au Choix; and Government of Canada's Challenge student employment program. I would also like to thank Darlene Balkwill and Anne Rick of the Zooarchaeological Analysis Program of the Canadian Museum of Nature, for all their patience and good work, and to John Erwin who helped with map preparation. Finally, thanks go to Noel Broadbent for his comments on this manuscript.

Notes

¹The term "hunter-gatherer" refers to societies who live off wild resources, that is, they do not produce their food to any significant degree. "Gathering" is the greater staple in southern hunter-gatherer groups, "hunting" refers to exploitation of both land and sea mammals, and "hunter-gatherer" includes fishing and trapping activities. Although "hunter-gatherer" refers to subsistence, it incorporates notions of a small scale society which operates according to consensus and in which there are few or no wealth and power differences.

²Plant foods, of course, are more important to hunter-gatherers outside Arctic and Subarctic regions.

References

- Auger, R. (1984), "Factory Cove: Recognition and Definition of the Early Palaeo-Eskimo Period in Newfoundland." St. John's: Master's thesis, Department of Anthropology, Memorial University of Newfoundland.
- Auger, R. (1986), "Factory Cove: an Early Palaeo-Eskimo Component from the West Coast of Newfoundland." In *Palaeo-Eskimo Cultures in Newfoundland, Labrador and Ungava*, pp. 111-118. St. John's: Reports in Archaeology 1. Memorial University of Newfoundland.
- Balikci, A. (1970), *The Netsilik Eskimo*. New York: Garden City Press.
- Barfield, L. (1994), "The Iceman Reviewed." *Antiquity* 68:10-16.
- Cox, S. L. (1977), "Prehistoric Settlement and Culture Change at Okak, Labrador." Cambridge, Massachusetts: PhD thesis, Department of Anthropology, Harvard University.
- _____. (1978), "Palaeo-Eskimo Occupations of the North Labrador Coast." *Arctic Anthropology* 15(2):96-118.
- _____. (1987), "A Pre-Dorset Sequence from Nuasornak Island, Okak Bay, Labrador." Unpublished report, on file at Historic Resources Division, Department of Culture, Recreation and Youth, Government of Newfoundland and Labrador. St. John's.
- _____. (1988), "Pre-Dorset Occupations of Okak Bay, Labrador." *The Northern Raven* 7(3):1-3.
- Dansgaard, W., S. J. Johnson, H. B. Clausen, and C. C. Langway, (1971), "Climatic Record Revealed by the Camp Century Ice Core." In *The Late Cenozoic Glacial Ages*, edited by K. K. Turekian, pp. 37-70. New Haven: Yale University Press.
- Devereux, H. (1965), "The Pope's Point Site (Df Ba-1), Newfoundland." Unpublished report on file at the Archaeological Survey of Canada, Canadian Museum of Civilization. Ottawa.
- Diaz, H. F., J. T. Andrews, and S. K. Short, (1985), "Climate Variations in Northern North America (6000 B.P. to Present) Reconstructed from Pollen and Tree Ring Data." *Arctic and Alpine Research* 21(1):45-59.
- Fitzhugh, W. W. (1972), *Environmental Archaeology and Cultural Systems in Hamilton Inlet, Labrador*. Washington, D.C.: Smithsonian Contributions to Anthropology, 16.
- _____. (1978), "Maritime Archaic Cultures of the Central and Northern Labrador Coast." *Arctic Anthropology* 15:61-95.
- _____. (1980a), "Preliminary Report on the Torngat Archaeological Project." *Arctic* 33(3):585-606.
- _____. (1980b), "A Review of Paleo-Eskimo Culture History in Southern Quebec-Labrador and Newfoundland." *Etudes/Inuit/Studies* 4:21-31.
- Giddings, J. L. (1964), *The Archaeology of Cape Denbigh*. Providence, Rhode Island: Brown University Press.
- Hammer, C. U., H. B. Clausen, and W. Dansgaard, (1980), "Greenland Ice Sheet Evidence of Post-Glacial Volcanism and its Climatic Impact." *Nature* 288(5788):230-235.
- Hood, B. (1994), "Archaeological Resources in the Proposed Torngat Mountains National Park: A Summary and Evaluation." Unpublished report on file at Archaeology Division, Parks Canada, Atlantic Region. Halifax.

- Koerner, R. M., and D. A. Fisher, (1985), "The Devon Island Ice Core and the Glacial Record." In *Quaternary Environments*, edited by J. T. Andrews, pp. 309-327. Boston: Allen and Unwin.
- Halstead, P. and J. O'Shea, editors (1989), *Bad Year Economics*. Cambridge: Cambridge University Press.
- Harp, E. (1964), *The Cultural Affinities of the Newfoundland Dorset Eskimo*. Ottawa: National Museum of Canada Bulletin, 200.
- _____. (1976), "Dorset Settlement Patterns in Newfoundland and Southeastern Hudson Bay." In *Eastern Arctic Prehistory: Palaeoeskimo Problems*, edited by M. M. Maxwell, pp. 119-138. Washington, D.C.: Memoir for the Society for American Archaeology, 31.
- Kennett, B. L. (1990), "Phillip's Garden East: A New Perspective on Groswater Palaeoeskimo." M.A. thesis, Department of Anthropology, Memorial University of Newfoundland. St. John's.
- Lee, R. B. (1979), *Men, Women and Work in a Foraging Society*. Cambridge: Cambridge University Press.
- Loring, S. and S. Cox, (1986), "The Postville Pentecostal Groswater Site, Kaipokok Bay, Labrador." *Palaeo-Eskimo Cultures in Newfoundland, Labrador and Ungava*, pp. 65-94. St. John's: Reports in Archaeology, 1. Memorial University of Newfoundland.
- MacPherson, J. B. (1981), "The Development of the Vegetation of Newfoundland and Climate Change during the Holocene." In *The Natural Environment of Newfoundland, Past and Present*, edited by A. G. Macpherson and J. B. Macpherson, pp. 189-217. St. John's: Department of Geography, Memorial University of Newfoundland.
- Maxwell, M. M. (1985), *Eastern Arctic Prehistory*. New York: Academic Press.
- Mayewski, P. A., L. D. Meeker, M. C. Morrison, M. S. Twickler, S. Whitlow, K. K. Ferland, D. A. Meese, M. R. Legrand and J. P. Steffenson (1993), "Greenland Ice Core 'Signal' Characteristics: An Expanded View of Climate Change." *Journal of Geophysical Research* 98(D7):12,839-12,847.
- McGhee, R. J. (1981), *The Dorset Occupations in the Vicinity of Port Refuge, High Arctic Canada*. Ottawa: Archaeological Survey of Canada, Mercury Series, 105.
- _____. (1990), *Canadian Arctic Prehistory*. Ottawa: Canadian Museum of Civilization.
- _____. and J.A. Tuck (1975), *An Archaic Sequence from the Straits of Belle Isle, Labrador*. Ottawa: National Museum of Man, Mercury Series, 34.
- Murray, M. S. (1992), "Beyond the Laundry List: The Analysis of Faunal Remains from a Dorset Dwelling at Phillip's Garden (EeBi-1), Port au Choix, Newfoundland." Masters thesis, Department of Anthropology, Memorial University of Newfoundland. St. John's.
- Pastore, R. T. (1986), "The Spatial Distribution of Late Palaeo-Eskimo Sites on the Island of Newfoundland." *Palaeo-Eskimo Cultures in Newfoundland, Labrador and Ungava*, pp. 125-134. St. John's: Reports in Archaeology, 1. Memorial University of Newfoundland.
- _____. (1992), *Shanawdithi's People: The Archaeology of the Beothuks*. St. John's: Atlantic Archaeology Ltd.

- Pintal, J.-Y. (1994), "A Groswater Site at Blanc-Sablon, Quebec." *Threads of Arctic Prehistory: Papers in Honour of W.E. Taylor, Jr.*, edited by D.A. Morrison and J.-L. Pilon, pp. 145-164. Ottawa: Canadian Museum of Civilization.
- Plumet, P., C. Lascombe, V. Elliot, M. Laurent and A. Delisle (1994), *La Question de la Coexistence du Paléoesquimau et de l'Amérindien*. Recherches Amérindiennes au Québec, Paléo-Québec, 21.
- Renouf, M. A. P. (1986), "Report of 1985 Excavations at the Point Riche and Phillip's Garden sites, Port au Choix National Historic Park." Unpublished report on file at Archaeology Division, Parks Canada, Atlantic Region. Halifax.
- _____. (1987), "Archaeological Investigations at the Port au Choix National Historic Park: Report of 1986 Field Activities." Unpublished report on file at Archaeology Division, Parks Canada, Atlantic Region. Halifax.
- _____. (1991), "Archaeological Investigations at the Port au Choix National Historic Park: Report of the 1990 Field Activities." Unpublished report on file at Archaeology Division, Parks Canada, Atlantic Region. Halifax.
- _____. (1993), "The 1992 Field Season at the Port au Choix National Historic Park." Unpublished report on file at Archaeology Division, Parks Canada, Atlantic Region. Halifax.
- _____. (1994a), "Two Transitional Sites at Port au Choix, Northwestern Newfoundland." In *Threads of Arctic Prehistory: Papers in Honour of W.E. Taylor, Jr.*, edited by D.A. Morrison and J.-L. Pilon, pp. 165-195. Ottawa: Canadian Museum of Civilization.
- _____. (1994b), "Hunter-Gatherer Population Aggregations In Prehistory: A Case Study from Port au Choix, Northwestern Newfoundland." In *Hunters and Gatherers in the Modern Context*, pp. 529-539. Proceedings of the Seventh International Conference on Hunting and Gathering Societies, pp. 529-539. Fairbanks: Department of Anthropology, University of Alaska at Fairbanks.
- Robbins, D. T. (1986), "'Newfoundland Dorset' Culture?" In *Palaeo-Eskimo Cultures in Newfoundland, Labrador and Ungava*, pp. 119-124. St. John's: Reports in Archaeology, 1. Memorial University of Newfoundland.
- Schwarz, F. A. (1989), "Gambo II: A Report on Excavations Conducted at Five Prehistoric Sites on Gambo Pond, July-August 1988." Unpublished report, on file at Historic Resources Division, Department of Culture, Recreation and Youth, Government of Newfoundland and Labrador. St. John's.
- Sergeant, D. D. (1991), *Harp Seals, Man and Ice*. Canadian Special Publications of Fisheries and Aquatic Sciences, 114. Ottawa: Department of Fisheries and Oceans.
- Short, S. K., W. N. Mode, and P. T. Davis, (1985), "The Holocene Record from Baffin Island: Modern and Fossil Pollen Studies." In *Quaternary Environments*, edited by J. T. Andrews, pp. 608-642. Boston: Allen and Unwin.
- Thomson, C. (1980), "Preliminary Archaeological Findings from Shuldham Island, Labrador, 1980." In *Archaeology In Newfoundland and Labrador, 1980*, edited by J. Spruill Thomson and B. Ransom, pp. 5-25. St. John's: Historic Resources Division, Department of Culture, Recreation and Youth, Government of Newfoundland and Labrador.
- Tuck, J. A. (1970), "An Archaic Indian Cemetery in Newfoundland." *Scientific American* 226(6):112-21.
- _____. (1971), "An Archaic Cemetery at Port au Choix, Newfoundland." *American Antiquary* 36(3):343-58.

- _____. (1975), *Prehistory of Saglek Bay, Labrador: Archaic and Palaeo-Eskimo Occupations*. Ottawa: National Museum of Man, Mercury Series, Archaeological Survey of Canada, 32.
- _____. (1976), *Ancient People of Port au Choix*. Newfoundland Social and Economic Studies, 17. St. John's: Institute of Social and Economic Research, Memorial University of Newfoundland.
- _____. (1978), "Excavations at Cow Head, Newfoundland: An Interim Report." *Etudes/Inuit/Studies* 2(1):138-141.
- _____. (1982), "Prehistory in Atlantic Canada since 1975." *Canadian Journal of Archaeology* 6:210-223.
- _____. (1985), "Unearthing Red Bay's Whaling History." *National Geographic* 168(1):50-57.
- _____ and W.W. Fitzhugh (1986), "Palaeo-Eskimo Traditions in Newfoundland and Labrador." In *Palaeo-Eskimo Cultures of Newfoundland, Labrador and Ungava*, pp. 161-168. St. John's: Reports in Archaeology, 1. Memorial University of Newfoundland.
- _____ and R.T. Pastore (1985), "A Nice Place to Visit...But: Prehistoric Extinctions on the Island of Newfoundland." *Canadian Journal of Archaeology* 9(1):69-80.
- Williams, L.D. and R.S. Bradley (1985), "Paleoclimatology of the Baffin Bay region." In *Quaternary Environments*, edited by J. T. Andrews, pp. 741-772. Boston: Allen and Unwin.