Contraction and Expansion in Newfoundland Prehistory, AD 900–1500

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This chapter looks at the abandonment of Newfoundland at around 1170 cal BP by once-thriving Dorset Paleo-Eskimo populations and the subsequent expansion of resident Recent Indian groups. We connect these processes to each other, to the abandonment of a strategic Dorset site in northwestern Newfoundland, and to a warming period demonstrated for this region beginning at 1400 cal BP and peaking at 1100 cal BP. We speculate that this warming was a local expression of a more general phenomenon. This case study is an example of how cause and effect can reverberate within and across cultural systems.

Cultural Context

Dorset Paleo-Eskimos (1950–1050 cal BP) are an Arctic-adapted population that moved into Newfoundland (Figure 13.1) from the eastern Arctic via Labrador. Their sites are numerous in Newfoundland, occurring mostly in coastal areas and to a much lesser extent the interior (Pastore 1986; Schwarz 1994). A large proportion of Dorset coastal sites are in exposed areas such as islands, headlands, and points of land, reflecting their sea mammal hunting focus (Holly 1997, 2002; Pastore 1986; Rast 1999; Schwarz 1994). The large size of many Dorset sites, their rich artifact assemblages, and the identification of local Dorset populations through distinct patterns of end blade morphology and lithic raw material (Erwin 2001; Leblanc 2000; Robbins 1985, 1986) indicate a low residential mobility for these groups.

Recent Indian populations appear in Newfoundland at around 2070 cal BP, likely coming from Labrador but connected to the wider Gulf of St. Lawrence region. Recent Indian sites are fewer and smaller than Dorset sites. They are well represented in both exposed and sheltered coastal areas as well as inland, suggesting a more generalized marine-terrestrial adaptation (Holly 1997, 2002; Pastore 1986; Rast 1999; Schwarz 1994). Small site size and relatively few artifacts indicate a high residential mobility.

The Recent Indian period is divided into three complexes: Cow Head (2070–930 cal BP), Beaches (2000–910 cal BP), and Little Passage (1100–360 cal BP). There are relatively few Cow Head complex sites and fewer still that comprise more than a few artifacts within a larger Beaches complex assemblage. As pointed out by Hull (2002), Hartery (2002), and Holly (2002), Cow Head is stylistically distinct from Beaches and therefore is unlikely to be ancestral to it; broadly overlapping radiocarbon dates support this observation. There is general agreement that the Beaches and Little Passage complexes...
FIGURE 13.1. Location map.
form a cultural continuum that evolves into the historic Beothuk period (Hartery 2002; Holly 2002; Hull 2002; Pastore 1992; Schwarz 1984); there is overlap between the calendar age ranges here as well, but it is minimal. For the purpose of this chapter, we exclude Cow Head complex data and deal only with Beaches and Little Passage complexes, the former contemporary with Dorset occupations and the latter postdating them (Figure 13.2).

Dorset in Newfoundland: Entry and Abandonment

We look at Dorset entry into and subsequent abandonment of Newfoundland at two interconnected scales, site specific and pan-Newfoundland. We first look at the abandonment of an important Dorset site on the northwest coast and then address the Dorset population collapse throughout Newfoundland.

Phillip’s Garden

Phillip’s Garden is a 2–ha (4-acre) Dorset site at Port au Choix on the Northern Peninsula of Newfoundland (Figure 13.1). The site was occupied over a period of 800 years according to 37 charcoal-based radiocarbon dates ranging from 1950 to 1170 cal BP (Figure 13.3).² There are remains of at least 68 dwellings, some of which are very large, with footprints ranging between 75 and 103 m² (807–1,108 ft² [Renouf 2003a, 2006]). Site occupation is divided into three arbitrary phases based on intensity of occupation derived from overlapping calibrated radiocarbon dates: early (1950–1550 cal BP), middle (1550–1350 cal BP), and late (1350–1170 cal BP; Figure 13.3). Of the 15 dated dwellings, one–three of them overlap during the early phase; five–seven, from the middle phase; and two–three, from the late phase. This suggests an initial low to medium population, increasing to a maximum, then returning to a medium level before abandonment (see also Erwin 1995; Harp 1976). Harp (1976) suggested that each dwelling housed one extended family or two related families, although the large size of some of the dwellings suggests that this estimate is conservative (Renouf 2006). For instance, accounts of Inuit and Alaskan Eskimo winter dwellings in the medium size range (15–40 m²) describe two–seven families per house (Lee and Reinhardt 2003).

While we cannot establish actual contemporaneity of dwellings at Phillip’s Garden, and while only a small proportion of the known dwellings are dated (15/68), it is clear that the population of Phillip’s Garden was large through all phases, consisting of at least several families. This suggests that Phillip’s Garden was a social gathering site, a type that is well documented among hunting and gathering populations and...
an essential part of the annual rhythm of population aggregation and dispersal (Damas 1969; Lee 1972; Mauss 1979; Turnbull 1968).

Gathering sites were important places where families congregated to engage in the social and ritual activities that defined, taught, and reaffirmed their shared cultural identity. If Phillip’s Garden was such a place, it would have been important on a number of levels. It would have been economically important since many people necessitated a large supply of food. It would have been socially important since families gathered together as a community. It would have been ritually important given the likely symbolic aspect of the hunt and of the many social and ritual activities that would have taken place.

In addition, the location of Phillip’s Garden was important. It is situated in the Gulf of St. Lawrence just south of the narrow Strait of Belle Isle across which direct and/or indirect contact occurred between Dorset populations on both sides, as it did through all precontact cultural periods (Hull 2002; Pintal 1998; Renouf 1999). Nagle (1986) notes that Newfoundland Dorset sites contain small amounts of Ramah chert from northern Labrador and contemporaneous Labrador Dorset sites have small amounts of fine-grained cherts from the Newfoundland west coast. Phillip’s Garden was strategically located at the crossroads of this interchange. Perhaps its social and symbolic importance as a gathering site enhanced its role in this communication network.

Phillip’s Garden was located where it was because of the harp seal hunt. Large harp seal herds migrate by Port au Choix twice during the winter. In the fall they swim from Greenland south to their breeding grounds in the Gulf of St. Lawrence (Sergeant 1991). When they pass through the Strait of Belle Isle in December they are in open water. After they give birth to their young on the ice in April/May they begin their return journey, moving northward at the receding edge of the seasonal pack ice. A persistent ice lead is known to occur a few kilometers offshore from Phillip’s Garden, and harp seals congregate in this open water (Leblanc 1996). According to local seal hunters, April/May is the best time for seal hunting because of
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this predictable offshore access (Leblanc 1996). By contrast, in December the seals may appear in any one of a number of areas: off the coast of Port au Choix, off the coast of the Quebec Lower North Shore, or in the middle of the Strait of Belle Isle.

Phillip’s Garden has rich and well-preserved faunal assemblages that are overwhelmingly dominated by seal. Of the Phocidae bones that could be identified to species, over 90 percent were harp seal, and therefore we assume that most of the bones that are identifiable only to genus are harp as well. Although these assemblages indicate both a December (Hodgetts 2003) and an April/May seal hunt (Harp 1976; Hodgetts et al. 2003; Murray 1992; Renouf 1993), it is likely that the April/May seal hunt was the more important focus of exploitation and was therefore the subsistence basis for the large population.

Despite its obvious prosperity Phillip’s Garden was abandoned by 1170 cal BP (Figure 13.3). In two faunal collections dating to 1420–1230 cal BP, Hodgetts et al. (2003) show a shift away from the 90–100 percent reliance on harp seal to an increase (20–30 percent) in the proportion of fish and birds, mirroring the decline in human population at around the same time.

Hodgetts et al. (2003) connect this decline to a high-resolution chironomid sequence reconstructed from Bass Pond (Figure 13.1), close to Phillip’s Garden (Rosenberg 1998; Rosenberg et al. 2005). Chironomids, or midges, consist of a number of temperature-sensitive species that can be proxy for freshwater temperature and other environmental variables. Figure 13.4a shows the variation in maximum summer lake temperature relative to the present (Rosenberg et al. 2005). A warming period begins at 1400 cal BP and reaches a temperature maximum at around 1100 cal BP.

A rise in sea temperature occurred at the same time in the Bay of Islands, about 200 km to the south (Levac 2003). Dinocyst proxy data and paleobioclimatic transfer functions are used by Levac (2003) to reconstruct sea surface conditions for the Bay of Islands are derived by Levac (2003) from transfer functions using dinocyst assemblages from a marine sediment core. The solid black line represents the best estimate, while the gray shaded area corresponds to the confidence interval. The vertical line through each curve indicates modern values. c) The duration of sea ice cover is the period of time for which at least 50 percent of the sea surface is covered by ice. Levac’s (2003) radiocarbon chronology was calibrated to calendar years using Calib 4.4.html (Stuiver and Reimer 1993).
temperature and ice conditions (Figure 13.4b–c). These data suggest that winter sea surface temperature sustained a late Holocene maximum at 1500–1150 cal BP (Figure 13.4b) and, significantly, sea ice cover was virtually absent during the same period (Figure 13.4c).

Together these data suggest that on the west coast of Newfoundland the period around 1500–1100 cal BP was one of warmer seasonal temperatures. These might have affected ice conditions off Phillip’s Garden in a number of ways: the pack ice might have been lighter and present for a shorter duration, thereby reducing the period of harp seal availability; the timing and distribution of the pack ice and associated harp seal herds might have been less predictable, thus undermining an important aspect of the hunt; or the ice lead offshore of Phillip’s Garden might have been larger and therefore the ice edge was less accessible with small-craft technology. We can only speculate. However, Bass Pond summer temperature peaked just after site abandonment, suggesting that continuously rising temperatures might have undermined the conditions of site use to the point where its large population was no longer supportable.

**Regional Dorset**

The Dorset occupation of Newfoundland was intensive. Figure 13.5 shows the distribution of the 199 known Dorset sites in Newfoundland. Not only were these sites numerous, but some of them were quite large, extending over .5 ha (1 acre) or more: Cape Ray on the southwest coast, the Pittman site in White Bay (Fogt 1998; Linnamae 1975), Point Riche and Phillip’s Garden at Port au Choix (Eastaugh 2002; Harp 1976; Renouf 2002), Chest Head on the east coast of the Northern Peninsula (Renouf and Bell 2003), and the Dildo Island site in Trinity Bay (Leblanc 2003). Of these, Phillip’s Garden is by far the most intensively occupied.
We looked at the pattern of Dorset occupation in Newfoundland across five regions: the Northern Peninsula, the north coast (Notre Dame Bay and White Bay), the northeast coast (Bonavista Bay and Trinity Bay), the south coast (Placentia Bay to Cape Ray), and the southwest coast (Cape Ray to the Bay of Islands). Table 13.1 shows the oldest and youngest calibrated age ranges and median probability age for Dorset sites in each area. Figure 13.6, based on this table, shows the Dorset entry into and abandonment of Newfoundland, both of which occurred within a narrow time frame. The entry occurred between 1950 and 1610 cal BP, with the earliest date coming from the Northern Peninsula, as would be expected of a population arriving from Labrador. Abandonment occurred between 1350 and 1060 cal BP. In four regions the youngest end of the 1σ probability range is 1170 cal BP, suggesting a synchronicity of abandonment across a number of regions. While we do not know if Dorset groups moved out of Newfoundland (Renouf 1999) or became extinct (Tuck and Pastore 1985), this synchronous disappearance of a series of local populations across a widespread area can be characterized as a population collapse.

Discussion

Two factors could account for this Dorset population collapse: (1) the speculated increasing temperatures throughout coastal Newfoundland similar to those demonstrated for the west coast and (2) the abandonment of Phillip’s Garden. The warming seen in the Port au Choix and the Bay of Islands data could have been a strictly local event or, more likely, is a local example of a more general phenomenon. Unfortunately, there are no high-resolution paleoclimate data from other coastal regions to test this. For example, none of the existing pollen records from Newfoundland has the temporal resolution necessary to identify conditions between 1500 and 1150 cal BP (e.g., Macpherson 1995), whereas many marine-based chronologies either are poorly constrained for this period (e.g., Dinn 1999), have low resolution (e.g., de Vernal et al. 1993), or are located well offshore (e.g., Scott et al. 1989). The cause of the late Holocene warm sea surface interval in the Bay of Islands is partly attributed to increasing winter solar insulation (Levac 2003), which is supported by atmospheric general circulation models (Alley et al. 1999). Such insulation increases would probably equally affect coastal sea surface conditions around Newfoundland but would have a diminished effect in more open waters where changes in ocean current strength and position would be the dominant influence on such short time scales (Fillon 1976; Levac and de Vernal 1997). We therefore speculate that the warming conditions seen in the west coast records occurred more widely throughout coastal Newfoundland. Similar to our speculations about the
potential impact of warmer sea surface and lake conditions at Phillip's Garden, warming conditions throughout coastal Newfoundland might have affected pack ice, the ice-dependent harp herds, and the seal-specialized Dorset hunters. Pastore (1986) and Tuck and Pastore (1985) earlier argued that this specialization on harp seal hunting would have left the Dorset vulnerable to environmental changes.

If such circumstances existed, how would Dorset populations have managed? Renouf (1999) addressed this question when she argued that Newfoundland hunter-gatherers, like all hunter-gatherer groups living in high-risk environments, would have had well-established processes for offsetting uncertainty, primarily through local and distant networks of reciprocal obligations. For Newfoundland hunter-gatherers this would have involved kin and non-kin sharing networks throughout Newfoundland and Labrador. But if Dorset had such risk-reducing mechanisms in place, why did the population collapse?

We suggest that this is connected to the abandonment of Phillip’s Garden. We noted that this population aggregation locale, with its important subsistence, social, and ritual functions, was strategically located between Newfoundland and Labrador. We also noted that there was communication between these two regions during Dorset times, reflected in the small amounts of Labrador lithics at Newfoundland sites and Newfoundland cherts in Labrador sites (Nagle 1986). No doubt these lithics were important not only in themselves but for the network of near and distant ties that they represented. Near ties were important to offset localized resource fluctuations when visits to kin and
non-kin in nearby areas could provide access to different conditions. However, distant ties were crucial when fluctuations were widespread, in which case near ties were experiencing the same conditions and were not in a position to help. In the case of a speculated 1500–1100 cal BP warming across Newfoundland, Labrador networks would have been crucial. However, if these networks were disrupted by the abandonment of an important site at the gateway to Labrador, the entire network of communications would be at risk. The fall of such a key site could precipitate a widespread population collapse.

Recent Indians in Newfoundland: Containment and Expansion

How Dorset abandonment affected Newfoundland’s resident Recent Indian population is rooted in the prior relationship between these groups, that is, the relationship between Dorset and Beaches complex populations. Figure 13.5 shows the intensive character of Dorset occupation. By contrast, Beaches complex occupation of Newfoundland was light. Figure 13.7a shows 31 identified Beaches sites, most of which are small. Some of the largest Beaches complex sites are Cape Freels 1, 2, and 3, which extend along a 25-km beach ridge; however, these three sites consist of a palimpsest of hearths that reflects the seasonal and brief nature of the occupation (Carignan 1977).

These differences reflect distinctive economic patterns, with different emphases on coastal and interior resources. They also reflect different patterns of residential mobility. These economic and mobility differences are expressed in patterns of site location. Research over the past decades has shown that while both Dorset and Recent Indian populations occupied coastal areas, a greater proportion of Dorset sites is at the outer coast, which provides access to harp seals. In contrast, more Recent Indian sites are found in the inner coast, which provides access to a wide range of resources such as harbor seal, ducks, seabirds, shellfish, anadromous fish, small game, and wood. Sites are also found in the interior, which provides shelter and from which caribou can be hunted; small game, trapped; and salmon and trout, fished (Holly 1997, 2002; Pastore 1986; Schwarz 1994).

We have argued in detail elsewhere (Renouf 2003b; Renouf et al. 2000) that these differences were complementary, allowing populations of both cultures to live in the same regions. This can be seen in the spatial distribution of Dorset and Beaches complex sites. Figure 13.8a–b shows the distribution of the 44 known Dorset sites and six Beaches complex sites in Notre Dame Bay. Beaches sites occur in the same areas as Dorset, but they are so few that it appears that the Dorset presence was a disincentive to Beaches occupation. In Bonavista Bay there are 28 Dorset sites and eight Beaches sites (Figure 13.9a–b). All the Beaches sites are in the same location as Dorset sites; however, there are no Beaches sites in Clode Sound, where there are six Dorset sites. In Burgeo (Figure 13.10a–b) there are 19 Dorset sites, many located in the Burgeo Islands and some in the sheltered Big Barasway. There are only two identified Beaches complex sites, and both occur in areas where Dorset sites are absent.

This pattern shifts after Dorset populations vacate the landscape. Across Newfoundland, the number of Recent Indian sites increases from 31 Beaches sites to 49 Little Passage sites (Figure 13.7b). There are eight Little Passage sites in Notre Dame Bay (Figure 13.8c). In Bonavista Bay, the number of sites increases by only one, but their location shifts to include the now-available Clode Sound (Figure 13.9c). In Burgeo there are nine Little Passage sites, most in the Burgeo Islands and Big Barasway (Figure 13.10c). These patterns suggest that Beaches complex populations were held in check by the more numerous and more settled Dorset. However, with their removal from the landscape Little Passage complex populations could expand into previously occupied areas. The timing of the Little Passage expansion across regions is
FIGURE 13.7. Site distribution in Newfoundland: (a) Beaches, (b) Little Passage. A group of three large sites is named (from the Provincial Archaeology Office site database, 2004).
FIGURE 13.8. (above) Site distribution in Notre Dame Bay: (a) Dorset, (b) Beaches, (c) Little Passage (from the Provincial Archaeology Office site database, 2004).

FIGURE 13.9. (right) Site distribution in Bonavista Bay: (a) Dorset, (b) Beaches, (c) Little Passage (from the Provincial Archaeology Office site database, 2004).
unclear, since 16 of the 23 Little Passage radiocarbon dates come from the northeast coast, leaving the other regions poorly dated, with one to three dates each. In the northeast, however, the dates range more or less continuously from 1090–960 to 430–360 cal BP (Table 13.2), suggesting that in this area at least, expansion occurred not long after Dorset abandonment at 1290–1170 cal BP (Table 13.1).

What areas did Little Passage groups expand into? Holly (2002) shows that Little Passage population expansion occurred mostly in the inner coastal areas, with 41 percent of Beaches sites in the inner coastal area increasing to 51 percent during Little Passage times. We suggest that two independent processes made the inner bay areas more attractive to Little Passage groups: the absence of Dorset groups and, as speculated, warmer sea conditions. Higher winter sea surface temperatures would have resulted in less winter ice, earlier springs, and increased marine and terrestrial productivity. In other words, the same marine climate conditions that would have undermined the specialized sea mammal Dorset adaptation would have favored the more generalized Recent Indian pattern.

### Conclusion

This chapter addresses what was happening in Newfoundland from 1200 to 1000 cal BP, a time period during which two cultural groups lived there, Dorset Paleo-Eskimos and Re-
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We examine Dorset abandonment at the site level and across Newfoundland. We link the abandonment of the large and intensively occupied Phillip's Garden site to sea surface and lake temperature maximums seen in high-resolution paleoclimate data from that region. We speculate that warming sea surface temperatures might have occurred throughout coastal Newfoundland and if so, might have undermined Dorset seal hunters in all regions. We also link Dorset population collapse to the abandonment of Phillip's Garden, which we argue was strategically located between Newfoundland and Labrador. We argue that this would have disrupted important links between these two regions and that with this disruption, Dorset populations throughout Newfoundland became increasingly vulnerable in the face of increasing environmental stress on harp seal resources.

With Dorset gone, Recent Indian populations increased and expanded, in some cases moving into regions previously occupied by Dorset, in particular inner coastal areas. The speculated marine warming conditions that would have been unfavorable for Dorset sea mammal hunting at the outer coast would have been favorable for inner coastal areas, providing warmer sea surface temperatures, a shorter sea ice season, and more productive resources.

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Notes
1. Except where indicated, all calendar dates in this chapter were calibrated using Calib 4.4.html (Stuiver and Reimer 1993) and are represented by their 1-sigma probability range.
2. There is one older date of 2140 ± 100 radiocarbon years BP (Beta-23976), but since this date is anomalously old by 170 radiocarbon years in the context of 82 Dorset dates in Newfoundland, we exclude it from the definition of the chronological range of Phillip's Garden.
3. All site totals are based on the Provincial Archaeology Office site database as of 2004 and include only those sites for which there is a positive cultural identification. These numbers will change as new sites are found and new cultural identifications are made.
4. The term site used here and in the following sections denotes a site or a site component.

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