NEWFOUNDLAND DORSET ENDBLADES: MEASURING REGIONAL VARIATION

By

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Conclusion: It takes a transnational village to write a thesis in archaeology of the Dorset.

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Chapter 1: Introduction

Fig.1.1. Newfoundland and Labrador (in red) located in Eastern Canada

1.1. Introduction

This thesis is a morphological study of Dorset Palaeoeskimo endblades from Newfoundland and Labrador. Endblades are lithic (stone) artifacts that are believed to have functioned as tips of composite weapons (harpoons); they can be unifacially or bifacially flaked; some were shaped at least partially by grinding. The endblades were selected from collections in St. John's, Newfoundland, most of which were originally excavated by or under the direction of professional archaeologists. The purpose of the study was to gather metric and discrete data from these artifacts in order to analyze whether they showed patterns of regional variation within the Newfoundland Dorset variant.

The approach I have taken is to focus on what I assume to be one type – the endblade – and analyze examples of it from many different sites that are believed to have been Dorset occupations or camps throughout the island of Newfoundland. I have clustered all sites located in a region and analyzed the endblades from these sites as if they were from a single regional megasite. The assumptions here are: (1) that the endblades are correctly identified as endblades and as Dorset; (2) that a regional megasite has meaning because the Dorset moved about the landscape performing their seasonal tasks and that combining the endblades left at different kinds of sites would contribute to giving as complete an overview as the vagaries of archaeological deposition and recovery permit; (3) that the geographically based regions in some way reflect how the Dorset organized themselves; (4) that Dorset material culture on the island was static over time (Maxwell 1985:213-215). In the absence of good chronological control, there are no useful options to this assumption at the moment.

1.2. The Dorset in Newfoundland

The Palaeoeskimo cultures thrived for thousands of years in the most northerly and, as most of us would view them, some of the least hospitable regions on earth. They developed a broad range of technological, cultural and social mechanisms for surviving, and even thriving, in their harsh and rugged homeland. These highly skilled hunters were adapted to the Arctic, exploiting marine and terrestrial landscapes by utilizing the small tools and microblades characteristic of toolkits made by members of the Arctic Small Tool tradition (ASTt) (Maxwell 1985:42; Odess 2003:14). Between 4500 and 900 BP (Renouf 2003:67), people of the Palaeoeskimo cultures lived along the coasts of the Canadian Arctic, Greenland, Quebec, Labrador, Newfoundland, and the small islands of St. Pierre and Miquelon. People of the Dorset tradition, a Late Palaeoeskimo phase, lived on the island of Newfoundland from about 1900 to 1200 BP. The Groswater tradition is an earlier Late Palaeoeskimo phase that is thought to have lived on the island of Newfoundland between about 2800-1900 BP.

What is known about the Dorset in Newfoundland is largely based on analysis of their tools, their settlement locations and house structures, some art/ritual objects, faunal remains in middens and storage pits, their quarries, and burials at Port au Choix (Renouf 2005:75-76) and Englee. Further inferences have been made regarding their lifeways by looking at Dorset sites elsewhere in the Arctic/sub-Arctic, referring to later Arctic hunting cultures, and by studying palaeoenvironment and climate records, the distribution of raw materials the Dorset utilized, and characteristics of the animals on which they depended.

In addition to lithic tools, a small number of artifacts of bone, ivory and antler have been recovered at a few sites where conditions permitted their preservation. At Phillip's Garden, Harp identified bone harpoon heads, lance points, small barbed points, sled runners, awls, and needles (Harp 1964:72-78). The sled runners are assumed to be evidence of handpulled sleds. (While it is unlikely that leather traces from dog harnesses would be found in the archaeological record, the small bone and stone connecting pieces might have survived had there been dog traces and harnesses in the first place.)

Whether the Dorset used boats has long been an open question. The circumstantial evidence for boats is the presence of model kayaks among the artifacts produced over the centuries by Dorset Palaeoeskimo people living in the Arctic and sub-Arctic (Taçon 1983:49) as well as their settlement in places seemingly inaccessible without them. The recent excavation of a Dorset site at L'Anse à Henry (LeBlanc 2000:97,100-101) added to the evidence for some sort of boat. L'Anse à Henry is situated on St. Pierre, an island lying about eighteen kilometers off the south coast of Newfoundland. The Atlantic Ocean between Newfoundland and St. Pierre does not freeze, nor does the Arctic ice reach this far south, conditions that are believed to have prevailed in Dorset times as well. While they may or may not have used large, strong boats like the umiaks of the Inuit today, the Dorset must have had some form of boat to have been able to make even this short ocean voyage (Sutherland 2005:4).

Fig.1.2. St. Pierre faintly but definitely visible on horizon, as seen from Maline on the Burin Peninsula, south coast of Newfoundland / *Colligan 2006*

In Newfoundland the Dorset tool kit includes the all-purpose microblades and cores; endblades; chisels; gravers (burins or burin-like tools – BLTs); end, side and thumbnail scrapers; bifaces; knives; adzes; rough hammer stones and whetstones; and soapstone lamps and pots (Harp 1964:35-72). Due to post-depositional factors which have probably disproportionately affected the non-lithic components, what remains of the Dorset material culture in Newfoundland includes only a portion of what the Dorset utilized.

Fig.1.3. Endblades from Cape Ray Light (CjBt-01) /*Colligan 2006*

The Dorset material culture in Newfoundland and elsewhere is partially defined by artifact types that are absent: No evidence has yet been found that the Dorset used the bow and arrow. Also, holes in needles, pendants, harpoon heads, and other implements were gouged, indicating that the Dorset did not use the drill technology known to Palaeoeskimo people who lived before them (Maxwell 1985:127).

1.3 Dorset Harpoon Endblades

The Dorset were primarily seal hunters, depending on both migratory and non-migratory species as their primary prey. They manufactured the endblades with which they tipped their harpoons in many different styles and sizes ranging from 1 to 6 centimeters long (as shown, for example, in Fig.1.3), from chert, quartz, quartz crystal, rhyolite, slate, and other materials.

Endblades have been studied by a number of researchers over the years since the Dorset culture was identified (see Chapter 4) but, unfortunately, most comparative work on endblades is qualitative, consisting of assessments such as endblades from one Dorset site are longer and narrower (or shorter and less basally indented) than those from another site. This subjective method of comparison hampers intersite analysis of the regional variation that has been observed. Researchers have begun including metric analysis in their published work to facilitate this kind of comparison (for example, Renouf 2005:68). It is my intention to address this deficiency in comparability of observations about endblade variability.

The artifacts that I include in this study come from collections at the Provincial Museum of Newfoundland and Labrador, St. John's, Newfoundland, and from two other collections in St. John's. Endblades from most of the generally accepted archaeological regions in Newfoundland are included, as explained in greater detail in Chapter 4. The result is a large, stratified sample from around the island.

1.4. Focus and Significance of Study

In undertaking this study I have two objectives: First, I want to identify a group of metric and statistical tools that can be used to produce statistical profiles of endblades found in each region studied as well as for Newfoundland as a whole. Second, I want to analyze these profiles using various statistical tools to see what can be learned. My objective is to take the discussion beyond the “shorter, longer, thicker” level described by LeBlanc (2000:98-99) and make it possible to say how *much* shorter, longer, and thicker. My hypothesis, which is confirmed, is that by using metric measurements and statistical tools, it is possible to compare artificially constructed regional assemblages of endblades and see the forest as well as the trees.

It is not my objective to look at *why* regional variation occurred or to determine whether and why there might have been interregional connections. Such research would require additional types of data. I intend to lay the basis for a well-grounded comparative study to assist others doing regional and interregional analyses.

1.5. Chapter Summary

As has already been mentioned, due to local environmental conditions in Newfoundland, it is largely through studying their lithic remains that the Dorset Palaeoeskimo are known. The theoretical issues relating to typology and style that form the basis for this study are presented in Chapter 2.

Chapter 3 describes the Dorset Palaeoeskimo tradition in Newfoundland. The Dorset were identified in the Canadian Arctic about eighty years ago; shortly afterward the southernmost expression of this culture was identified on the island of Newfoundland. In the years since, a lot of research has been done to learn about how the Dorset Palaeoeskimos lived and what characterized their life on the island of Newfoundland. An overview of their way of life and the environmental and regional contexts in which they lived is presented in Chapter 3.

The methodology used to gather and analyze the data is explained in Chapter 4. Particular attention is given to showing how the data on the proximal angles are derived because this is a new technique that has made it possible to record a previously unrecorded attribute of Dorset lithic endblades.

The analysis of the data is presented in Chapter 5 through graphs, tables, and illustrative photographs. Because the issue of a difference in proximal angles has not previously been studied, the results of t-tests run to determine the degree of statistical significance of the findings are presented. An overall summary table is located at the end of the chapter displaying the statistical means for many of the measured characteristics shown along side the qualitative observations made by archaeologists who have excavated Dorset sites in Newfoundland.

Chapter 6 presents conclusions about the strengths and weaknesses of the methodology and data as well as suggestions for further research prompted by this study.

Chapter 2: Style and the Dorset

Evidence of the Dorset cultural choices are part of what makes them such a fascinating subject of study. Besides its small endblades, Dorset material culture is characterized by the production of small objects. Archaeologists have excavated hundreds of "miniature works of art . . . on an extremely small scale," small sculptured objects few of which were more than 8 centimeters long (Taçon 1983:44). The subject matter, raw material preferences, poses and treatment, particularly the miniaturization and the "x-ray" motif (skeleton) which is scratched into the underside of many carvings of animals (Taçon 1983:45) make them are Dorset characteristics. Some examples of the miniaturization are a 2.5 centimeter-high figure of a human in a high-collared hoodless parka from Shuldham Island, a 8-centimeter-high woven basket (preserved in permafrost) from Brooman Point, tiny maskettes with human features, and hundreds of tiny carvings of bears, seals, and birds, whole or a symbolic part (Taçon 1983). Emphasizing the deliberateness of their choice to miniaturize, are the life-size human masks which the Dorset also made (Taçon 1983:48). Size for the Dorset, as for many cultures, was one part of their shared concepts of how objects were to be made and undoubtedly carried social meaning. The manufacture of small tools is one expression of Dorset style, but how and why do cultures express style in the making of lithic tools?

There are two debates that underpin a study based on tool typology. The first is how style morphology enables a culture to be defined. Gordon Childe first advanced the idea that archaeological cultures can be defined on the basis of artifact types and assemblages (1951:51), and that boundaries between cultures appear in the archaeological record as the extent of an assemblage of artifacts with similar morphological traits. Should there be materials from an archaeological culture appearing on the other side of such a boundary, it can indicate social interaction has occurred between the groups.

In the 1950s, Albert Spaulding and James Ford initiated the second debate with which we will concern ourselves here, that about whether style and function were actually separate aspects of an object (Spaulding 1953, 1954; Ford 1954). Thus they created the dichotomy that structured the debate for the next twenty years.

François Bordes and Lewis Binford, among others, debated this idea. Bordes created an elaborate typology based on function and style in order to organize and classify in a meaningful way the huge quantities of lithic materials that had been excavated from the caves of the Middle and Upper Palaeolithic. He and his associates developed the idea that assemblages of similar distributions of tool types represented cultures, which provided a useful approach for analyzing the dense cave deposits and explaining relations between non-contiguous deposits (Bordes and Bordes:1970). Binford and those taking his position argued instead that the differences between assemblages reflected differences in the work carried out at the site and had not been created by different cultures; instead they saw assemblages as collections of tools used for specialized, functional activities (Binford and Binford 1966).

François Bordes and Sergei Semenov debated the relationship between tool function and morphology. Semenov used functional and usewear analysis to study lithic tools, assuming that the overall shape of a tool might not indicate its function and that the morphology was likely to change as a tool was broken, reshaped, resharpened, perhaps serving different purposes in the course of its use life (Semenov 1964). Bordes studied lithic tools and assemblages through tool morphology, inferring tool function from shape (Bordes 1970).

Martin Wobst recognized style not as the opposite of function but as having a function of its own, that of transmitting socially useful messages, which he called stylistic signaling (1977:321). Through stylistic signaling, groups and individuals could quickly determine whether a person was friend or foe and could make a decision about an appropriate behavioral response. If the message was not clearly delivered or not understood as it was meant, however, miscommunication with its associated problems could occur.

Wobst studied stylistic signaling in Yugoslavia where ethnically identifiable articles of clothing were not imbued with style for reasons of personal taste but were worn to display loyalties in a multicultural region riven by political and social tensions. Stylistic signaling permitted the communication of this sensitive information at a relatively long distance and with low risk, compared to what might have resulted if a closer encounter had been necessary to discover political (group) identity. Wobst found that few artifacts were appropriate for communicating large scale social group information, and even fewer of these would show up in the archaeological record (1977:337). According to Polly Wiessner, Wobst dismissed the usefulness of stylistic signaling for analyzing the material culture of hunter gatherers (Wiessner 1983:257-258), yet the decorated knife handles at the Upper Palaeolithic caves at Altamira have been convincingly analyzed as having a role in boundary maintenance.

The San, a foraging society in the Kalahari, used projectile points for stylistic signaling. The San arrows represented different levels of group identity in the same composite tool. The shaft displayed small group identity while the arrow head displayed the stylistic preferences of the larger group to which all the San whom she was studying belonged (Wiessner 1983: 269). Exchanging and giving the arrows were a means of establishing reciprocal relations that could be called upon in times of resource shortages. In this way style had a social function, that of reinforcing group identity in a situation where there was little occasion for social competition with other groups (Wiessner 1983:272). Perhaps the appearance in Dorset deposits of endblades of anomalous styles are the result of exchange.

Could this have relevance for understanding the Dorset? It seems unlikely that the Dorset would have exchanged harpoons in the same way that the San exchanged arrows. San arrows were quickly made (Wiessner 1983:260) and a hunter would make and carry many of them at a time. The harpoon, a complicated weapon essential for the seal hunt, required the investment of considerable time, skill and materials. On the other hand, might the Dorset have left endblades around in prominent spots to indicate their claim on a place? This seems unlikely because, for stylistic signaling to take place successfully, it would be necessary for the recipient of the message to see it (and endblades are small, lithic objects) and understand it (endblades are made quickly and not elaborated).

James Sackett introduced two further ideas to the discussion. The first was that all variations in form could be attributed to either style or function, and, together, could explain all morphological changes not attributable to post-depositional factors (Sackett 1882:68). To Sackett style is essentially function "expressed within a culture-historically specific, ethnically meaningful segment of the archaeological record" or "function writ small" (1982:75).

Sackett saw objects as simultaneously existing in two domains, the utilitarian and the non-utilitarian. The fusing of these two aspects of an object is what makes it possible to talk of an endblade as both a utilitarian object used to physically wound and capture a seal, while (hypothetically) seeing it as a means through which the Dorset hunter honored the seal and showed his gratitude for its giving the gift of life to the Dorset. The endblade may have been made from raw material with particular social meaning or perhaps had been given special powers by a shamanic figure.

Sackett's second contribution was to analyze style at the level of the assemblage. While Wobst's discussion of style focused on individual items (hats, headdresses), for Sackett, it is the assemblage in which objects are situated that has stylistic significance (Sackett 1982:76-79), deriving meaning from the social context (Sackett 1982:61).

Each morphological variable could be both functional and stylistic (Jelinek 1976:20). Following is a brief discussion of some of the morphological variables of Dorset endblades. While their functional aspect seems obvious, here are some possibilities about stylistic aspects that might have played functional roles as well:

- toolstone: besides considerations of size, availability, and properties, the choice of lithic materials may have been made based on cultural values (Jelinek 1976:27). Some stone has striking visual characteristics, mineral inclusions, or distant origins (Ramah chert, Cow Head chert); perhaps there were beliefs of special potency or other associations attached to some materials that made them particularly desirable for hunting tools.

- base shape, notching, and the extent of basal indentation may have been associated with a certain group that hafted their endblades in a recognizable way, as among the San.
- size: very small endblades might not have been used directly in the seal hunt but may have played a ceremonial role to improve the prospects of the hunt, a psychological role in curing illness, an instructional role as part of harpoons or spears for children learning to hunt, possibilities that have been explored by other researchers (McGhee 1996:171; Park and Mousseau 1990).
- width, thickness, equilateral triangular shape, and proximal angle variations: while having relevance to their function to tip harpoons, variation may have communicated stylistic information about group or artisan identity.
- manufacturing differences – ground, serrated, unifacial and bifacial working, and tip fluting are ways of making tools that could have been both functional as well as a useful way to signal identity. The choice of gouging rather than drilling holes would seem to fall into this latter category; researchers today, and most likely the Dorset and their contemporaries, associate the choice to gouge rather than drill holes with the Dorset tradition. (Maxwell pointed out that the use of an older technology represented an unusual case of a culture consciously abandoning a more effective technology already known to its ancestors (1985:128), that of drilling. Maxwell concluded this must have been due to ideational constraints (1985:128)).[1]

Another aspect of style with great significance to archaeologists is its use to

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[1] It would be interesting to discover whether the Dorset knew how to drill and whether they were in possession of drills. Were they direct descendants of the Early Dorset? These questions would have to be answered before it could be said with certainty that they chose to do things the hard way.

monitor changes that have taken place within archaeological groups. This can be either through Binford's "cultural drift" – the accumulation of small changes, as in genetic drift, that eventually leads to a significant change (Sackett 1982:97) or through sudden shifts in response to catastrophic events, through warfare or through social upheaval. A sudden break in continuity could appear in the archaeological record as a sharp change in style of artifacts, in the attributes of the assemblage, or the sudden lack of evidence for a group. The Dorset are characterized as having static tool styles throughout the centuries they were present in Newfoundland. This may be an accurate assessment or may result from a combination of mostly shallow deposits and the difficulties of dating them (see Chapter 6), suggesting regional variation rather than change over time.

The intention of this work has been to measure the regional variation as it exists in the archaeological record as a first step to unraveling questions such as whether deliberate or intentional style continuity was taking place. It is not within the scope of the study to establish causation.

Chapter 3: The Dorset Palaeoeskimos in Newfoundland

3.1. Background: Who Were the Dorset?

The Palaeoeskimo cultures were present in the Canadian Arctic and Greenland from around 4500 BP to about as recently as 1000 BP. Robert McGhee described this remarkable human migration, contributing to the prevailing impression of the Dorset:

> At some time around 5,000 years ago, the picture suddenly and mysteriously changed. Archaeological remains dating from between 5,000 and 4,500 years ago are found everywhere along the western and northern coasts of Alaska, across Canada's Arctic archipelago and as far as the barren valleys of northern Greenland. Moreover, these remains are very uniform, very distinctive and look like nothing that has been found belonging to earlier periods in the northern forests or subarctic coastal regions of North America. What they do resemble are the archaeological remains left by Siberian peoples from Lake Baikal to Chukotka: tiny stone tools chipped skilfully from brilliantly coloured flints. [McGhee 2005:44-45]

These peoples were probably descendants of Neolithic Siberians who migrated east (McGhee 1996:37) and colonized the Arctic several millennia after the initial Mesolithic migrations of Siberians into eastern Beringia. They were gone from the Arctic by about 1000 BP (Sutherland 2005:5), a successful adaptation to this harsh landscape lasting nearly four thousand years (Renouf 1993:186).

Several Palaeoeskimo cultural phases have been identified in the eastern Arctic and have been designated Pre-Dorset, Early Dorset, Transitional Dorset, Independence I and II, Groswater, Middle Dorset and Late Dorset. The cultural sequence and its chronology have remained chaotic and confused despite repeated efforts by researchers to clarify them (for example, Fitzhugh 1976; Maxwell 1985; Nagy 2000; Odess 2005). Human cultural developments in this immense, lightly populated, under-studied region continue to defy organization into neat temporal categories. On the island of Newfoundland, where only Groswater and Middle Dorset phases of the Palaeoeskimo tradition have been identified, the cultural sequence appears simpler.

3.2. First People in Newfoundland

The Palaeoeskimos were not the first human inhabitants of Newfoundland. Remains from the Maritime Archaic Indians indicate that humans crossed into Newfoundland along the Strait of Belle Isle from the Labrador coast about 5500 years ago (Rast et al 2004:43). At its narrowest, the Strait is eighteen kilometers across today and remains frozen as much as half the year, making a winter crossing possible. Maritime Archaic people settled along Newfoundland's long coastline to hunt the abundant marine mammals.

Table 3.1. Suggested Dates of Human Occupations of Newfoundland[1]

Maritime Archaic Indian	5500-3200 BP
Palaeoeskimo – Groswater	2800-1900 BP
Palaeoeskimo – Dorset	2000-1200 BP
Recent Indian – Cow Head Complex	2000-1500 BP
Recent Indian – Beaches	1500-1000 BP
Recent Indian – Little Passage	1000-European Contact

Source: Renouf 1999a:20; 2000:107.

Two Maritime Archaic burial sites on Point Riche on the west coast have allowed archaeologists to infer a great deal about the Maritime Archaic way of life. Artifacts found in non-burial Maritime Archaic sites included faunal remains from terrestrial animals, wood-working tools, and manufactured objects with various bird, and marine and

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[1] Dorset archaeology has a lot of terminology issues. Groswater in Newfoundland are also called Early Dorset while Dorset on Newfoundland are generally considered to have been Middle Dorset. Both traditions are Late Palaeoeskimo.

Fig.3.1. Map of Newfoundland
(Source: Geographica: The Complete Illustrated Atlas of the World.)

terrestrial mammal components and themes (Renouf 1999a:20-26). The Maritime Archaic were probably gone from Newfoundland by 3200 years ago (Renouf 1999a:20).

3.3. Palaeoeskimos Arrive in Newfoundland

The first Palaeoeskimo evidence on the island came from a culture preceding the Dorset called the Groswater after the type site located on Groswater Bay in Labrador and described by William Fitzhugh (1976). The Groswater first appeared on the Labrador coast about 3800 BP, moving southward and reaching Newfoundland around 2800 BP (Renouf 1993:188), some 400 years after the Maritime Archaic Indians had left. Newfoundland appears to have been unoccupied during this four-century period (Erwin et al 2005:48). About 800 years later, at about 1950 BP, under conditions that are not yet understood, the Groswater were replaced by another population of Palaeoeskimos, the Dorset, who had a somewhat different cultural adaptation.

The nature of the relationship between the people of the Dorset and the Groswater traditions is not understood beyond that they shared Palaeoeskimo cultural traits. Nagy reviewed the work of researchers seeking to find evidence of a transition from Pre-Dorset (the term for the Groswater tradition in some parts of the Eastern Arctic) to Dorset; she concluded that there was not sufficient evidence to determine whether a transition had occurred since it was not clear whether the Dorset represented a descendant culture or one that was new and unrelated (Nagy 2000:4-5).

Radiocarbon dates suggest the possibility of overlap between the Groswater and Dorset occupations on at least one Newfoundland archaeological site. The Groswater site of Phillip's Garden West dates from 2500 to 1900 BP, while Phillip's Garden, a large and rich Dorset site immediately adjacent to the Groswater site, has radiocarbon dates ranging from 2100 to 1200 BP. Even dates showing overlapping occupation would not guarantee that there had been direct contact between Groswater and Dorset without evidence that the sites were occupied simultaneously. The presence of Groswater material in Dorset sites would not be evidence of contact since archaeologists generally find Groswater material in most Dorset sites that have recently been excavated in Newfoundland (Renouf 1994:169). They may have found them to be curious or may actually have reused the tool or its material.

Groswater and Dorset cultural traditions look different in the archaeological record. The two cultures manufactured tools in different styles; their house styles were different; in some locations Dorset midden deposits were deep, indicating a pattern of longer site occupation; the Groswater left small, short time occupation sites, currently interpreted as indicative of a highly mobile hunting people. Each tradition tended to choose different types of locations for their settlements. The Groswater may have exploited a somewhat more flexible mix of prey than the Dorset. The Dorset seem to have specialized particularly in marine mammal exploitation although they did not completely ignore caribou, beaver, migratory birds, small mammals, and fish resources.

Whether or not they were genetically related, the comparison of two Palaeoeskimo traditions occupying the same island yet pursuing different subsistence strategies is a study social scientists find hard to resist. Such differences confirm that even when faced with very similar environmental challenges, prehistoric people exercised agency and choice in creating their lifeways.

3.4. Resource Availability

The resources available to the pre-contact people living in Newfoundland were evaluated by Tuck and Pastore (1985) as less than stable and reliable. In a much-cited article they stressed the vulnerability of both human and animal populations in a northern island environment like Newfoundland with its challenging climate and small number of prey species. They concluded that the human occupants were subject to the effects of periodic population crashes of their prey in a food chain with many carnivores and separated from alternative resources that would have been available to them if they had lived in a mainland environment.

Renouf among others has speculated that, confronted with the difficulties posed by the environment, the Dorset may have used cultural strategies to ensure their survival. She raises the possibility that they may have related in some mutually advantageous way to the Recent Indians (2003a) living in Newfoundland. While both Dorset and Recent Indians used maritime resources, there were differences in their lifeways which Renouf attributed to “niche differentiation”; the coastal resources they both exploited were similar but they might have “partitioned resources” to minimize the destructive aspects of competing (2003a:1). Perhaps it was a relationship that permitted each group to turn to the other's resource area when in need or when there was abundance.

3.5. The Identification of the Dorset Cultural Tradition

The Dorset tradition was first identified by Diamond Jenness working with Arctic material from Cape Dorset on Baffin Island and from Coats Island. The artifacts had been excavated, without recording their context, and donated to the National Museum in

Ottawa. In 1925 Jenness published the first analysis of this tradition which he named the Cape Dorset culture. Working with bags of cultural material he knew to have been produced by different traditions now jumbled together, he sorted out bone objects that had a patination that indicated they might be considerably older than the other specimens. Taking into consideration that soil composition can result in patination that looks like it has come from aging, he further grouped the objects according to stylistic similarities to specimens found in the museum's Thule and modern collections. Some were were different from any of these. He observed that the holes in some of the objects had been gouged rather than drilled, a characteristic that has become recognized as diagnostic of the Dorset.

3.6. Evidence for a Newfoundland Dorset Variant

The designation of a new culture in the Arctic was a breakthrough that allowed for the identification of previously unattributed objects already in collections of Arctic material. Archaeologists began looking for additional sites from which they could obtain *in situ* specimens that could contribute to the greater understanding of this newly identified culture. In 1927 and 1929, Jenness and W.J. Wintemberg explored the Great Northern Peninsula on the west coast of Newfoundland, examining material they excavated themselves as well as objects shown to them by local residents. Wintemberg identified Dorset objects and attributed them to the “Eskimo” tradition (Wintemberg 1939:94, 95, 96; 1940:312) rather than to the Beothuk, to which Jenness believed they belonged (Linnamae 1975:8; Fitzhugh 1980:22).

Wintemberg first presented the evidence for the presence of the Cape Dorset tradition on the island of Newfoundland in two articles appearing in *American Antiquity* in

1939 and 1940. While he regarded the style of the tools as similar to the Dorset tradition, Wintemberg identified differences in the overall content of the toolkit from the Dorset toolkit found in Arctic sites, thus beginning the characterization of a Newfoundland Dorset variant. Except for adzes, the Newfoundland Dorset tool types had their equivalents in the Dorset Arctic sites. Wintemberg found the adzes from Newfoundland Dorset sites to be similar to those from Woodland Indian sites (1940: 313-314). It is not surprising that Newfoundland's wooded landscape required tools that resembled those found at Woodland sites to the south; the presence of wood was one of the features that distinguished Newfoundland from the driftwood-dependent locations in the Arctic where Dorset sites had originally been identified.

Elmer Harp's initial investigations on Newfoundland's west coast in 1949 and 1950 produced further refinement of the description of the Newfoundland Dorset. He compared the cultural material from the eight west coast sites he had excavated, concluding that they shared “a strong cultural unity” (1964:89). This was based on his observation that artifact types showing “strong similarities in workmanship” “occurred repeatedly” and were made of the “same materials” (1964:89). He analyzed type by type and trait by trait the specimens he had excavated from Newfoundland sites, finding “a strong and widespread degree of cultural concurrence between the Newfoundland Dorset aspect and the parent complex” (1964:138).

Harp described the assemblage identifying primary and secondary characteristics that indicated this cultural material was Dorset. The primary characteristics were related to the function and shape of the specimens but it was the secondary characteristics that established that the tools were from a Newfoundland variant of the Dorset: the absence of drilled holes from which he inferred the absence of the bow, “the predominance of chipped stone artifacts over those made of other materials and by differing techniques,” the small size of the artifacts, individual tools that incorporated both chipping and grinding, and the tools with unifacial chipping (1964:136-137).

Jenness had remarked on the presence of an unusual number of objects made from bone, ivory and antler in the Arctic assemblages (1925:433, 436). Harp noted the lack of objects made from bone, ivory and antler at many Newfoundland sites, an absence which he attributed to moist, acidic soil conditions and the lack of permafrost in the sub-Arctic. Here an archaeological adage offered good guidance: “The absence of evidence is not evidence of absence.” In the instances where organic materials have survived, the presence of limestone or of shells are thought to explain their preservation.

While almost no wooden artifacts have survived in Newfoundland – one exception is a well-crafted dipping ladle from the Fleur de Lys soapstone quarry (Erwin 2001: 155) – the stone adzes in the assemblages provided evidence that the Dorset on Newfoundland made use of the abundant trees around them.

Bone, ivory, and antler are useful for their “toughness” and “mechanical qualities that can not be matched by other materials available in the northern environment” (LeMoine 2005:135).   As mentioned in Chapter 1, there was ample direct and inferential evidence supporting the Dorset having made and used tools of bone, ivory, and antler in Newfoundland. A small number of tools made from these materials have been excavated at Phillip's Garden. During the 2006 field season at Cow Cove-3 (EaBa-16) in White Bay region bone endblades and a needle were excavated, according to John Erwin (personal communication, August 6, 2006). Furthermore, many Dorset stone tools appear to have been made by pressure-flaking, a technique that flintknappers today perform using a tool made from an antler prong (Kooyman 2000:16-19).

In addition, there were lithic tools in the assemblages that were used to work skins as well as bone, ivory, and antler. Numerous scrapers found in sites suggests skins were worked; burin-like tools are believed to have been used as gravers on bone, antler, and ivory; the need for tailored skin clothing in a cold climate would have required sewing, explaining the needles found at Phillip's Garden and Cow Cove-3. Harpoon endblades would have required the widespread use of bone harpoon heads such as those found at Phillip's Garden. Holes in harpoon heads indicated the use of rope which would have been made of sinew, skin or fibers.

Linnamae excavated Cape Ray Light in the 1960s where she found Dorset tools having “a high degree of similarity” (Linnamae 1975:82) with Dorset tools elsewhere in Newfoundland and the Arctic. She concluded that “triangular chipped stone end blades ... are one of the most distinctive Dorset artifact classes” (1975:74). While the Newfoundland variant has most of the Arctic Dorset traits, however, it lacks some minor ones, including some that characterize early and late Dorset phases.

By including a designation of Early, Middle and Late Dorset, Linnamae added a chronological dimension to her description of the Dorset material. She placed this dimension within a matrix composed of qualitative characteristics and tool types in order to systematically compare Dorset material from the Arctic and with those from Newfoundland. From this comparison, she concluded that in Newfoundland the “bulk of the artifact material does, however, have middle period [Middle Dorset] affinities” (1975:73).

Because of the great variation in her sample size (Linnamae 1975:67), Linnamae did not show, at least in her published work, how frequently the characteristics occurred. She intended her results to be indicative of trends, not reflective of precise frequencies. My study, which is also based on samples of widely varying sizes, permits greater analytical precision than Linnamae's because it uses quantifiable factors and statistical tools for the analysis.

Once the Newfoundland Dorset variant was described, researchers began to look for explanations of how it developed. Linnamae and Fitzhugh attributed it to geographic isolation (Fitzhugh 1980:22; Linnamae 1975:91); Fitzhugh also linked it to environmental adaptations and the influence of Recent Indians living on the island (1980:22).

3.7. Evidence for Regional Variation within the Newfoundland Dorset Variant

As archaeological excavations extended to sites all around the island, evidence began to accumulate that challenged the assumption of a homogeneous and unchanging Dorset culture in Newfoundland. In the 1980s Robbins identified three regional variants – west coast, northeast coast and south coast – based on artifact styles, material utilization, and somewhat different economic adaptations (Robbins 1986:120-121). He observed that endblades differed from region to region in “recognizable and predictable” ways, suspecting that further work would show this was true of other artifact types as well (Robbins 1986:121).

Robbins looked at chronological factors to explain the variations he had observed. However, radiocarbon dates from Phillip's Garden and Stock Cove, two geographically separated sites (located on the west coast and in Trinity Bay, respectively) with distinctly different endblades, indicated that the two sites had existed at the same time. He concluded that, at least in this case, it would have been unlikely that their variation reflected stages of development of Dorset technology (Robbins:1986:123).

Sylvie LeBlanc reviewed the regional variants described by archaeologists who work Newfoundland, identifying regionally distinct Dorset styles in Newfoundland (2000:97-101). She proposed a model where different Dorset bands with their own territories had their own technological practices and specific developmental history. Her examples come from Dildo Island, a complex site in Trinity Bay that had been inhabited in turn by Maritime Archaic, Dorset and Recent Indian cultures whose different raw materials choices could not be explained by “deterministic or adaptational” theory (2000:103). While her work to explain the regional connections is outside the scope of this thesis, her summary of regional traits provides useful points of comparison for my own data based on measuring regional collections of endblades in Newfoundland. At the end of Chapter 5 there is a table comparing her summary of the qualitative descriptions that researchers have made of the endblades in different regions to the quantitative data that I gathered. (A fuller expression of her work was not available at the time this thesis was submitted.)

3.8. Climate and Geography

Newfoundland is an island in the North Atlantic off the east coast of North America. It lies between 46 30' and 52 degrees of latitude. It sits as a barrier to the southward moving Arctic ice pack – propelled by winds and currents, Arctic ice combines with the locally formed sea ice; the ice cracks, breaks into floes, and jams against the shore. Some becomes land-fast as it encounters the coast, other ice moves into passages between islands, closing the Strait of Belle Isle during the winter months. The greatest significance of the pack ice in Newfoundland is its affect on the availability of faunal resources exploited by humans (Macpherson 1981:71) and its availability as a seasonal route over which humans and fauna can move between the Labrador/Quebec mainland and insular Newfoundland. While geography did not determine Dorset cultural responses, it framed the choices available to them (Renouf 1993:2066-207).

Fig.3.2. Sea Ice along the North Coast of Newfoundland in February / *Colligan 2002*

Several factors contribute to the creation of an inordinately cold climate in Newfoundland, a climate that was not only familiar to the Dorset but that was probably one of the attractions the island held for them. Its location on the eastern edge of North America makes Newfoundland subject to cold continental air masses, particularly in winter. It lies in the path of cyclonic patterns that make for ever present wind. The island's northerly location makes it subject to Arctic air masses and the frigid Labrador ocean current.

The Labrador current flows along Newfoundland's west, north and east coasts, bringing Arctic ice floes in winter. Locally made sea ice forms early over the many areas of low salinity due to river drainage along the Labrador coast, around the island, and in its innumerable coastal inlets. Even today the waters around Newfoundland's north and west coasts usually remain ice covered for several months each year (Enfotec Website). However, while the ice off the Great Northern Peninsula may remain as long as six months a year, just a few hundred kilometers down the coast at the Dorset site of Cape Ray Light, the coast is influenced by the Gulf of St. Lawrence system and remains ice free a few months longer each year (Macpherson 1981: 69;79).

Ice cores from glaciers in the High Arctic provide proxy data to reconstruct the palaeoclimate of Newfoundland and Labrador. The cores indicate the Palaeoeskimos lived in Newfoundland during an extended period of climatic instability. Mobility and a more generalized subsistence base may have been the Groswater way of managing resource instability. A period of warmer, more stable climate began around 2200 BP; soon after, evidence of the Dorset with their more specialized marine mammal hunting tradition began to be seen in the sub-Arctic and later in Newfoundland (Renouf 1993:207); perhaps they expanded outward from their Arctic home because of the changing climate conditions. The ice core data indicate an even warmer and probably quite unstable period about 1250 BP, which may have coincided with the seals no longer regularly migrating near enough to Newfoundland's coasts to put them within reach of Dorset land-based hunting technology. This later climate shift coincided with the Dorset abandonment of the island (Renouf 1993:207).

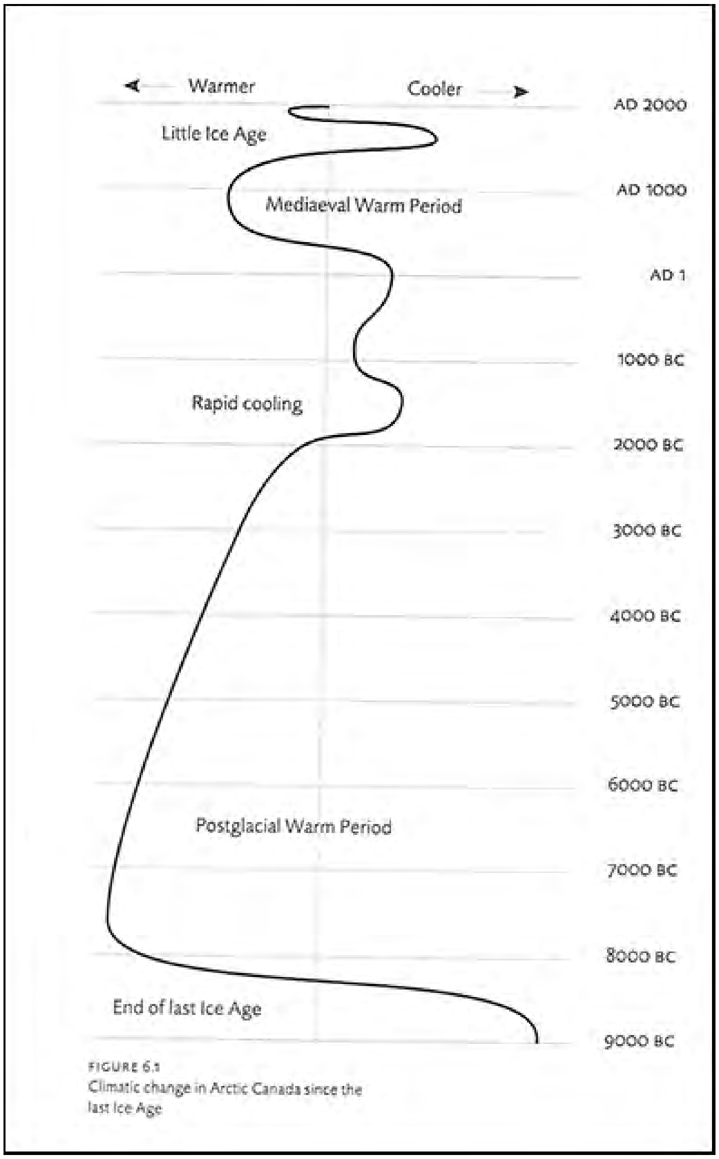

Table 3.2. Climate Change in Arctic Canada Since the Last Ice Age. Dorset entered Newfoundland at the beginning of the Medieval Warm Period and were gone by about 1200 AD.
Source: McGhee 1996:108.

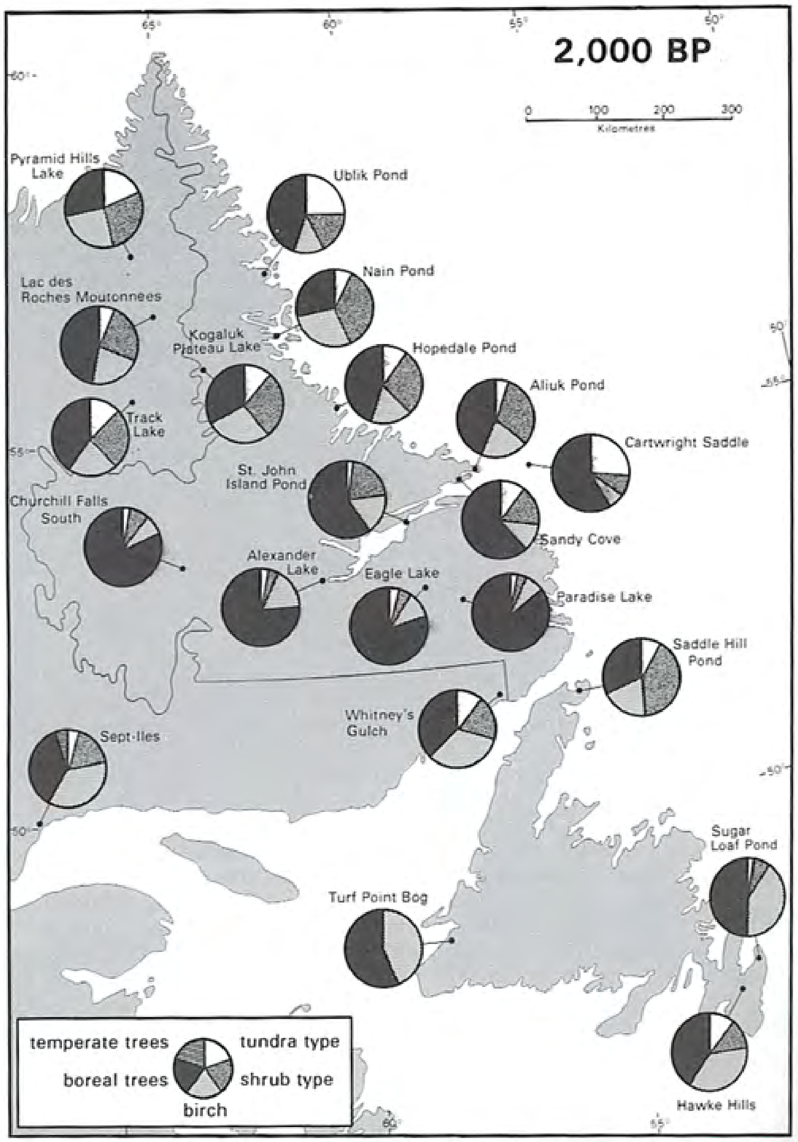

Fig.3.3. Pollen Spectra from 2000 BP. See Saddle Hill Pond (near West Coast Region) and Turf Point Bog (near Cape Ray Light). Source: Macpherson and Macpherson 1981:210.

The picture from the ice cores, however, is on a macro scale. To understand weather on a scale closer to that on which it is experienced by humans, other climate proxies are needed. Fossil pollen cores provide more localized data (see Fig.3.3) useful for understanding climate and conditions affecting the secondary, terrestrial resources available to the Dorset. Hodgetts et al have sought pollen data in ponds that will be on a sufficiently fine scale to help interpret faunal evidence for changes in Dorset subsistence strategies (2003:116-117). The pollen maps from 2000 BP show no temperate zone trees in western Newfoundland; instead there is a landscape of shrub, boreal forest, birch and tundra-type vegetation.

3.9. Dorset Subsistence

Fig.3.4. Seals on Ice off Newfoundland /*Dept of Fisheries & Oceans, Canada*

On Newfoundland the Dorset are thought to have specialized in hunting seals and other marine mammals, and to a lesser degree terrestrial, avian, coastal, and freshwater resources. While the marine mammals off the coast of Newfoundland included some of the same prey species as hunted by Dorset elsewhere in the Eastern Arctic, there were important differences in the fauna and landscape found on the island. There were no muskox in Newfoundland and polar bear were present only if they arrived on an ice floe. There were more species of small mammals available than in the Arctic; local wood was abundant in most areas for fuel, construction, and toolmaking, making reliance on drift wood unnecessary. The lower latitude meant there were at least several hours of daylight every day throughout the year.

The marine mammals available to the Dorset included several species of true seals – Harp (*Phoca groenlandicus*), Hooded (*Cystophora cristata*), Harbor (*Phoca vitulina* or *Phocinae*), Bearded (*Erignathus barbatus*), Ringed (*Phoca hispida*), and Gray (*Halichoerus grypus*) (Tuck and Pastore 1985:72).

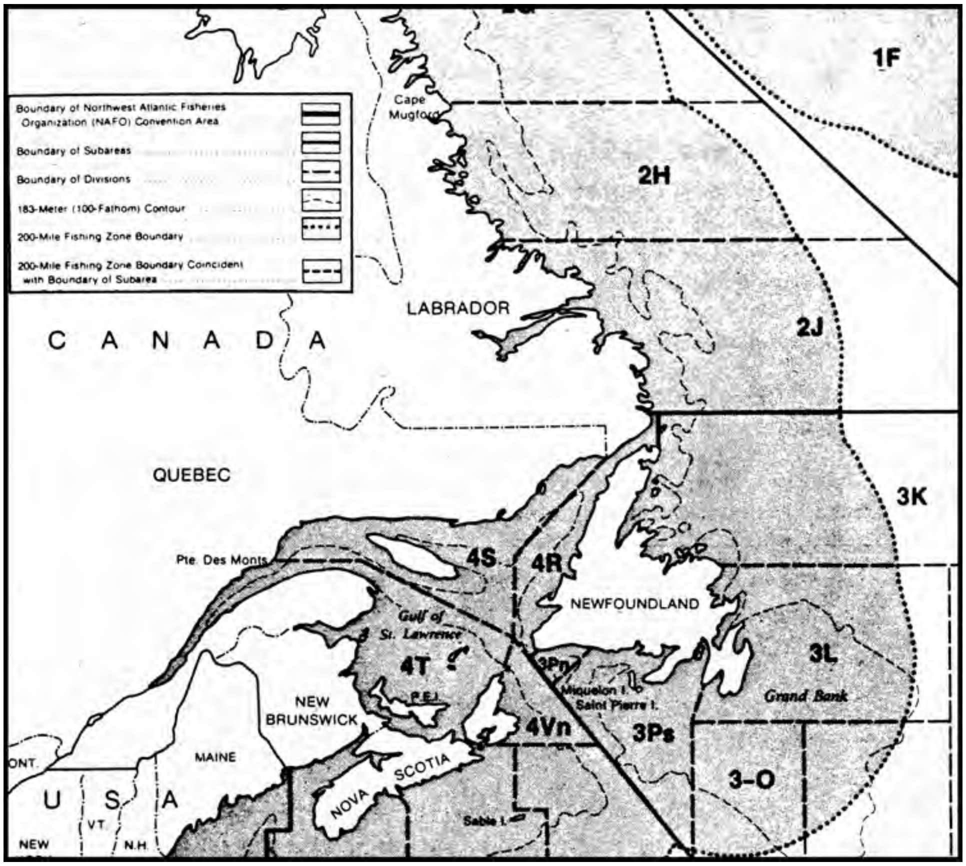

Fig.3.5. Winter/Spring Location of Migratory Harp Seal Herds. The Front Herd is found in 2J and 3K; the Gulf Herd is in 4R, 4S and 4T. They do not regularly migrate to the south coast or east of Notre Dame Bay (located in 3K). Source: Department of Fisheries and Oceans in Sergeant 1991:8.

Harp and Hooded seals still pass along the Labrador and Newfoundland coasts on their annual migration, coming south with the Arctic ice in late December. They pass by again, this time in even greater concentrations and closer to Newfoundland's coast, going northward in the early spring following the retreating ice, having their pups, breeding and moulting on the ice floes. They travel in two separate herds (see Fig. 3.5 for location when near Newfoundland), the Front herd and the Gulf[2] herd (Sergeant 1991:9). Most years the seal herds remained near the coast within reach of the Dorset harpoons until early May. This appeared to have been prime seal hunting time for the Dorset, judging from the high juvenile component in the identified faunal remains at Phillip's Garden.

Non-migratory marine mammals also lived along the coast. Gray, Harbor, and Bearded seals either did not migrate or migrated irregularly. Ringed and Bearded seals were hunted in winter at the breathing holes they maintained through the thick ice cover. Walrus, rarely seen now along the Newfoundland coast, were more common at the time of the Dorset, and were also hunted. The Dorset most likely made extensive use of seal meat, oil, skin, and perhaps the viscera, as do contemporary northern peoples. Also, like present day seal hunters, the Dorset may have cached seal meat and eaten it months later, not being squeamish about, or perhaps actually preferring it in a putrid state.

Both baleen and toothed whale species were present in the waters around Newfoundland. While the Dorset do not seem to have had the technology to hunt large, baleen whales – no whale hunting gear has been found in their sites (Murray 1992:20) – they may have used kayaks to force smaller whales to run aground so they could be taken from the shore. Any whales that became stranded were most certainly utilized (Tuck and Pastore 1985:72). The Dorset, as later northern people, may have used whale bone in house construction as well as in tools (Renouf 1999b:42).

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[2] Refers to the Gulf of St. Lawrence where the St. Lawrence River flows into the Atlantic Ocean waters.

While only some half dozen species of terrestrial mammals are native to Newfoundland (Tuck and Pastore 1985:69), the Dorset may have utilized them all. On the west coast and in the interior accessible from some of the bays, herds of caribou migrate twice a year between the interior or upland regions and the coast. Caribou are believed to have contributed meat, skin, sinew, antler, and bone to the Dorset subsistence. Other terrestrial mammals on the island during the Dorset occupation included beaver, wolf, hare, fox, marten, and bear.

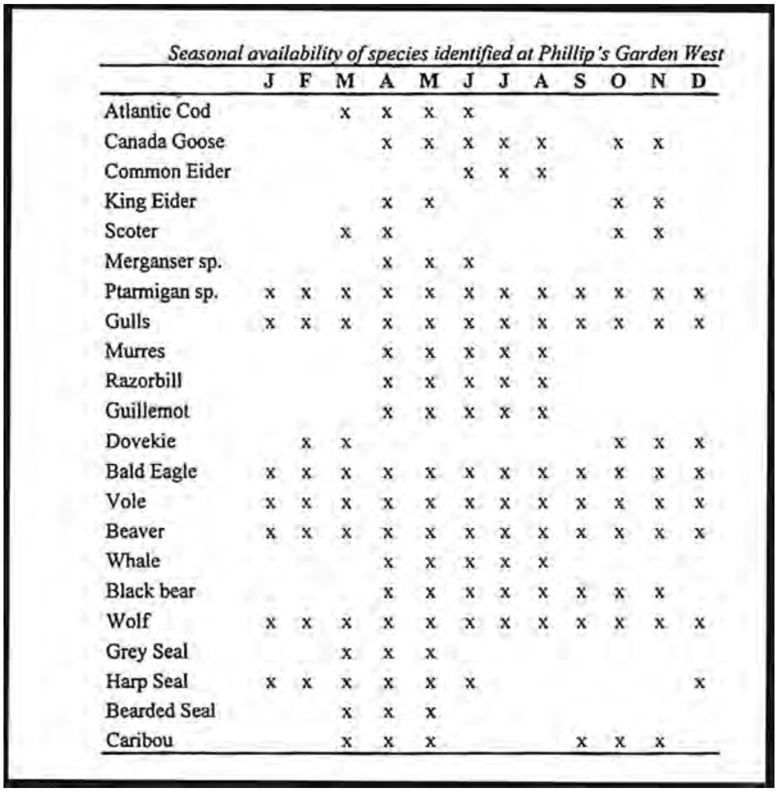
Migratory and sea bird species, including the now extinct great auk, were present on the island. Today there are five protected seabird preserves on the island and one on the Labrador coast as well as hundreds of non-protected coastal rookeries where a shifting assortment of birds nest throughout the year. These great colonies represent vast accessible concentrations of avian resources. Birds as well as their eggs have probably been gathered from the cliffs along Newfoundland's coasts and offshore islands, by all the prehistoric as well as historic groups living there. In addition to eating birds and eggs, northern people into historic times have used feathers and bird beaks for insulation, tools and decoration, as the Dorset may also have done.

Fig.3.6. Bird rookery at Cape St. Mary's includes thousands of nesting pairs of gannets: an example of concentrated seabird resources to which the Dorset had access/ *Colligan 2005*

Marine mammals are not the only food to be found in the sea. There are shellfish available along the Newfoundland coast that could have been gathered, at least in lean times, a strategy pursued by coastal peoples for millennia (Yesner 1980:729). Both anadromous species of fish as well as ground fish and sedentary species are available in the sea, the bays, and the fresh waters of Newfoundland. While most fish would have been available only in the warmer months, char could have been fished through the ice in winter. Cod otoliths (ear stones) are found in Dorset contexts (personal observation), though whether these came directly from the cod or by way of seal stomachs has not been determined.

310. Seasonal Resource Availability

Table 3.3. Species Available (in Months Marked with X) at Phillip's Garden West, a Groswater Site Immediately Adjacent to the Dorset Site of Phillip's Garden



Seasonal availability of species identified at Phillip's Garden West

	J	F	M	A	M	J	J	A	S	O	N	D
Atlantic Cod			x	x	x	x						
Canada Goose				x	x	x	x	x		x	x	
Common Eider						x	x	x				
King Eider				x	x					x	x	
Scoter			x	x						x	x	
Merganser sp.				x	x	x						
Ptarmigan sp.	x	x	x	x	x	x	x	x	x	x	x	x
Gulls	x	x	x	x	x	x	x	x	x	x	x	x
Murres				x	x	x	x	x				
Razorbill				x	x	x	x	x				
Guillemot				x	x	x	x	x				
Dovekie		x	x							x	x	x
Bald Eagle	x	x	x	x	x	x	x	x	x	x	x	x
Vole	x	x	x	x	x	x	x	x	x	x	x	x
Beaver	x	x	x	x	x	x	x	x	x	x	x	x
Whale				x	x	x	x	x				
Black bear				x	x	x	x	x	x	x	x	
Wolf	x	x	x	x	x	x	x	x	x	x	x	x
Grey Seal			x	x	x							
Harp Seal	x	x	x	x	x	x						x
Bearded Seal			x	x	x							
Caribou			x	x	x				x	x	x	

Source: Wells 2005: 84.

In favorable years, at least, the faunal resources available at Phillip's Garden were abundant. This site sustained the Dorset for several centuries. Plant resources, like berries, are not included in Table 3.3 but were seasonally available and probably utilized as needed. The resources listed in Table 3.3 would have approximated what was available to the Dorset elsewhere on the island, except for the areas not on the migratory seal route.

In their previously mentioned article on the vulnerability of Newfoundland's precontact human population, Tuck and Pastore (1985) argued that in Newfoundland's case the secondary resources do not provide a sufficient backup for those years when the primary resources fail. They maintained that the Dorset and other prehistoric peoples

Newfoundland led a precarious existence, dependent on migratory sea mammals whose schedule, location, and timing required particular weather and ice conditions. There was no guarantee that a year when unfavorable weather kept away the seals would not coincide with weather that negatively impacted the caribou herds – if ice covered over the lichen on which the caribou fed, or if the snow was too deep for even their adaptively-splayed hooves to walk over, many caribou would starve. While humans not confined to an island had the possibility of moving to somewhere with alternative resources, the Dorset island home placed limitations on their backup strategies.

Fig.3.7. Boggy interior, Baie Verte Peninsula on White Bay / *Colligan 2004*

Schwarz surveyed near coastal (interior areas close to the innermost bays and accessible by river systems) and deep interior areas finding evidence that the Palaeoeskimo and Indian cultures on the island developed specialized responses to Newfoundland's ecology. Site location is one indication that each culture pursued somewhat different subsistence strategies. His research led him to conclued that less attention should be paid "to the *natural* instability of Newfoundland ecosystems than to possible *cultural* sources of instability" (Schwarz 1994:67, Schwarz's emphasis), concluding that "Through the prehistoric period, different cultural groups clearly formulated different adaptive responses to this single environment, and these adaptations must therefore derive from cultural structures as well as environmental conditions" (Schwarz 1994:67-68).

Table 3.4. Newfoundland Site Location, by Cultural Affiliation

Cultural Affiliation	**Site location Interior-N and %**		**Site location Inner Coast-N and %**		**Site location Outer Coast-N and %**	
Maritime Archaic	N=4	14.8%	N=12	44.4%	N=11	40.8%
Groswater	N=1	5.9%	N=6	33.3%	N=10	58.8%
Dorset	**N=4**	**5.3%**	**N=22**	**29.3%**	**N=49**	**69.4%**
Recent Indian	N=11	31.4%	N=10	28.6%	N=14	40.0%

Source: Schwarz 1994:65.

Assuming that a group moves about the landscape to gain access to its resources, site location can be used as a proxy for regional resource utilization. The site location strategies followed by the four groups shown in Table 3.4 indicate distinctive cultural responses to the options available to them. There is both overlap in resource utilization and a cultural preference for certain environments. Palaeoeskimo sites are more likely to be found in outer coastal locations. Some of the Dorset appeared to have spent much of each year in large settlements like Phillip's Garden, taking advantage of the migrating species that came to them. The material culture and faunal remains found at their sites provide the evidence of specialization in hunting marine mammals. The Groswater were slightly less specialized. While there are Maritime Archaic and Recent Indian sites in outer coast locations, more frequently their sites are found in inner coastal and coastal interior locations. Judging from the site location data, the Recent Indians made the most balanced use of the island's resources. While it is tempting to point to the difficulty for the Dorset, or for present-day archaeologists, of traveling in Newfoundland's interior regions, as an explanation for the absence of Dorset sites, these difficulties have not prevented archaeologists from finding Recent Indian sites in the interior areas.

3.11. Dorset-Recent Indian Relations

The Palaeoeskimo and Indian groups were distinct physically, culturally, linguistically, and technologically; they specialized in the exploitation of different niches in the same environment. As mentioned in Section 3.4, Renouf and others have proposed that the Dorset and Recent Indian cultures, rather than having had a competitive relationship, may have worked out mutually beneficial relations which functioned to offset the unpredictability of their environment. Such a relationship could have meant reliable access to food in times of need – groups could have maintained a regular trade in food, skins, and other material, or exchanged information and territorial access regularly or when the need arose (Renouf, Bell Teal 2000:114; Renouf 2003a). In some areas it might have involved sharing the same space but in different seasons, as proposed by Rast, Renouf, and Bell with regards to sites at Burgeo on the South Coast (2003:51). Complementary specializations could have been the key to survival in years when climate or other vagaries did not permit the harvesting of a group's primary prey. A negotiated way of living in the same environment might help explain their long period of co-existence. The archaeological evidence for a mutually supportive relationship between the two peoples was a cache of Dorset and Recent Indian artifacts excavated from an undisturbed context at Gould in Port au Choix. These materials included Dorset artifacts, Recent Indian pottery and projectile points, and beaver skin; all appeared to have been intentionally assembled and buried around 1500 +/- 40 BP (Renouf, Bell, Teal 2000:113-114).

3.12. The End of the Dorset

What happened to the Dorset? Nothing certain is known about why there is no evidence of a Dorset presence in Newfoundland after 1200 BP. The four scenarios are that they were killed off, died off, were absorbed, or moved away. In the Eastern Arctic where the Thule and the Inuit succeeded the Dorset, Inuit oral history speaks about the Inuits' Thule ancestors forcing the even earlier "Tuniit" from the land; McGhee believes the Tuniit were the Dorset (2005:54). The theory of succumbing to a European disease has been advanced by researchers proposing that diseases to which the Dorset had no immunity could have entered the Eastern Arctic with Norse sailors (Sutherland 2005:6; Agger and Maschner 2004). Around 1200 BP the Recent Indians in Newfoundland acquired the use of the bow and arrow, a decidedly superior hunting technology which may have enabled them simply to out-compete the Dorset seal hunters who do not appear to have utilized the bow (Erwin et al 2005:62). Other possible explanations for the Dorset disappearance were the advent of the Medieval Warm Period, as mentioned previously, which made the island's weather more unstable beginning as early as 1000 BP (Renouf 1993:207). Perhaps there was some sort of abnormally severe resource failure of the type discussed by Tuck and Pastore that overwhelmed the survival strategies employed by the Dorset. There is evidence that after the Dorset were no longer living on the island of

Newfoundland, some Dorset groups continued to occupy the Labrador coast where Late Dorset sites date to 800 BP.

3.13. Regional Overview

Fig.3.8. Phillip's Garden, Port au Choix Peninsula, Newfoundland/*Colligan 2004*

Hundreds of mostly small sites attributed to the Dorset have been found in Newfoundland. Sites have been identified through surveys conducted for archaeological purposes as well as road and building construction, erosion, and gardening. While Dorset settlements have been found along the entire coastline, the maps in Fig.4.2 and Fig.4.3 show only the sites in the study.

Fig.3.9. West coast of Newfoundland, one type of landscape / *Colligan 2004*

3.13.1. West Coast Region

West Coast Region included sites along the Gulf of St. Lawrence coast of the Great Northern Peninsula from Norris Point (DjBl-02, DjBl-05) northward to Fisherman's Cove (EgBf-14). For thousands of years this area was home to people attracted by the abundant annual migrations of marine mammals, including walruses, and whales, but in particular several species of seals. The Great Northern Peninsula with a hinterland of forests, tundra, mountains, and scrub spruce has a coast of sandy estuaries, rocky cliffs, and long, raised cobble beaches. This region has a dynamic coastline; during the time when the Dorset lived in the Port au Choix area, there were many islands that today are connected to the mainland (Bell, Smith, Renouf 2005:24; 27).

3.13.2. White Bay Region

Along White Bay, and the Baie Verte Peninsula that juts into it, are rocky headlands, deep coves, and raised beaches; behind the beaches and at times extending down to the water's edge is a mixture of forests and bogs (Erwin 2001:190). The White Bay sites were located along beach ridges on this deep bay, which is jammed with ice several months a year (Encyclopedia of Newfoundland and Labrador). Cow Cove-3 (EaBa-16) is located in the inner bay on a raised beach facing away from where the seal herds pass. Its location and orientation suggest that, rather than being a place from which seals were hunted, it may have been a warm weather site (Erwin 2004:8). The Dorset soapstone quarry shown in Fig.3.10, situated at the northern end of the Baie Verte Peninsula, was a focus of Dorset activity in this region (Erwin 2001:154-155).

Fig.3.10. Dorset soapstone quarry on White Bay, with Dr. John Erwin explaining soapstone pot removal scars / *Colligan 2004*

3.13.3. Notre Dame Bay Region

Fig.3.11. *Iceberg in Notre Dame Bay off Twillingate / Dunkel/ Colligan 1998*

Notre Dame Bay is a broad bay open to the North Atlantic; it has the most irregular and deeply indented coastline on the island (Encyclopedia of Newfoundland and Labrador). Several species of seals are present in the bay throughout the year. Icebergs borne south by the Arctic current become trapped in the bays and inlets along the north and east coasts of Newfoundland where they eventually melt in the summer.

3.13.4. Bonavista Bay Region

While Bonavista Bay is very open, it has deep, sheltered inlets (or sounds) and bays that extend into the island's interior. The Labrador current brings ice, icebergs, and several species of seal during the winter. While not necessarily icebound in the spring, there can be ice floes and icebergs until late in the season (Encyclopedia of Newfoundland and Labrador).

Fig.3.12. Bonavista Bay near Burnside and a chert quarry used by the Dorset / *Colligan 2006*

3.13.5. Trinity Bay Region

Trinity Bay is not on the migration route of harp seals although both harp and harbor seals can be found there (Encyclopedia of Newfoundland/Labrador on CD; LeBlanc 1996a:18); the coastline at the bottom of the bay offered relatively easy access to interior resources. Elevated land behind Stock Cove, for example, has an overview of the isthmus of Avalon through which the migrating caribou herd would have passed (Pastore 1985:127).

3.13.6. South Coast Region

South Coast region lies along the North Atlantic Ocean and extends from Port aux Basques east to Fortune Bay and the Burin Peninsula. It is an exposed, elevated coast cut by fjord-like inlets. Its maritime climate with abundant rain and fog is created by the interactions of the Gulf Stream and the Labrador Current. The absence of sea ice makes year-round fishing possible. The land is a mixture of tundra, ponds, barren tablelands, lakes, and conifer forest. Non-migratory populations of harbor and gray seals, walrus, and small whales are found on this coast and would have been available to the Dorset as well (Penney 1984:32-36).

Fig.3.13. South Coast, west of Burin Peninsula /*Dunkel/Colligan 2005*

3.13.7. Cape Ray Light Region

Cape Ray Light is located on Cape Ray, a peninsula on the extreme southwest coast of Newfoundland that juts out into the Cabot Strait connecting the North Atlantic and the Gulf of St. Lawrence. Linnamae, who excavated the Cape Ray Light site in the late 1960s, described it as a flat, windswept coastal lowland with a rocky shore, rock outcrops and black spruce shrubs with tundra-like conditions due to the constant wind. Where there is soil at all, it is acidic and poorly drained with areas of muskeg and bog marshes (Linnamae 1975:24-26), as is the case in many areas of Newfoundland. Cape Ray Light is the only region in the study that is comprised of only one site.

3.13.8. Labrador

Fig.3.14. River on Labrador coast along the Strait of Belle Isle / *Colligan 1998*

The coast of Labrador is an 800-mile long stretch of boreal-tundra landscape, a bridge between the Arctic homeland of the Dorset and the subarctic areas (Fitzhugh

1976:103) they inhabited for a thousand years. The landscape in the north is tundra due to too little precipitation and too few warm days to support trees; the southern coast is subject to considerable storminess and winds. Mountains and deep fjords cause significant local variation (Macpherson and Macpherson 1981:129).

Chapter 4: Methodology

Fig.4.1. Looking seaward from Phillip's Garden, West Coast Region /*Colligan 2004*

4.1. Introduction

The focus of this study is the Dorset harpoon endblades found on the island of Newfoundland. Harpoon endblades constitute “one of the most distinctive Dorset artifact classes” (Linnamae 1975:74). Using data generated by these ubiquitous artifacts of Dorset material culture, I answered several questions regarding the variation and homogeneity of endblades excavated in different regions around the island of Newfoundland.[1]

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[1] In this study Newfoundland refers only to the island of Newfoundland; I specify Labrador when appropriate. Since 1949 Newfoundland and Labrador have been one province of Canada, the Province of Newfoundland and Labrador.

Many lithic tools required frequent resharpening – for example, knives, scrapers, gravers, and adzes – but endblades, like projectile points, were probably expected to last for one or only a few usages (Cheshier and Kelly 2006: 354). While endblades might be broken in manufacture or in use and perhaps their uselife prolonged by being reworked into smaller endblades or entirely different tools, they probably did not undergo the continual resharpening – and significant morphological modification (Kooyman 2000:95) – that resulted from this process as did other tool types.

The data in this study comes from a stratified sample of endblades from the regions described in Chapter 3: West Coast, White Bay, Notre Dame Bay, Bonavista Bay, Trinity Bay, South Coast, and Cape Ray Light. There is a Labrador Dorset region that was not created systematically comprised of endblades from ten Dorset sites in order to make a few gross comparisons between Newfoundland Dorset and Labrador Dorset endblades. Data are included on endblades from two Groswater sites, one from Newfoundland and one from Labrador. These comparisons are not the primary focus of the study and are not included in the "Newfoundland" data, that is the data on the island-wide group of the seven regions. The peripheral, preliminary nature of the data is indicated by the gray background in the sections of the tables where they are reported.

The regions into which the data are grouped are those suggested by Pastore (1985:131-133) with two changes. While Pastore included all west coast sites in a single region, I separate them into regions called West Coast and Cape Ray Light. West Coast includes sites from Bird Cove and Port au Choix going south as far as Norris Point. The more distant Cape Ray Light site, at the southwest tip of Newfoundland, was subject to somewhat different weather patterns and seal herd availability, as mentioned in Chapter

3, and is a separate region in this study. Dividing Pastore's West Coast into two regions also corrected what would have been a considerable imbalance in this study as far as the number of endblades from a single region. Similarly LeBlanc divided the west coast into two regions, Phillip's Garden and Cape Ray Light, in her preliminary discussion of regional diversity (2000:97). After analyzing the data from this study, the division into two regions appeared to have been justified.

The second divergence from Pastore's scheme was unavoidable – I could not find Dorset endblades from Interior, East Coast (of the Great Northern Peninsula on Newfoundland's west coast) and Placentia Bay regions in the collections at the Provincial Museum in St. John's when I was there gathering the data. According to the site record forms on file at the Provincial Archeology Office, many of these were very small sites or testpits with very little material excavated from them. In the case of the Interior, it is understandable that there were few endblades since no hunting for seals would have been done away from the coast.

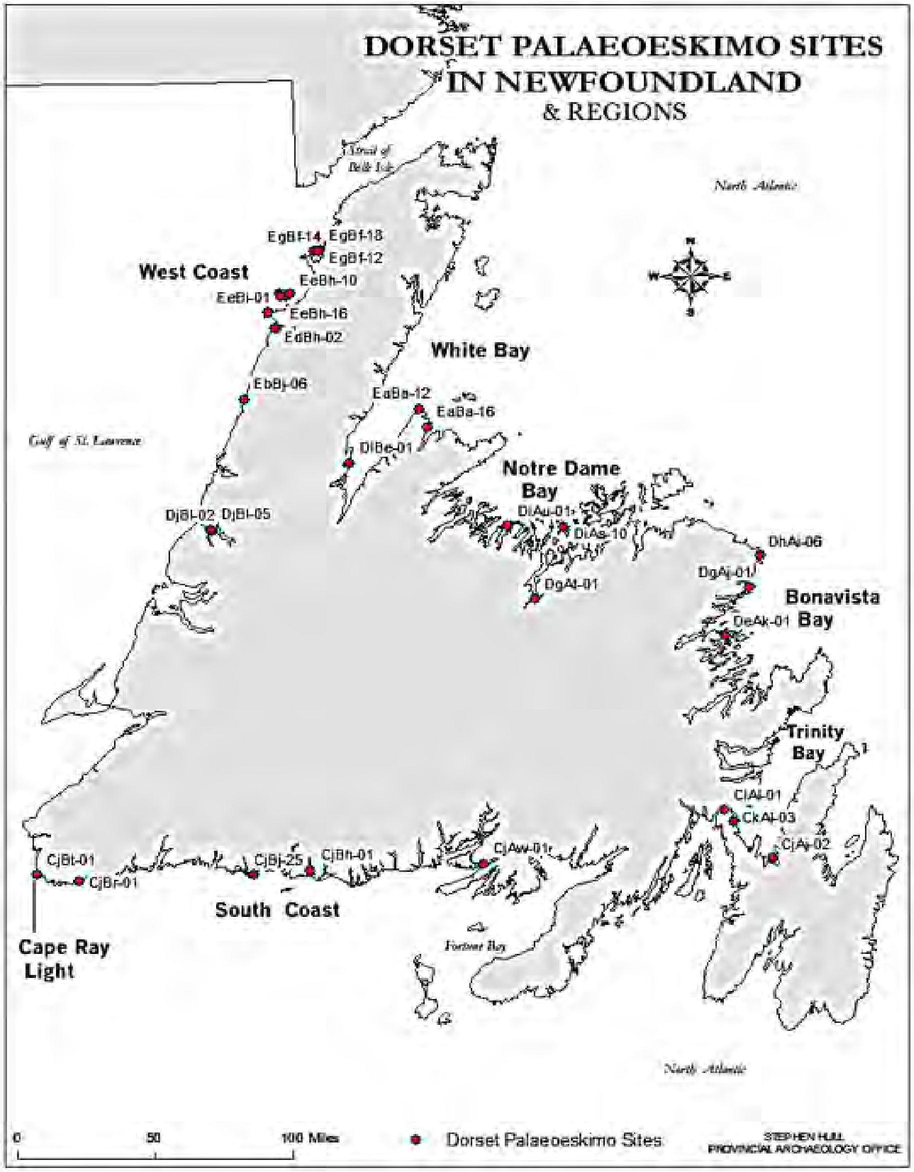

Fig.4.2. Newfoundland Showing Dorset Sites and Regions (Source: Provincial Archaeology Office with modifications to show regions) Note: Some sites obscured others on the map. This occurred on the north west coast, in the area near EeBi-01, where the following sites are obscured: EeBh-01, EeBh-08, EeBh-09, and EeBh-15. For a list of all sites, see Table 4.1. (Geographic features are in italic; Regions are in bold)

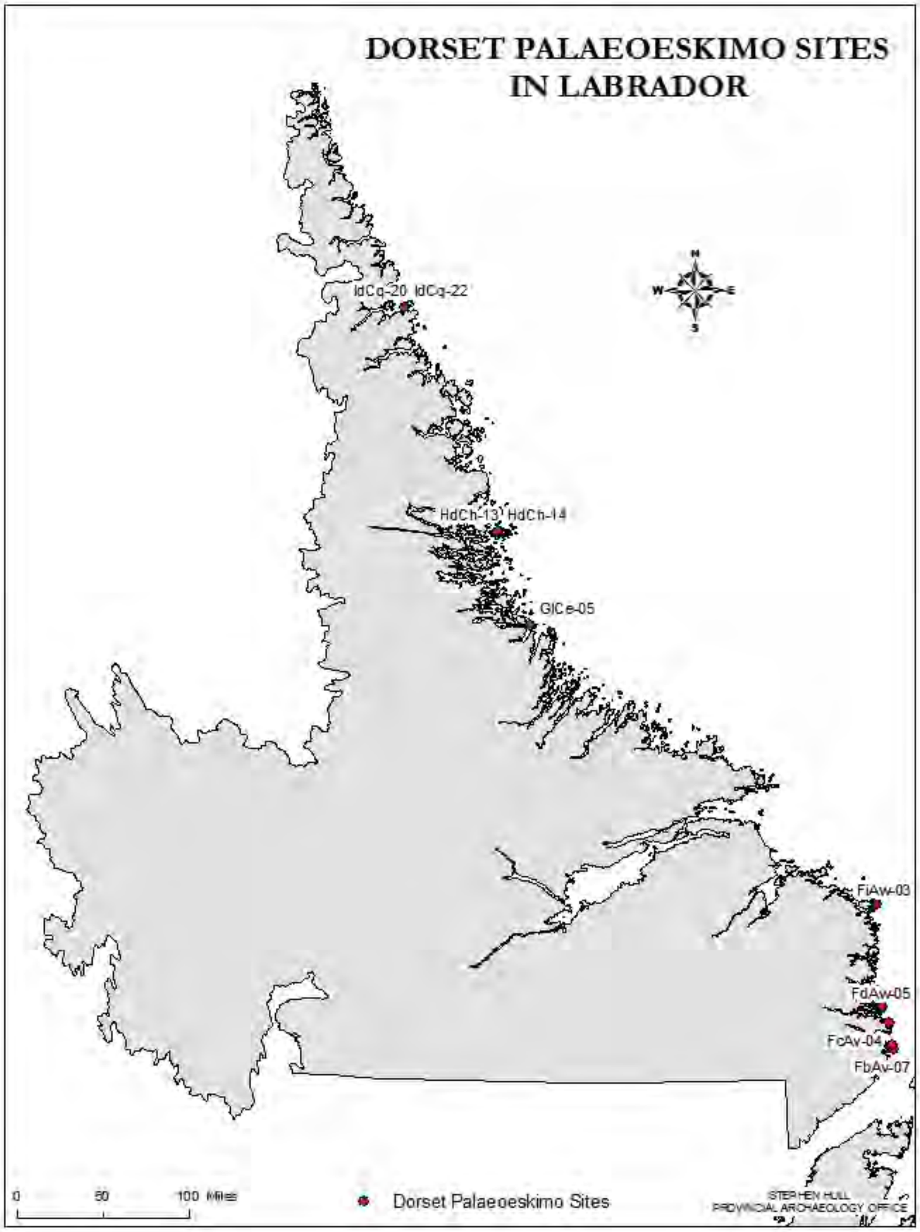

Fig.4.3. Labrador showing Dorset sites in this study, with Borden Numbers.(*Source: Provincial Archaeology Office)* Note: One site is obscured by another on the map. FbAv-12 is obscured by FbAv-07. For a list of all sites, see Table 4.1.

Table 4.1. Dorset Regions with Names of Sites in Each Region and Number of Endblades Included in Study

West Coast: 143 endblades

DjBl-02	Norris Point-1
DjBl-05	Norris Point-2
EbBj-06	Daniel's Harbour-1
EdBh-02	Keppel Island-3
EeBh-01	St. John Island-1
EeBh-08	Charmaine
EeBh-09	Flat Point
EeBh-10	Lobe C
EeBh-15	Squall
EeBh-16	Three Bar
EeBi-01	Phillip's Garden
EgBf-12	Bird Cove
EgBf-14	Fisherman's Cove
EgBf-18	Peat Garden

White Bay: 25 endblades

DlBe-01	Jackson's Arm
EaBa-12	Plat Bay Cove-2
EaBa-16	Cow Cove-3

Notre Dame Bay: 40 endblades

DgAt-01	Rattling Brook
DiAs-10	Swan Island
DiAu-01	Thomas Rowsell Island

South Coast: 14 endblades

CjAw-01	Eagle Point
CjBh-01	Bay de Vieux II
CjBj-25	Eclipse I
CjBr-01	Isle aux Morts

Trinity Bay: 68 endblades

CjAj-02	Dildo Island
CkAl-03	Stock Cove
ClAl-01	Frenchman's Island

Bonavista Bay: 39 endblades

DeAk-01	Beaches
DgAj-01	Shambler's Cove
DhAi-06	Cape Cove-2

Cape Ray Light: 60 endblades

CjBt-01	Cape Ray Light

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Labrador: 24 endblades

FbAv-07	Cape Charles 2
FbAv-12	Sand Cove 1
FcAv-04	Pardy
FdAw-05	St. Francis Harbour Bight
FiAw-03	Black Tickle
GlCe-05	Solomon Island 1
HdCh-13	Dog Island West Spur L1
HdCh-14	Dog Island West Spur L2
IdCq-20	Shuldham Island 7
IdCq-22	Shuldham Island 9

****

Groswater Sites:

Newfoundland: 33 endblades

DlBk-03	Factory Cove

Labrador: 10 endblades

GfBw-04	Postville Pentecostal

I measured each endblade included in the study, using measurements (weight, height, width, thickness, etc.) and qualitative descriptions requested by the Provincial Archaeology Office Specimen Records (see Appendices for a sample of the data collection sheet I used). Working on photographic enlargements of the endblades, each of which included a ruler, I also measured the basal indent (a measurement of the shape of the endblade base).

In addition to these measurements, I adapted David Hurst Thomas' idea of measuring angles to compare projectile points (Thomas 1981) by measuring the proximal angles of Dorset endblades. An adaptation was necessary because Thomas worked with stemmed projectile points (from Monitor Valley, California) while I worked with Dorset endblades, which rarely had stems. (Stems project from the base and are used for hafting the projectile point. Dorset endblades and Monitor Valley projectile points were hafted using different techniques.)

To accommodate the structural difference between Monitor Valley points and Dorset endblades, I shifted the angles measured from what Thomas called the distal and proximal shoulder angles (Thomas 1981:11) to a measurement of the angles formed by the lateral sides intersecting with a line along the base of the endblades (see Fig.4.6). I call these the proximal left and the proximal right angles. (In a tool, the *proximal* end is the end closer to the user and the *distal* end is the end farther away from the user.) Measuring the proximal angles as I did had the added advantage of being a measurement taken from the same perspective the Dorset tool maker would have had as he or she made the tool. I did not assume that the proximal angles would be equal. (Thomas recognized they could be unequal and used the lesser of the angles (1981:11).) The measurement of angles made it possible to compare the slopes of the lateral (side) edges of the endblades and may have led to the observation of a new endblade attribute, that of the inequality of the proximal angles and the predominance of the proximal right angle.

4.2. The Function of Endblades

In carrying out this study, I focused on the harpoon endblade for several reasons: (1) Endblades are one of the most common worked and utilized tool forms and are usually found in abundance at Dorset sites. (2) Endblades, while readily identifiable as such, are quite varied in shape, material, size, stem/base, and manufacturing technique, and so exhibit variation. (3) Endblades had a clear, important purpose in the Dorset economy – they were used for hunting, mostly marine mammals but probably also for terrestrial, aquatic, and avian species as well; different prey may have influenced their shape and distribution. (4) Many, probably the vast majority, were made of stone and have survived post-depositional action, although the other harpoon components which may have carried substantial amounts of cultural information have not survived.

Fig.4.4. Endblade inserted in harpoon head; both from Rose Island Site Q, Labrador (IdCr-06) / *Colligan 2005*

Endblades were not used to kill prey but to inflict a traumatic wound and to serve as the means for attaching the harpoon and line to the prey. The hunter could strike from a distance, wound the animal and wait for it to weaken before retrieving it and killing it with a knife, club, or spear. The endblade penetrated the animal's skin and acted as an anchor for the harpoon head which the hunter held on to by a line of sinew or skin rope through one or more holes in it (Fig.4.5) (Bonner 1994:175-176). Harpoon technology was effective in offering the hunter some protection from the wounded animal until it could be killed with less risk.

Fig.4.5. Modern Reconstruction of Dorset Harpoon with an endblade in place, made by Tim Rast / *Colligan 2005*

A reconstructed Dorset harpoon is shown in Fig.4.5. Bone harpoon heads, including some that are self tipped, have been found at Phillip's Garden but rarely elsewhere on the island, almost certainly due to poor preservation.

4.3. The Sample

There were two sets of considerations that influenced my decision not to do a random sample. First was that for a random sample it would be necessary to have at least a reasonable idea about the size of the population that is being sampled. This was not possible for the Dorset material to which I had access in Newfoundland. It was particularly difficult during the time that I was gathering my data because the collection at the Provincial Museum had been packed up for a move that had taken two years. The unpacking kept just ahead of me so I never knew how much Dorset material would be available even the following day. Additional material was made available from offsite storage when I urgently requested particular Dorset sites that I had found mentioned in the Provincial Archaeology Office site record list but could not locate in the Museum's vaults. Although I had made arrangements several months in advance, it was necessary to make a second trip six months later to get access to important collections that had been on loan or were housed elsewhere in St. John's.

Besides these problems, the material is not organized in a way that facilitates random sampling. Everything is stored in boxes (of different capacities) by tool type and by site. Since many sites in Newfoundland are multi-component with material from more than one culture, this means a tray of boxes could have material from several small sites, several traditions, and several tool types intermixed.

Even if these problems could have been overcome, a random sample would not have been an ideal choice. It could have meant that many of the small and medium size sites would not have been sampled, even though these sites are important to examine for what might be learned from them about the island's variation.

Given these considerations, I opted for carrying out a stratified sample. I selected endblades that are representative of the range of variation found at each site. My criteria for inclusion were to include from each Dorset site a selection of endblades that showed a range of sizes, types and colors of raw material, base types, over all shapes, and different manufacturing techniques (grinding and flaking). Furthermore the endblade needed to be in good enough condition that at least four of the metric measurements could be made.

On the other hand, redundancy was not desirable because there were constraints both on the time I could spend gathering the data and later analyzing it. My intention was to capture the variation rather than to focus on the frequency of certain types.

There are many sites where only a few endblades met these criteria. When I had only a few from a site (N=1-5), I included all of them. For the medium-sized collections (N=15-30) and large collections where I selected more that 30 endblades each, the subsets were selected as explained above, avoiding redundancy. Endblades included from the larger sites tended to be more complete than those for the smaller ones because I had more tools from which to choose and often could pass up the more broken specimens for examples in better condition.

After examining several thousand endblades, I photographed 530 Dorset and Groswater endblades. The final sample is 456 because I had originally included some pieces that are too broken, are preforms (tools that had been begun but not completed), or are probably not endblades. While the artifacts had been identified by the archaeologists and museum workers as endblades but I later excluded a few anomalous pieces because I doubted the accuracy of the initial identification. These specimens seem too large to be harpoon endblades or extremely atypical (see the large specimens in Fig.1.3, for examples). I also excluded objects that, although identified as endblades, are quite asymmetrical and matched the description of knives in the literature. I did not make these de-selections lightly because I assumed that the workers had good reasons for their the original artifact identification. However, I wanted to be sure the endblades that are included would be generally accepted as such.

4.4. Equipment

The following equipment was used to gather the data:

–A tripod-mounted Canon Rebel digital camera with a 50 mm 1:2.8 macro lens operated using a cable release. I photographed what I determined to be the dorsal[2] face of each endblade alongside a 15-cm ruler which appears in the photograph. Usually on Dorset endblades the dorsal face is more convex than the ventral and shows more evidence of retouching or grinding.[3] A standard flash attachment was used to photograph the first group of endblades in August 2005; to minimize shadows that at times obscured the outline of the tool, I used a ring flash when photographing the second batch of endblades in January 2006. Post-photographic image manipulation to enlarge, create composites, and convert the color images into black and white images was done using Adobe Photoshop version 2.0, 4.0 and 9.0. For measurement purposes each image was printed in black and white.

–A Boreal digital scale was used to measure weight.

–A simple solid protractor was used to measure angles.

–SPI 2000 calipers were used to measure height, width and thickness, as well as in

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[2] A stone tool is considered to have two surfaces, the ventral and the dorsal. The ventral surface is the side that is newly created when it is removed from its source (core, other tool); it often is slightly concave, has a bulb of percussion, ripple marks, fissures, or other evidence some of which may still be visible even after being worked into a tool. The dorsal surface is created by removing other pieces of lithic material from that surface; it is often slightly convex and is characterized by arris line(s), a ridge or ridges made by intersecting flake scars (Kooyman 2000:171,177).

[3] Harp reported that most of the Dorset endblades, which were then referred to as projectile points, were plano-convex or bi-convex (1964:36-42); Loring and Cox described the Groswater endblades at Postville Pentecostal as plano-convex or bi-convex (1986:72). This characteristic makes it easier to identify what is conventionally viewed as the "dorsal" face.

making measurements on the photographs so they could be calibrated against the ruler photographed to scale with the endblades.

In the interest of consistency the same equipment was used throughout the data collection, with the exception of the change to a ring flash as noted above.

4.5. Taking the Measurements

Once the endblades had been selected, the following procedure was used to gather and record information:

1- I made a digital photograph of each endblade separately, including in the frame a small metric ruler and photo number.

2- On a data sheet (Appendix B) I recorded the artifact number which included the Borden number[4] of the site, photo number, site name, cultural designation from museum box, descriptive information (color, material, type of base, technology used to make endblade, overall condition) and measurements for each endblade (weight, maximum length, maximum width and thickness).

3- At a later time, I made a black and white print of each photograph at approximately three times the original size, showing the endblade, the ruler and the photo number. I measured the basal indent and the angles described below.

4.5.1. Measuring the Basal Indent and the Angles

I measured the basal indent on the photograph of the endblade using calipers and then found the value of this measurement on the ruler in the same photograph by placing the calipers with the measurement on the photo of the ruler.

I measured the angles using this procedure (see Fig.4.6):

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[4] In Canada each archaeological site is given an alpha-numeric designation called a Borden number which corresponds to the National Topographical Series of maps.

(a) Draw a line to represent the proximal base line.

(b) Mark two dots on the print at points 0.5 cm below the distal angle along each lateral side; mark two more dots 0.5 cm up from the proximal end/base line along the lateral side. This step is important for making the procedure operational, that is, replicable both within this study and by others.

(c) Draw a line joining the dots along the two laterals and extending the lines below the baseline and above the distal angle.

(d) The angles formed by the lines along the left and right lateral edges with the base line are then measured using a protractor. In almost every case the lines approximate the basic shape of the endblade, simply smoothing out the curves of the lateral edges.

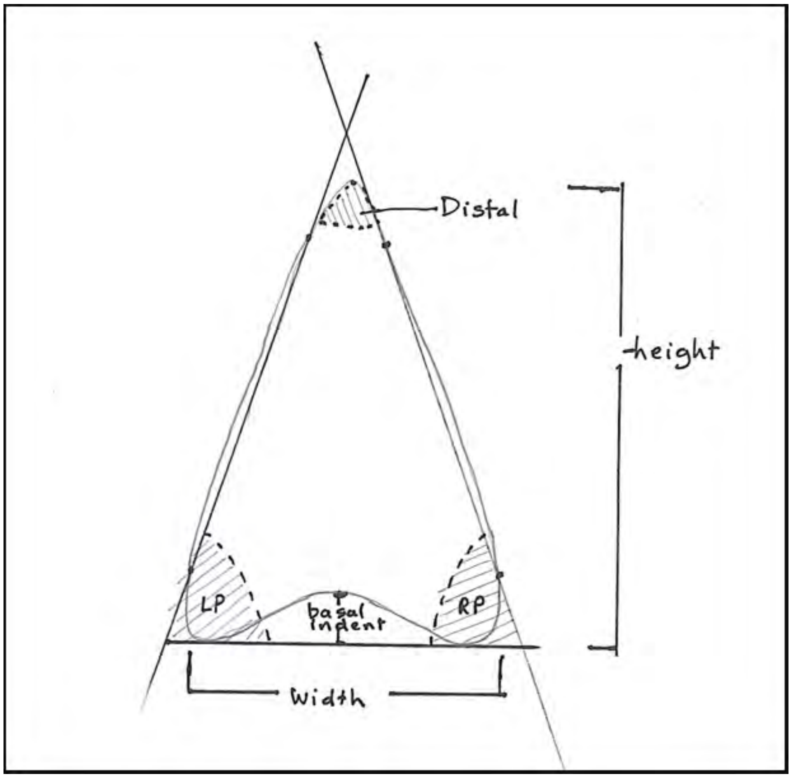


Fig. 4.6. Location of measurements taken on endblades used in this study (LP=Left Proximal; RP=Right Proximal)

Observations on using this technique:

(a) The measurements of the basal indent and the angles are only possible because of the photographic enlargement of the endblade. Efforts to measure these angles on the actual endblade were completely unsuccessful. Most Dorset endblades are less than 4 cm long and much less in width.

(b) To ensure the points are consistently placed 0.5 cm from the distal and proximal ends, the 0.5 cm was measured using calipers and the proportionately enlarged photograph of the ruler. For endblades less than 2 centimeters in length, this measurement was changed from 0.5 cm to 0.25 cm from proximal and distal ends. I tested whether this accommodation to small sized endblades made a difference in angles; it seemed negligible.

(c) It is often possible to arrive at an angle for endblades that are missing distal or proximal tips or ends. Given the regular shapes of most Dorset endblades, it is also often possible to estimate what the maximum width or height would have been if the endblade had not been broken. When it seems that a reasonably accurate estimate could be made, the estimated measurements are recorded, offsetting the number of incomplete endblades. When it is not possible to estimate the shape of the tool with confidence, an entry of "NA" (Not Available) is made. No estimate is made for what a broken tool would have weighed if it had been complete. All measurements are made using the metric system.

For the few side-notched Dorset endblades and the many side-notched Groswater endblades, additional measurements were taken in an attempt to quantitatively describe the bases of these endblades. These additional measurements include the number of side notches, the height of each from the base, the height of the notch from the bottom of the notch to the top of the notch, the width of the endblade at the base, the width of the hafting at each notch or pair of notches. The number of endblades with some type of side notching is reported in Table 5.15 but beyond this, the measurements were not further analyzed.

Weight is recorded in grams. It is determined by a digital scale and recorded to the nearest hundredth of a gram. However, this figure is not used since many endblades are broken and a comparison of weights does not seem meaningful.

Height is recorded in centimeters. The maximum height of an endblade recorded is the height measured from the base through the distal end. The measurement recorded here could be either the actual height if the endblade is complete, or an estimate of its height if this can be made with a reasonable degree of confidence. If a reasonable estimate can not be made, the measurement is deemed unavailable and is reported as NA. This is measured by calipers on the endblade.

Width is recorded in centimeters. The maximum width of an endblade is the widest point between the laterals, a line perpendicular to the axis. This is usually a line between the two proximal ends. If it can not be determined with confidence, NA is recorded. This is measured by calipers on the endblade.

Thickness is recorded in centimeters. The maximum thickness is measured at the thickest part of the endblade, almost always at some point in the lower half of the tool. NA is entered if what is likely to have been the thickest part of the endblade is missing. This is measured by calipers on the endblade.

Distal angle is recorded in degrees. The angle formed at the distal end of the endblade. It is measured on the photographic enlargement as described above. Where the distal tip is missing and it is possible to estimate with confidence the position and shape of the missing tip, the measurement is made as if it is still extant. If not, NA is recorded. This measurement is taken using calipers and protractor.

Proximal left angle is recorded in degrees. This measure is made on the photographic enlargement as described above. When the proximal left is missing, the measurement is made if it could be done with confidence. If not, NA is recorded. This measurement is taken using calipers and protractor.

Proximal right angle is recorded in degrees. This measure is made on the photographic enlargement as described above. When the proximal right is missing the measurement is made if it could be done with confidence. If not, NA is recorded. This measurement is taken using calipers and protractor.

Basal indent is recorded in centimeters. The basal indent is measured at its deepest point from a line representing the base. When one or even two proximals were missing and this could still be estimated with confidence, the measurement is taken. With a few exceptions this is a positive number. In the cases in which the base is convex, the measurement is below the base line and is recorded as a negative number. Where there is no basal indent, zero is recorded. Where it is not possible to estimate the depth of the basal indent, NA is recorded. The measurement is made using calipers and the ruler photographed to scale, as shown in the photographic enlargement.

The measurements used to describe quantitatively the Groswater side-notched straight-based endblades (see A-14D and A-15C for examples of this style) are entered into the database but I only analyzed for type of side notches and did not use the additional data.

Qualitative attributes are recorded as well:

Base type – The choices are straight-based, side-notched, double side-notched, concave, basally notched, lanceolate, straight, and other. In the course of the study, convex was added in the "Other" category.

Material type and color – No attempt is made to distinguish between material types with the exception of identifying Ramah chert, slate, and quartz crystal. Most tools are presumed to be made of chert unless otherwise noted. Color is identified but not used in analysis. A Munsell color is noted for a few endblades but the process was not deemed useful or practical and was discontinued early in the study. It would have been simple and useful to include a color control strip in each picture to ensure accurate color correction.

Facially worked – The choice here is unifacial or bifacial. If any flaking, thinning or grinding is visible, the endblade is considered to be worked on that side.

Fluting – The presence of fluting is noted. Attempts to indicate tipfluting were inconsistent and this is not used as a category for analysis (see Chapter 5 for this a fuller discussion of this issue).

Retouching – Any surface or edge flaking is considered to be evidence of retouch, with the exception of grinding. Where endblades are both retouched and ground, both techniques are noted.

Grinding – Edge or surface grinding is noted as ground; it is not necessarily the only manufacturing technique used in producing the endblade.

Serration – Edges that are retouched to make a serrated edge are designated serrated.

Broken – Whether an endblade is broken as well as the location of the break(s) is noted. This information was useful when measuring angles on the photograph.

A comment field was included for additional observations or drawings needed for clarity. The broken and the comment fields do not appear in the Raw Data tables in Appendix C.

Chapter 5: Analysis of Data

Fig.5.1. Ramah Chert Endblade from Fisherman's Cove, West Coast, shown next to a Canadian dime for scale (Dime is 1.7 cm in Diameter) / *Colligan 2006*
Measurements: h 1.34 x w 1.08 cm

5.1. Introduction to the Data

The quantifiable variables explained in Chapter 4 are analyzed from two perspectives: (1) with Newfoundland as a single assemblage; and (2) at the regional level with the intention of seeing if the quantitative and statistical measures support the hypothesis that regional variation is present. Graphs and tables present measures of central tendency in order to capture in a few numbers what is typical about the endblades at the regional and island-wide levels. Variance is used to measure the spread of data around the central tendency. Paired t-tests were run to determine whether the observations about the proximal angles have statistical significance.

The data for this study were entered into a spreadsheet in Open Office v.1.3 which was then converted into a dataset suitable to be analyzed on R (v.2.2.1), a statistical package running under Unix. A program was written to produce the ratios of width to height, basal indent to height, and thickness to height and to add them to the dataset. The graphs were created by using the routines in the Lattice Library under R. The tables were created from reports produced by R. The paired t-tests were run on R.

For some analyses histograms are shown, while for others box plots are preferable. While both types of graphs show the range of the data, box plots give a clearer idea of the central tendency of the data by showing where the middle 50 percent of the data lie. Histograms are more useful when the range and distribution of the data is of particular interest.

The mean, median, and the variance are tools of descriptive statistics that are used in this study to explore and describe the attributes of the endblade sample that has been assembled for this purpose. The prerequisites that the data must have for more sophisticated tests such as the t-test and chi-square to establish statistical significance cannot be established. Results from running these tests could not be accepted as statistically valid and have not been applied.

On the other hand, the paired t-test is useful in comparing the two related angles of an endblade as is done later in this chapter. This test is applied to a property of the whole set of endblades, is buttressed by counts and comparison of medians but it was not used to infer statistically anything about the different regions.

5.1.1. Raw Material

Analyzing the raw materials from which specimens were made has the appeal that a tool's material composition relates to “an objective geological reality” and can be “objectively and independently characterized using standardized procedures to yield consistent results from researcher to researcher” (Odess 1998:419). However, this requires that the material be correctly identified, that there is knowledge of the local and region-wide sources of the materials, and that there is an understanding of how the distribution of these materials was affected by glaciation. Data on the raw materials from which the endblades in this study were made are recorded to the best of my ability. In the end I did not analyze this aspect of the endblades because, with my minimal knowledge of Newfoundland and Labrador geology and the brief access I had to the collections, I could make only the most elementary raw material identifications. Furthermore, I did not have access to the other types of geological data that would have been needed to make a meaningful analysis. Raw material data are the focus of two small surveys of endblades made of Ramah chert presented in section 5.12 and 5.13.

5.1.2. Terminology

When discussing “all” endblades, I am referring to all *included in this study*. The terms “island-wide,” “Newfoundland,” and “insular Newfoundland” are used interchangeably to mean all the Dorset material *on the island of Newfoundland that is included in this study*. In the same way, “all” endblades from Labrador and “all” Groswater or “all” endblades from Cape Ray Light refer only to *“all”* in the study.

5.1.3. Considerations of Small Site Size

Many sites are represented by only a few endblades, a difficulty in Newfoundland archaeology in general. As one way to overcome limitations inherent in small samples, Kilmarx proposed applying resampling techniques such as bootstrap analysis to the many small sites on the west coast site of St. John Island that he studied (1999:190-196). To compensate for the small numbers of endblades available from many sites for this study, several sites are combined to form regional groups and the combined groups of endblades are analyzed as regional assemblages. The mobile lifeway of the Dorset, their pattern of ranging across the landscape in their annual round, would suggest that different tasks would have been carried out in different locations. In fact it is likely that the tools they might use over several seasons would have been deposited over the landscape at several habitation and task-specific sites.

Even with collapsing the site data into regional groups, the effects of small site size are unavoidable for the region comprised of South Coast sites. On this coast there are simply too few endblades available to construct a selection large enough to give reliable results. The paucity of Dorset sites and artifacts is perhaps due to the absence of concentrations of migratory harp seals along this coast (see Fig.3.5); perhaps only small groups of Dorset hunters would camp briefly before moving on to other locations. There is a continual loss of sites along the south coast due to eustatic subsidence as previously mentioned. In her overview of Newfoundland regional variation LeBlanc also remarked on the limited amount of material from the south coast (2000:100). Therefore, while a region called South Coast is included, the data from this region should be treated with particular caution.

5.2. Differences in Endblade Angles

The small size of many Dorset endblades, as illustrated in Fig.5.1, makes it impossible to accurately measure the basal indent and endblade angles on the artifacts themselves with my low-tech equipment. However, by taking these measurements on the photographic enlargements, as described in Chapter 4, it is possible to make them and thus have available not only those measurements but the sums and ratios derived from them. These data permit a previously unreported observation about the endblades in Newfoundland.

Measuring the angles offers a way to reduce the various triangular shapes of endblades to two sets of numbers which can then be analyzed statistically. The angle measurements are (1) a comparison of the proximal left and the proximal right angles (measured on the dorsal side of the endblade); and (2) a sum of the three angles of the endblade.

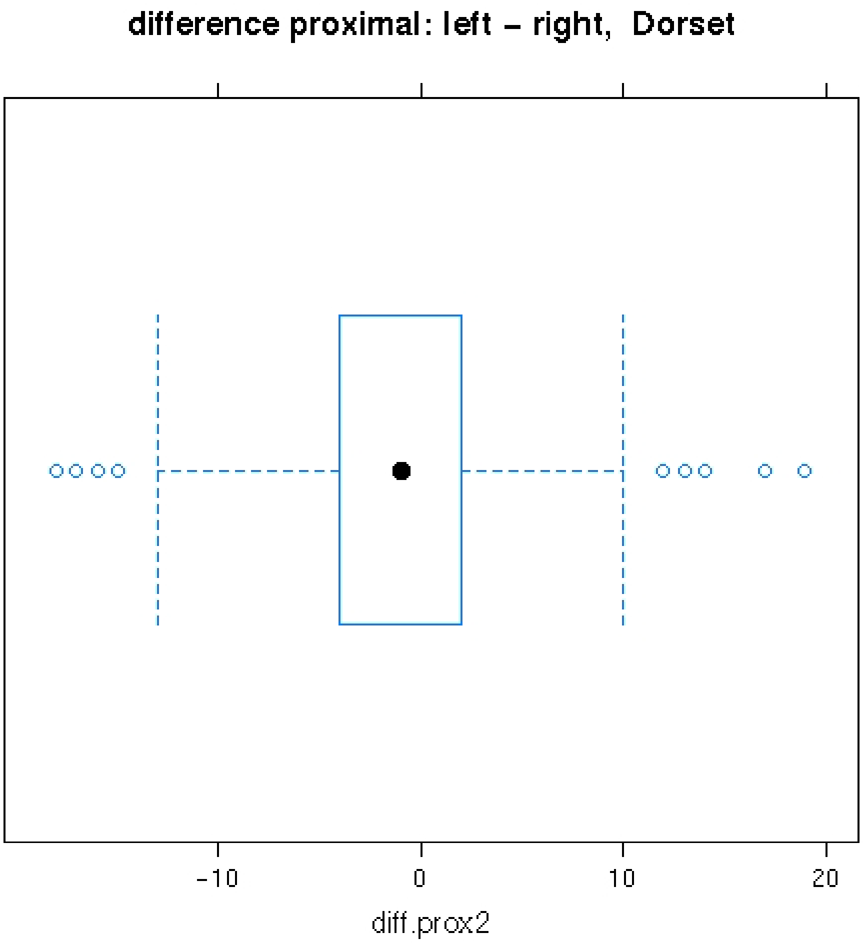


Fig.5.2A. Distribution of the Differences between Left and Right Proximal Angles, for Dorset Endblades in Newfoundland.

● = Median

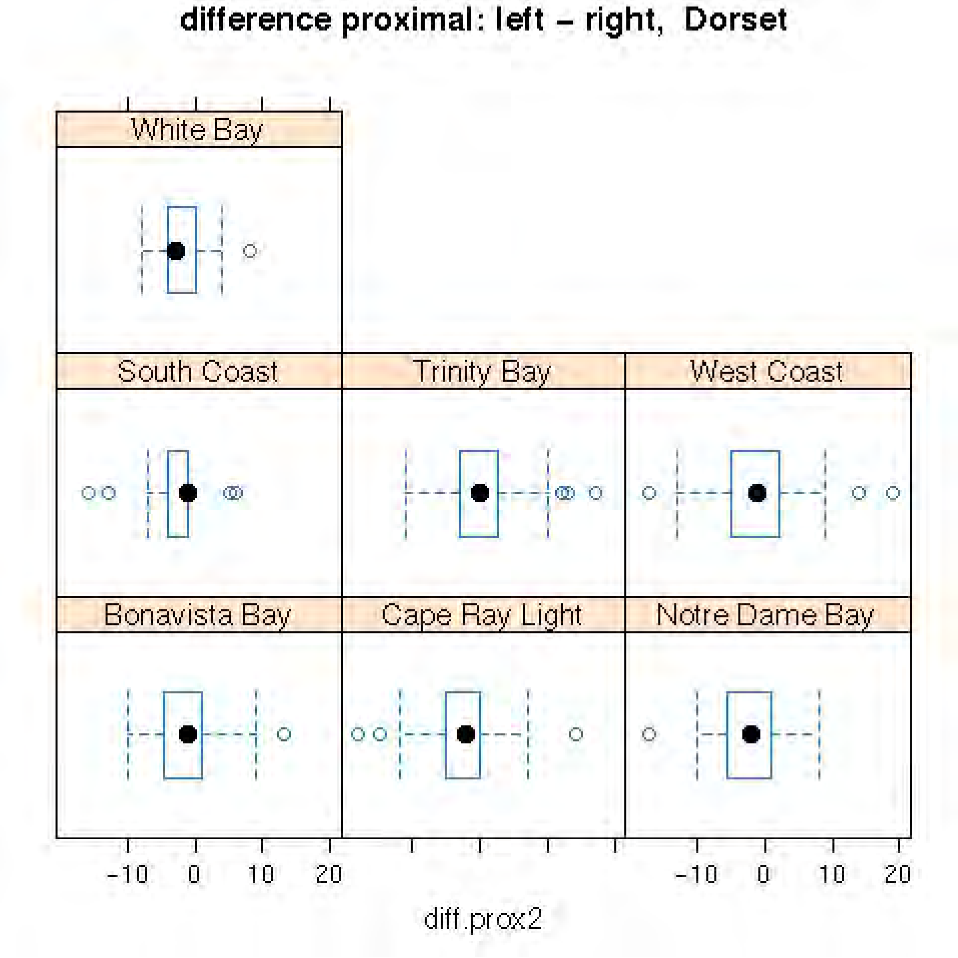


Fig.5.2B. Distribution of the Differences between Left and Right Proximal Angles, for Dorset Endblades, by Region.

● = Median

Table 5.1. Occurrence of Greater and Equal Proximal Angles of Dorset Endblades in Newfoundland; Groswater Endblades Shown for Comparison

Region	Number	Prox. Equal	Prox. L Greater	Prox. R Greater
Newfoundland-Dorset	*N=380*	*34*	*120*	*226*
West Coast	N=142	15	50	77
White Bay	N=25	2	5	18
Notre Dame Bay	N=36	3	9	24
South Coast	N=13	0	2	11
Trinity Bay	N=68	8	27	33
Bonavista Bay	N=39	2	13	24
Cape Ray Light	N=57	4	14	39
Groswater—Factory Cove and Postville Pentecostal	N=41	2	19	20

5.2.1. Difference between Proximal Left and Proximal Right Angles

In analyzing the proximal angle data, there are systematic differences which usually can not be seen when looking at the endblades (see Fig.5.4 and 5.5). However, when working with the endblades in the photographic enlargements, it is possible to measure these angles. The data show that there are frequently small differences between the left and right proximal angles with the right angle usually the greater, and there is a regional pattern to the differences.

Fig.5.2A, Fig.5.2B and Table 5.1 show that for Dorset endblades the proximal right angle is more likely to be larger than the proximal left. In the box plot the difference between the left and right proximal angles are points on the x-axis. Where the left proximal angle is greater, the difference is a positive number and the data point falls to the right of zero; where the right proximal angle is greater, there is a negative result and the data point falls to the left of 0; for those endblades where both angles are equal, the data point falls on the 0. The box plots show where the middle quintiles fall, in every case falling around the 0 point, but more to the left than the right, that is more often the right is the larger angle. The central tendency of the data is that more endblades have right proximal angles that are greater than left; on the graph, the further to the left of 0 that the box falls, the more endblades there are with a greater right proximal angle. The table shows how many of the endblades in each region have equal, greater left and greater right proximal angles.

In all cases for Newfoundland and in each of the regions, the majority of Dorset endblades have proximal right angles greater than proximal left angles. However, for Trinity Bay and for the Groswater sites, the combined number of endblades where the proximal left angle is greater than the right and those where the proximal angles are equal exceeded the number of endblades where proximal right angles are greater. For White Bay, Notre Dame Bay, South Coast, and Cape Ray Light, the proximal right is at least twice as likely to be greater than the proximal left.

As mentioned, the actual difference between the two angles is usually only a few degrees. To test the significance of such a small (but consistent) difference, paired t-tests were run on the data. The tests compare the means of the differences taking into consideration the size of the sample (the degrees of freedom – df), the variance, and other relevant data. These t-tests answer the following two questions: (1) Are the means of the differences in the proximal angles the result of chance or do they reflect a real difference? (2) What is the degree of certainty with which the resulting statement can be made? In each test the null hypothesis is that the true difference in means is equal to 0. The alternative hypothesis is that the true difference in means is not equal to 0 or, in other words, that there is a real difference between the left and right proximal angles. The confidence level sought is 95 percent.

5.2.2. Paired T-Tests for Dorset Sites in Newfoundland, for Three Regions, and for the Two Groswater Sites

Paired t-tests were run on the Newfoundland, Trinity Bay, West Coast, and Bonavista Bay Dorset data. A paired t-test was also run on the Groswater endblade data to see whether and how they resemble the Dorset results.

Newfoundland Data:

This was the result of the t-test run on data from Newfoundland as a whole:

```
> t.test (prox.l, prox.r, paired=T)

        Paired t-test

data:   prox.l and prox.r
t = -5.3045, df = 379, p-value = 1.925e-07
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -1.911731 -0.877743
sample estimates:
mean of the differences
-1.394737
```

This result confirms that the difference in the mean of proximal left (76.32) and the mean of proximal right (77.71) is statistically significant. The null hypothesis that the two means are equal is rejected. With 95 percent certainty, the difference between the proximal angles is real and not the result of chance. The probability that the proximal angles are equal is approximately 1 out of 100,000,000 times, an extremely strong case for statistical significance for the right proximals being larger than the left. Whether making endblades like this was for hafting considerations or the result of handedness or skill of the maker or for some other reason, we can not tell from the data.

Regional Data:

Since this study is primarily concerned with looking at regional variation, paired t-tests were run on some of the regional data as well. Looking at the proximal left and proximal right angles for each region, the data show that in every region there are more proximal right angles that are greater than proximal lefts. The t-tests establish whether the differences are due to chance.

5.2.3. Trinity Bay Region Paired T-test

The Trinity Bay data offer the weakest case for a real difference in the proximal angles. The null hypothesis that the angles are equal is accepted, contrary to the results for Newfoundland. It can be concluded that 8 out of 10 times the difference between the means of the proximal angles could be due to chance. This is the result of the t-test for the Trinity Bay endblades:

```
> t.test(prox.r.tb, prox.l.tb, paired=T)

        Paired t-test

data:  prox.r.tb and prox.l.tb
t = 0.1931, df = 67, p-value = 0.8475
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
-1.098399  1.333693
sample estimates:
mean of the differences
0.1176471
```

5.2.4. West Coast Region Paired T-test

West Coast data looks like it would follow the pattern of Newfoundland though perhaps not as strongly. The t-test confirms this, rejecting the null hypothesis and showing that there is a probability that in only 1 out of 2000 times chance would account for the differences in the means of the angles. Though not as strongly significant as the Newfoundland data, the difference is still strongly significant for West Coast Region data. This is the result of the t-test for the West Coast Region endblades:

```
>t.test(prox.r.wc, prox.l.wc, paired=T)
```

```
        Paired t-test

>data:  prox.r.wc and prox.l.wc
t = 2.7533, df = 141, p-value = 0.006676
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 0.3475189   2.1172698
sample estimates:
mean of differences
1.232394
```

5.2.5. Bonavista Bay Region Paired T-test

The t-test results for Bonavista Bay data are that in approximately one out of ten times the difference in the means could be due to chance or, in other words, the difference in means is weakly significant. Although there are almost twice as many proximal right angles that are larger than proximal left, close to the proportion for West Coast region, the t-test found the statistical significance to be weak in the case of the Bonavista Bay data. These results reflect the smaller sample size in combination with the smaller difference in means. These are the results for the t-test for Bonavista Bay endblades:

```
        Paired t-test

>data:  prox.r.bb and prox.l.bb
t = 1.7352, df = 38, p-value = 0.0908
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.2264546  2.9444033
sample estimates:
mean of the differences
1.358974
```

5.2.6. Groswater Paired T-test

The results of the t-test are quite different when applied to Groswater data. Here the results indicate that there is no statistical significance in the difference between the means of the proximal left and proximal right angles. The t-test shows that in 8 out of 10 cases, the difference could have been due to chance. The results are that the null hypothesis, that the difference in means is due to chance, should be accepted. This is quite distinct from the results found in the data on proximal angles for the Dorset and is a measurable difference between Dorset and Groswater endblades. These are the results of the t-test on Groswater endblades:

```
        Paired t-test

>data:  prox.r and prox.l
t = 0.1963, df = 40, p-value = 0.8453
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -1.360088  1.652771
sample estimates:
mean of the differences
0.1463415
```

It would be possible to get these statistical results if there were as many endblades where proximal left is greater than proximal right (the opposite of the results found by this study) but for this the proximal right would have to be **significantly** greater than the proximal left. However, a simple count of endblades in the study shows that for the Newfoundland Dorset and for every region, there are more endblades where the proximal right angle is greater than the proximal left (see data summarized in Table 5.1).

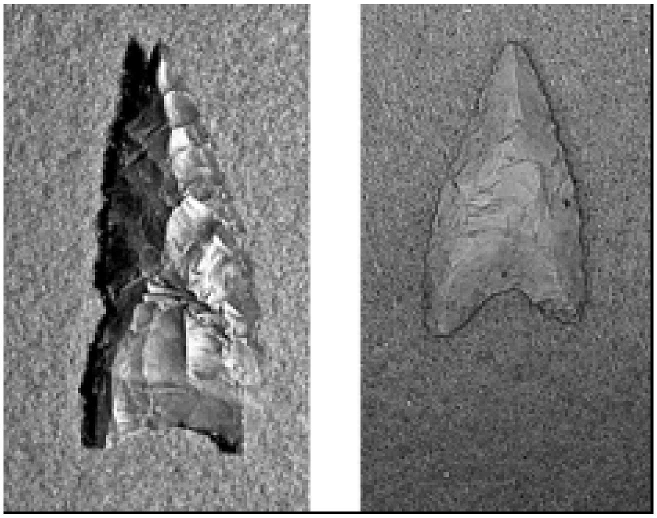
5.2.7. Measuring the Angles from the Type Site

To see if the pattern of a larger right proximal angle might also exist in Dorset endblades from the Arctic, I measured the angles of two endblades from Cape Dorset that were illustrated in Jenness' 1925 article (431, Figure 4). The left proximal of endblade “f” in the illustration is 70 degrees, while the right proximal angle is 71 degrees. For endblade “g” in the same illustration, the proximal left is 70 and the right is 72. As in the Dorset endblades from Newfoundland, the pattern of a slightly greater right proximal angle is also seen in these endblades.

5.2.8. Summary of Data on Angle Differences

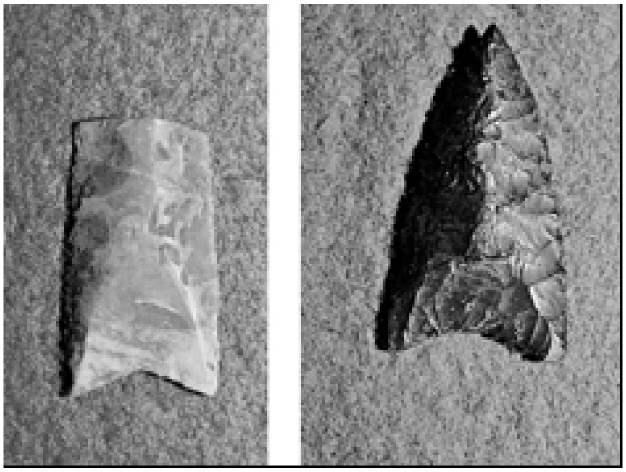
The measurements and statistical tests support what can be seen by looking at the data and counting the number of endblades where the right proximal angle is greater than the left: In every instance – each region and in Newfoundland, the proximal right angle is larger; it is also true for the two endblades from Cape Dorset. However, this is not the case in the small sample of Groswater endblades where there is an even distribution – the Groswater sample does not show the same preference for larger right proximal angles, as is confirmed both by counting the instances of greater left and greater right proximal angles and by the t-test which confirmed there is no statistical significance to the distribution.

The difference in proximal angles is only visible to the eye when there are several degrees difference between them; when the difference is slight – one or a few degrees – it is not visible. Measuring the angles as described in Chapter 4 makes it possible to detect the difference and compare this aspect of regional variation in Dorset endblades.



a. b.

Fig.5.3. These endblades illustrate unequal proximal angles. In a. the left proximal angle is 13 degrees greater than the right. In b. the right proximal angle is 18 degrees greater than the left. These endblades were unusual in the relatively great difference between the proximal angles. Both endblades were from Cape Ray Light. Measurements: a: h 3.9 x w 1.5 cm; b: h 2.73 x w 1.45 cm



a. b.

Fig.5.4. The left and right proximal angles of each of these endblades are equal, that is, in a. both proximal angles are 82 degrees, and in b. both proximal angles are 76 degrees. Endblade a. is a ground and flaked endblade (incomplete) from Dildo Island in Trinity Bay Region. Endblade b. is from Phillip's Garden in West Coast Region. Measurements: a: h NA x w 1.56 cm; b: h 3.3 x w 1.75 cm

a. b.

Fig.5.5. The proximal angles of these two endblades are typical of Dorset endblades in Newfoundland in that there is not a great difference between the angles. In endblade a. the left proximal is larger than the right by 3 degrees. In endblade b. the right is larger than the left by 2 degrees. Both endblades come from sites in Notre Dame Bay Region; a. is from Rattling Brook and b. is from Swan Island. Measurements: a: h 2.48 x w 1.6 cm; b: h 3.96 x w 1.95 cm

5.3. Sum of the Three Angles of Endblades

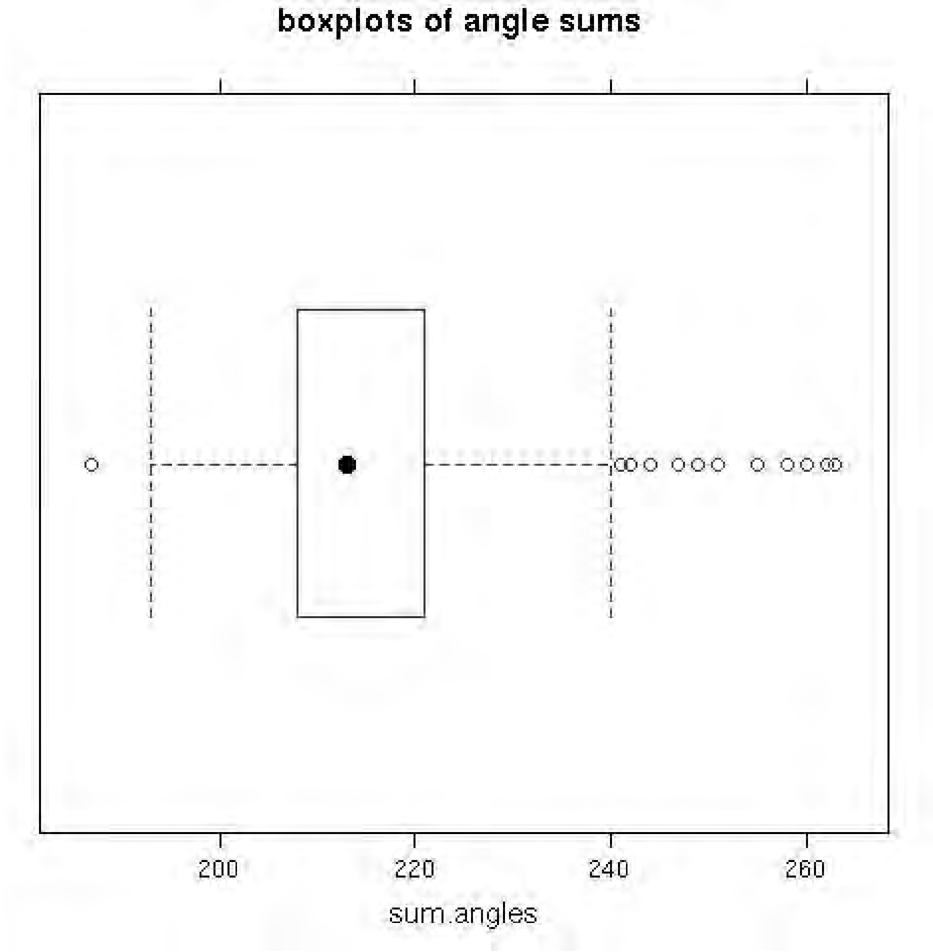


Fig.5.6A. Sum of Three Angles of Dorset Endblades for Newfoundland

● = Median

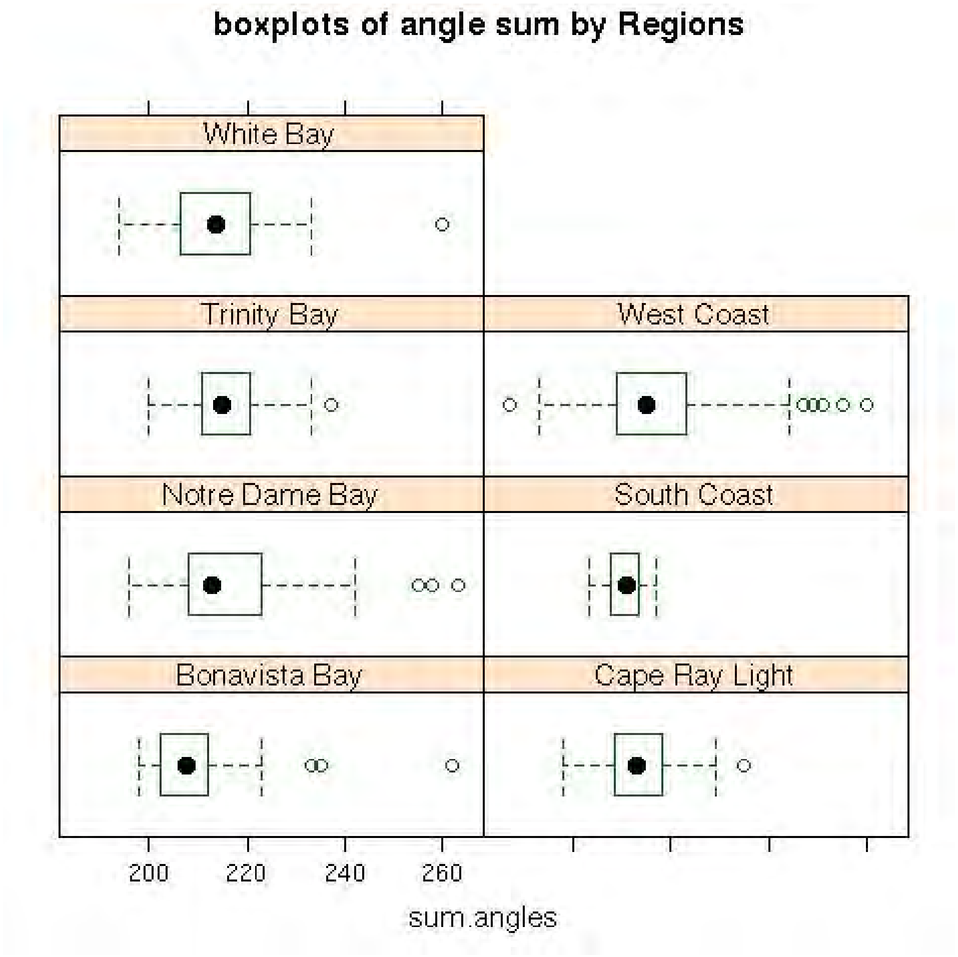


Fig.5.6B. Sum of Three Angles of Dorset Endblades, by Regions

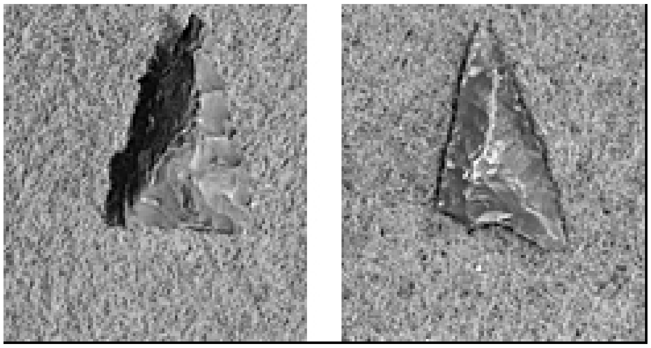
● = Median

Table 5.2. Measures of Central Tendency for Sum of Angles for Dorset Endblades: Mean, Median, and Variance

Region	Number	Mean	Median	Variance
Newfoundland	*N=334*	*215.4*	*213*	*143.68*
West Coast	N=135	217.3	215	161.68
White Bay	N=20	214.6	213.5	217.94
Notre Dame Bay	N=30	218.5	213	288.88
South Coast	N=7	210.4	211	23.95
Trinity Bay	N=51	215.7	215	57.07
Bonavista Bay	N=36	210.3	207.5	149.75
Cape Ray Light	N=55	212.9	213	58.68

The sum of the three angles shows in a single number some attributes not shown by other measurements: (1) The sum of the three angles of each endblade is always greater than 180 degrees because Dorset endblades are triangular but not perfect triangles; it is rare that the sum of the angles of an endblade is less than 200 degrees. (See Fig.5.7 for two examples of endblades with sums of angles under 200.) (2) The lateral (side) edges of Dorset endblades flare outward; by measuring the angles from a standardized point from each vector, it is possible to capture some of this shape while at the same time smoothing out the bumps and curves that characterize the shape of Dorset endblades and make it difficult to describe this aspect of the shape of endblades. (3) The sum of the angles is unrelated to the measurements of size or the width-height ratio since endblades of distinctly different sizes and shapes can have similar sums of angles, as can be seen very clearly in Fig.5.8. (4) Those with more than 230 degrees usually have a snub-nosed distal end that does not appear to have resulted from having been broken though it may have been because the endblade was never completed. (5) The means and the medians for the sum of the angles are very close with the exception of those from Notre Dame Bay region. The variance for the sum of angles is enormous compared to the variances for some of the other attributes that were analyzed in this study, but this is an artifact of measurement.

The boxplots show the range of variation is not great except for the West Coast and Notre Dame Bay regions.



a. b.

Fig.5.7. These endblades, each about 1.5 cm in height, are examples of very low sums of angles. a. 198 degrees; from Cow Cove, White Bay Region.
b. 187 degrees; from Phillip's Garden, West Coast Region.
Measurements: a: h 1.55 x w 0.94 cm; b: h 1.4 x w 0.76 cm

a. b.

Fig.5.8. The sum of the three angles for these endblades falls around the mean sum for all Newfoundland. a. 216 degrees, from Stock Cove, Trinity Bay; b. 213 degrees, from Cape Ray Light. Despite their very different shapes, the sum of angles is very close.
Measurements: a: h 5.0 x w 1.37 cm; b: h 2.2 x w 1.82 cm

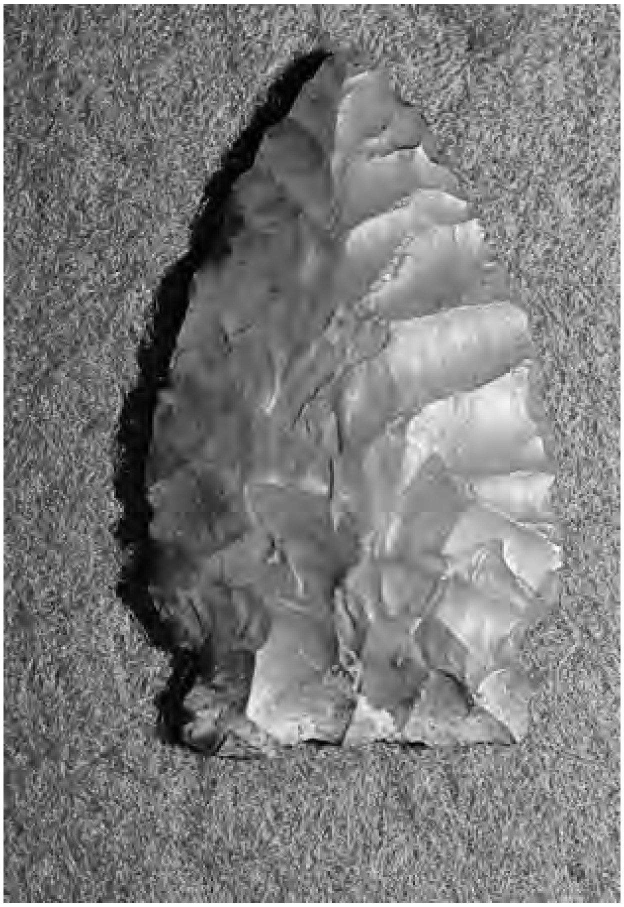


Fig.5.9. The sum of the angles of this endblade is 244 degrees, among the largest looked at in this study. From Phillip's Garden, West Coast Region. Measurements: h 3.54 x w 2.1 cm

5.4. Height of Endblades

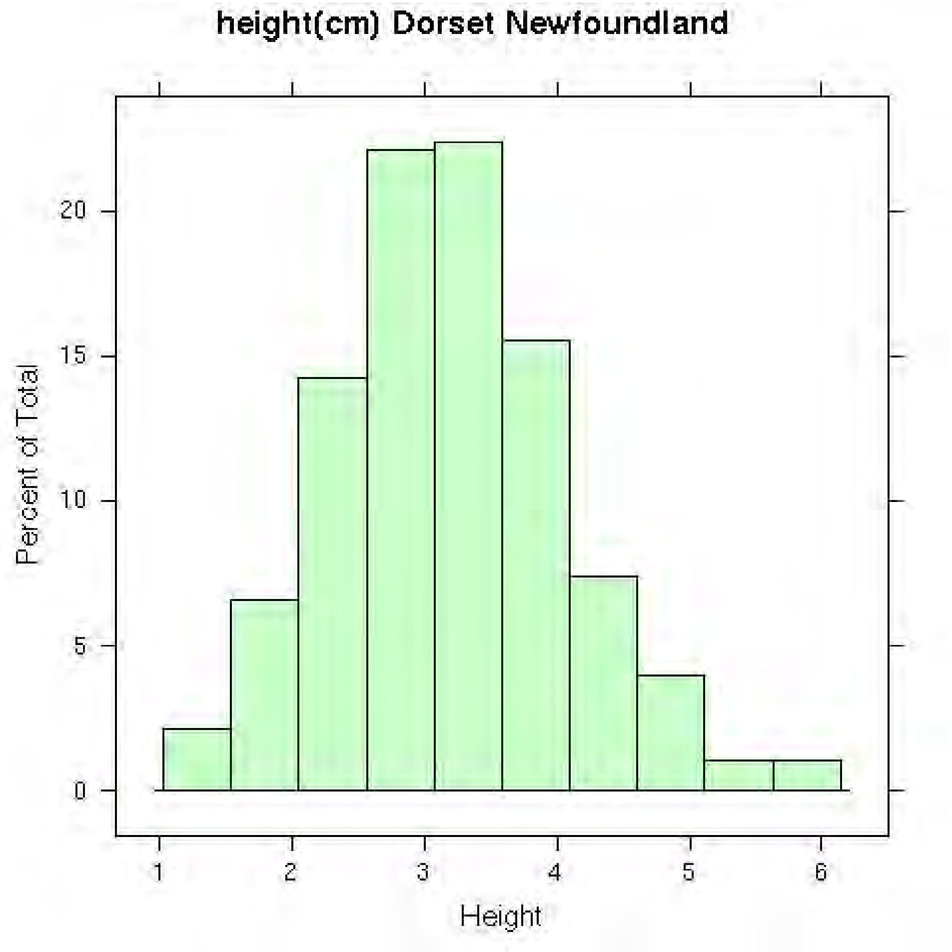


Fig.5.10A. Height (in Centimeters) of Endblades for Newfoundland

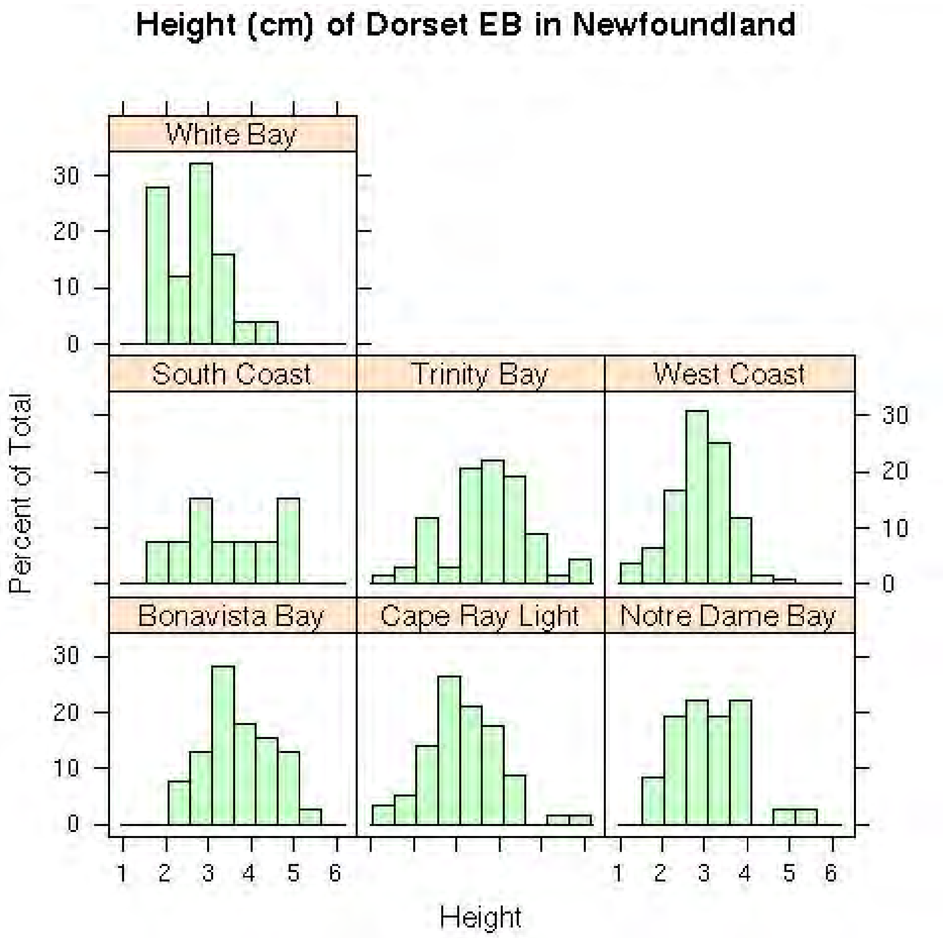


Fig.5.10B. Height (in Centimeters) of Endblades, by Region

Table 5.3 Measures of Central Tendency for Height (in Centimeters) of Dorset and Groswater Endblades for Newfoundland and Labrador: Mean, Median, and Variance

Region	Number	Mean	Median	Variance
Newfoundland	*N=337*	*3.18*	*3.14*	*0.749*
West Coast	N=102	2.91	2.93	0.42
White Bay	N=24	2.61	2.59	0.53
Notre Dame Bay	N=39	3.07	2.95	0.625
South Coast	N=9	3.42	3.5	1.153
Trinity Bay	N=65	3.73	3.8	0.952
Bonavista Bay	N=38	3.71	3.63	0.574
Cape Ray Light	N=60	3.14	3.1	0.749
Labrador Dorset	N=20	3.07	3.15	0.41
Groswater sites at Factory Cove (Nfld) and Postville Pentecostal (Lab)	N=36	3.11	3.09	0.241

The overall range of endblade height is about 2 to 6 centimeters with notable variations between the regions. More than two-thirds of the endblades from West Coast and White Bay are under 3 centimeters in height, while the height of nearly half of the endblades from Bonavista Bay and Trinity Bay is over 4 centimeters. The mean and median heights for Cape Ray Light and Notre Dame Bay endblades are about 3 centimeters. The mean and median of the Labrador endblades resemble those of Cape Ray Light and Notre Dame Bay. The means for height for the Labrador Dorset, the Newfoundland Dorset, and the combined Newfoundland/Labrador Groswater endblades range from 3.07 to 3.18 centimeters, a variation of 0.11 centimeters. The mean, median, and variance of Cape Ray Light, the region comprised of only one site, are very similar to the island-wide group of 31 sites. The data on endblade height from West Coast and Cape Ray Light show that they are less similar to each other for this attribute than each is to other regional groups, additional support for the decision to analyze them as two regions.

5.5. Width of Endblades

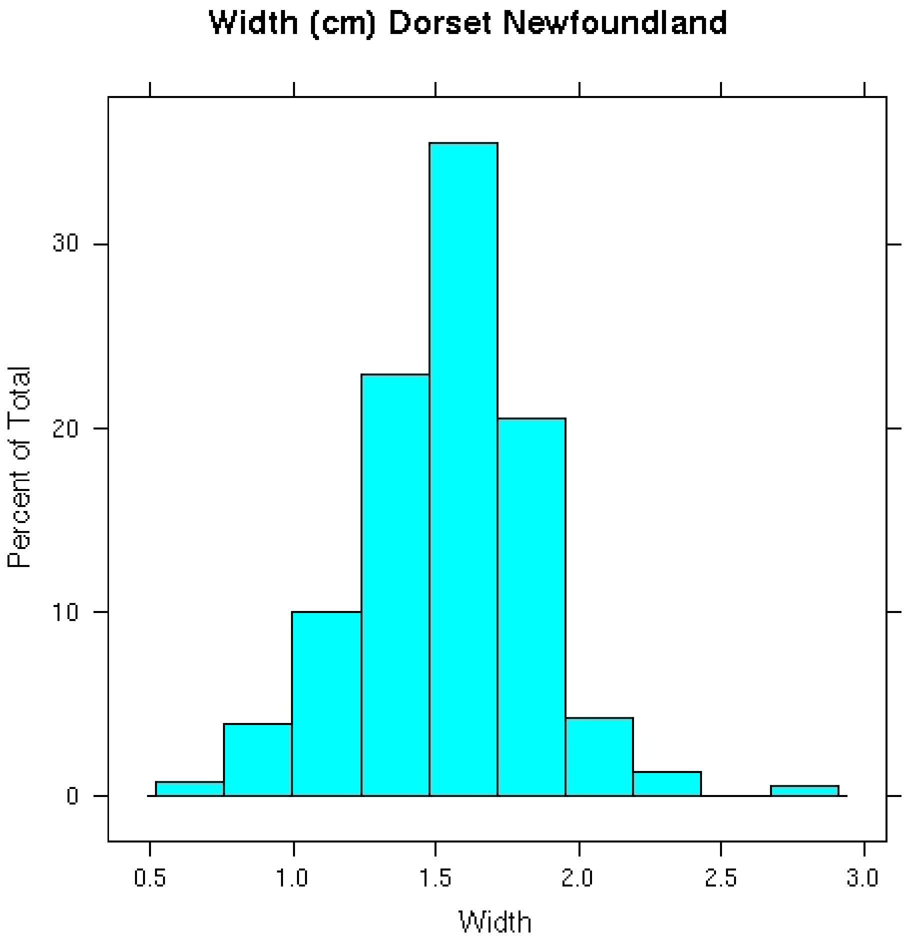


Fig.5.11A. Width (in Centimeters) of Endblades for Newfoundland

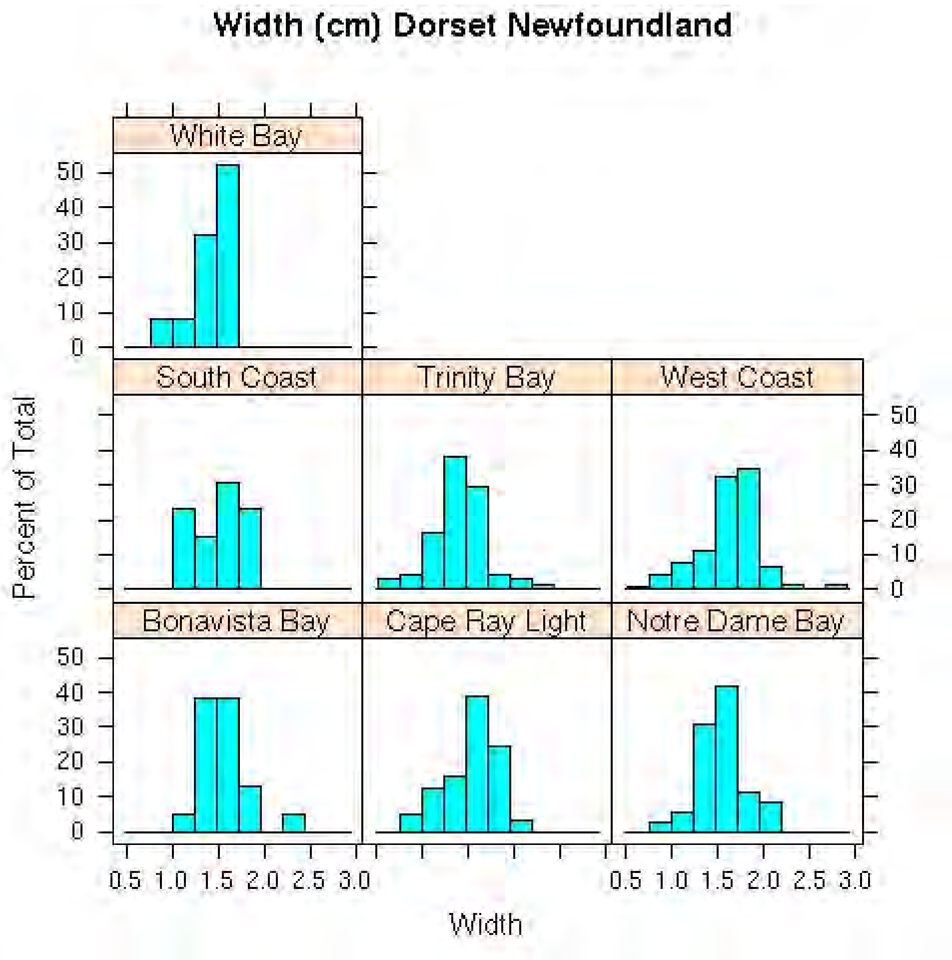


Fig.5.11B. Width (in Centimeters) of Endblades, by Region

Table 5.4. Measures of Central Tendency for Width (in Centimeters) of Dorset Endblades for Newfoundland and Labrador: Mean, Median, and Variance

Region	Number	Mean	Median	Variance
Newfoundland	*N=350*	*1.55*	*1.57*	*0.09*
West Coast	N=106	1.64	1.7	0.106
White Bay	N=25	1.43	1.5	0.049
Notre Dame Bay	N=40	1.55	1.53	0.061
South Coast	N=13	1.49	1.56	0.096
Trinity Bay	N=68	1.42	1.43	0.08
Bonavista Bay	N=39	1.55	1.5	0.056
Cape Ray Light	N=59	1.55	1.62	0.087
Labrador	N=23	1.7	1.68	0.11
Groswater sites: Factory Cove (Nfld) and Postville Pentecostal (Lab)	N=42	1.32	1.3	0.068

The widest endblades in Newfoundland are from West Coast and the narrowest are from Trinity Bay. More than 70 percent of endblades in the selections from West Coast, White Bay, Trinity Bay, Bonavista Bay, and Notre Dame Bay are between 1.25 and 1.75 cm wide. The mean width of endblades from Notre Dame Bay, Bonavista Bay and Cape Ray Light is 1.55 cm, slightly less than the West Coast mean width of 1.64 cm. The actual differences are quite small, however; the difference between the greatest mean width (West Coast) and the least (Trinity Bay) is 0.22 centimeters for Newfoundland. By looking at the regions included to make the comparisons more interesting, it can be seen that the mean width for Labrador Dorset is wider than for any Newfoundland Dorset region while the mean width for the Groswater is narrower than any for any Dorset region.

5.6. Ratio of the Width to the Height

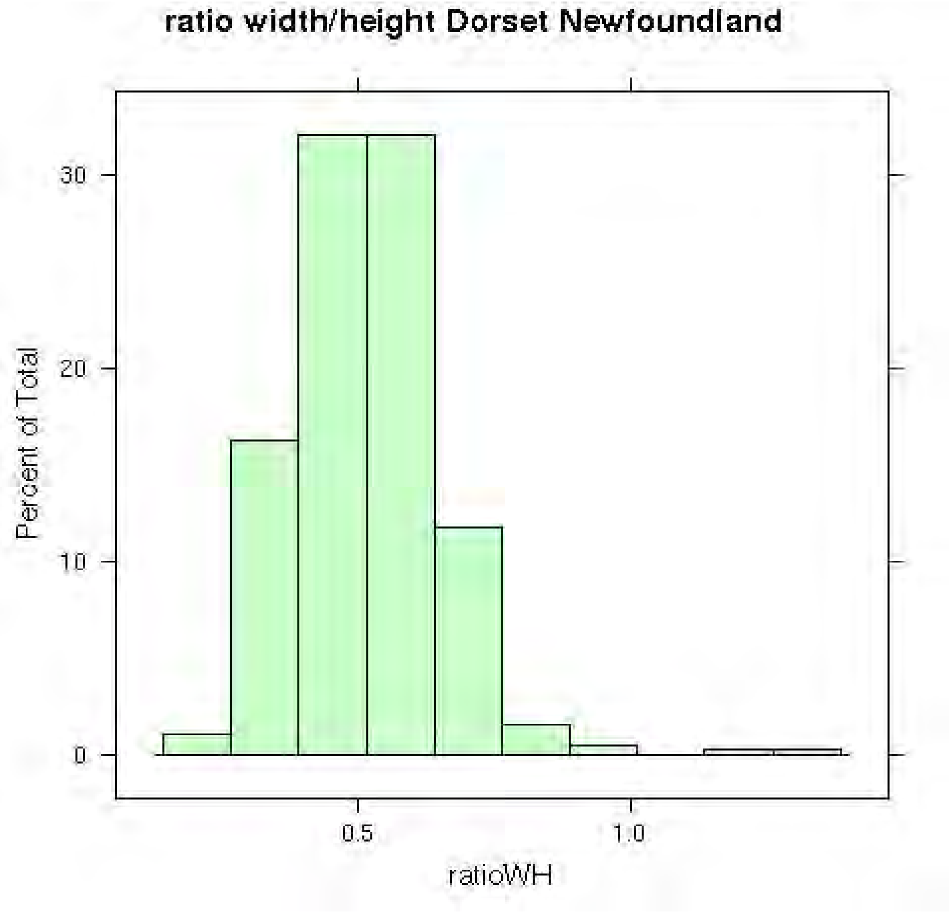


Fig.5.12A. Ratio of Width to Height for Endblades for Newfoundland

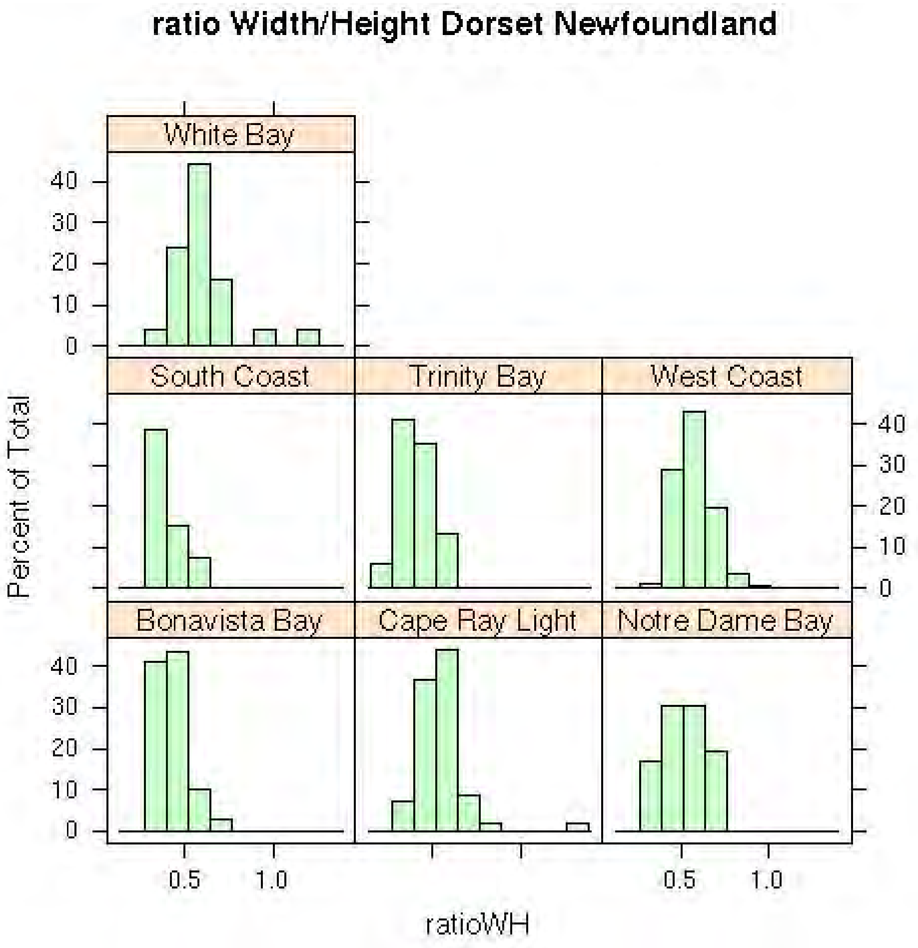


Fig.5.12B. Ratio of Width to Height for Endblades, by Region

Table 5.5. Measures of Central Tendency for Ratio of Width to Height of Dorset and Groswater Endblades for Newfoundland and Labrador: Mean, Median, and Variance

Region	Number	Mean	Median	Variance
Newfoundland	*N=335*	*0.51*	*0.51*	*0.018*
West Coast	N=102	0.57	0.57	0.01
White Bay	N=24	0.6	0.56	0.034
Notre Dame Bay	N=39	0.53	0.52	0.014
South Coast	N=8	0.39	0.36	0.008
Trinity Bay	N=65	0.4	0.4	0.007
Bonavista Bay	N=38	0.43	0.4	0.008
Cape Ray Light	N=59	0.53	0.53	0.02
Labrador	N=20	0.56	0.55	0.01
Groswater sites: Factory Cove (NF) and Postville Pentecostal (Lab)	N=36	0.43	0.42	0.004

For most regions and for Newfoundland the means and medians are identical, an indication that the means closely represent the central tendency of the data for each population. For the width/height ratio the means/medians vary slightly from region to region, showing that there is not a single template followed across the island. The greatest width/height ratios are for White Bay and West Coast, 0.6 and 0.58 respectively; having the greatest ratio of width to height translates into endblades that are wider in relation to height (or shorter in relation to width). The West Coast and White Bay endblades have a greater ratio than the endblades from Trinity Bay and Bonavista Bay, where width/height ratios are 0.4 and 0.43, respectively. These data support the observations that the endblades from White Bay and West Coast are shorter and wider than endblades from other regions, and those from Trinity Bay and Bonavista Bay are longer and narrower.

5.7. Comparing Thickness of Endblades

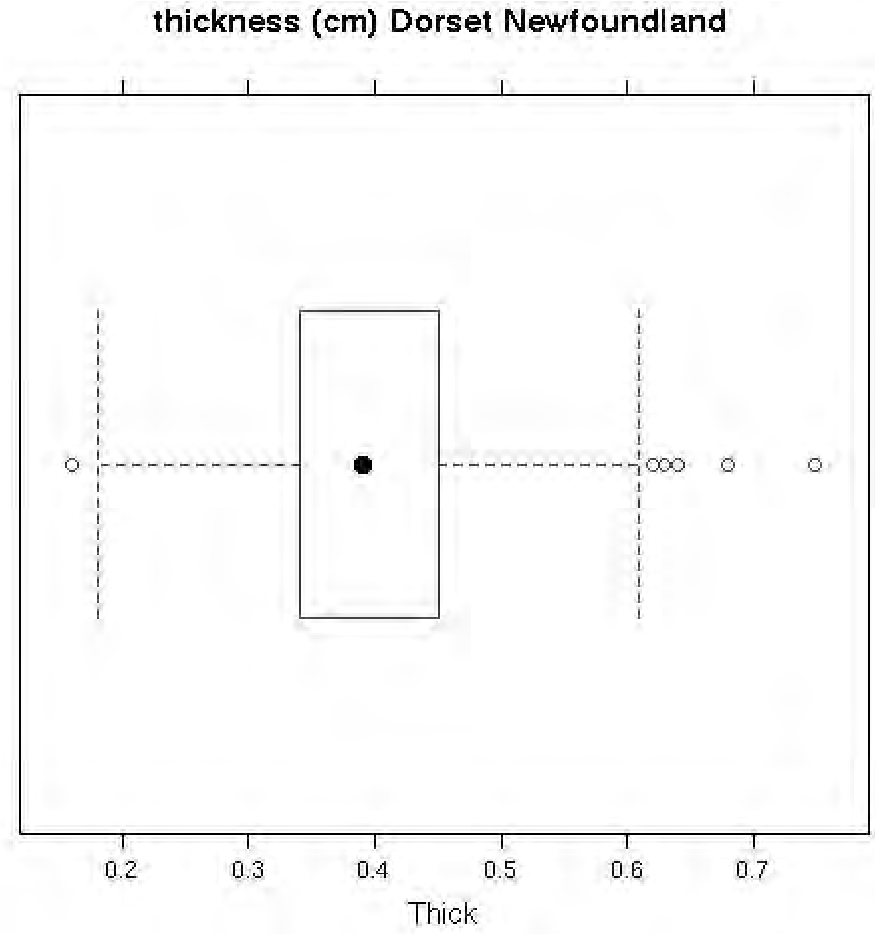


Fig.5.13A. Thickness (in Centimeters) of Endblades for Newfoundland

● = Median

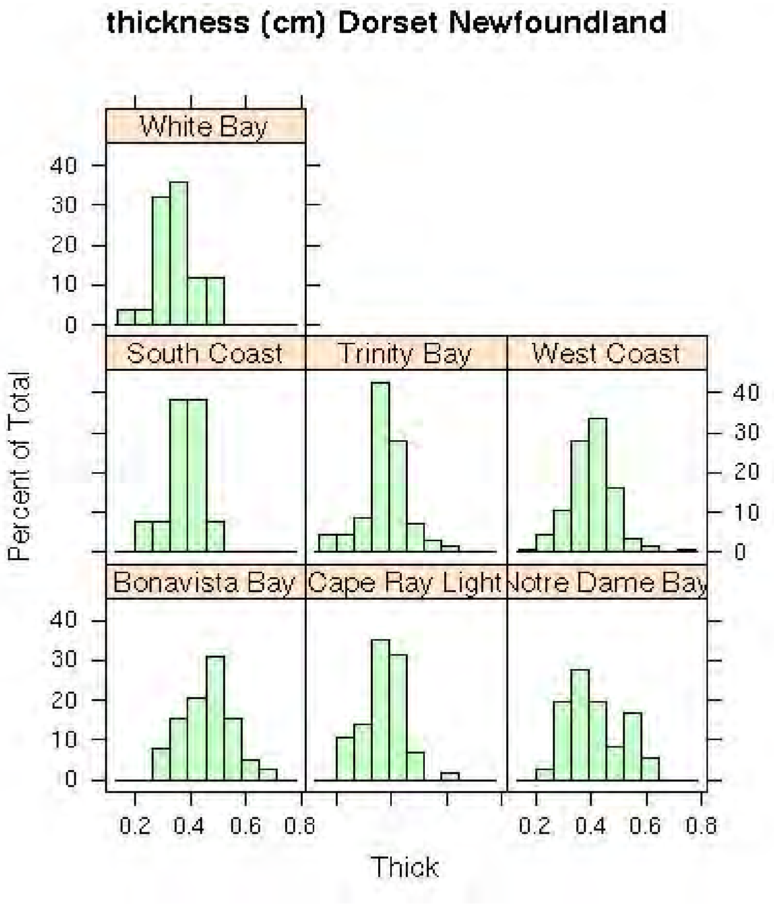


Fig.5.13B. Thickness (in Centimeters) of Endblades, by Region

Table 5.6. Measures of Central Tendency for Thickness (in Centimeters) of Dorset Endblades for Newfoundland and Regions, and for Labrador Groswater: Mean, Median, and Variance.

Region	Number	Mean	Median	Variance
Newfoundland	*N=378*	*0.39*	*0.39*	*0.007*
West Coast	N=141	0.4	0.4	0.007
White Bay	N=25	0.35	0.34	0.005
Notre Dame Bay	N=36	0.41	0.39	0.009
South Coast	N=13	0.38	0.38	0.005
Trinity Bay	N=68	0.37	0.38	0.007
Bonavista Bay	N=38	0.46	0.46	0.008
Cape Ray Light	N=57	0.37	0.38	0.005
Groswater sites: Factory Cove (Nfld) and Postville Pentecostal (Lab)	N=42	0.39	0.39	0.006

While endblade thicknesses range from less than 0.2 cm to 0.8 cm, the majority of the endblades are between 0.3 cm and 0.5 cm thick. This narrow range of variation may have been the influenced by one or more of the following: limitations of thinning technology, the properties of the raw material, a need for a degree of standardization to meet hafting requirements, a minimum thickness needed for the tool not to fail during the hunt, or the small size of the endblades and the equally small harpoon heads into which they would have been inserted. The means and medians of the thickness data are identical within most regions, indicating that they represent the central tendency of the data. The variances of the data are consistently very small, indicating both the tight clustering of the data around the mean and the small measurement being examined. The thinnest endblades are found in Trinity Bay, White Bay, and West Coast regions, with West Coast having both the thickest and the thinnest in this study.

The significance of the thickness of Dorset endblades is suggested by a report of an experiment linking projectile point durability to thickness (Cheshier and Kelly

2006:353-363). For their experiment, Cheshier and Kelly stated that it is “not necessary to explain projectile point shape; projectile points of different shapes are different styles, different ways to accomplish the same task of killing game” (353). Since points made in different styles can kill the same prey, the artisans and hunters are making a selection among stylistic options when they decide how to make their point. However, it is not the case that each different style accomplished the task of killing the game in the same way. The different shapes perform differently and the point makers undoubtedly weighed these considerations when deciding on point style. Through experimentation found that while thin, narrow points penetrated the hide of an animal better, it was wide, thick points that did more damage to the animal by causing larger wounds and greater bleeding.

Using a test set of fifty specially made long and short obsidian points of varying thicknesses, Cheshier and Kelly observed how many times the points could be shot into a deer carcass before breaking. They found that, to a small but statistically significant degree, the thicker points last longer without breaking. They point out that flintknappers find thickness difficult to control; perhaps ancient hunters resorted to making more supportive hafting to improve point durability (362). They questioned whether durability was even sought by hunters. One of the tool makers' objectives in making projectile points that broke on impact may have been to absorb some of the impact shock and protect the shaft and foreshaft which were more difficult to make than the points (362).

5.8. Ratio of Thickness to Height

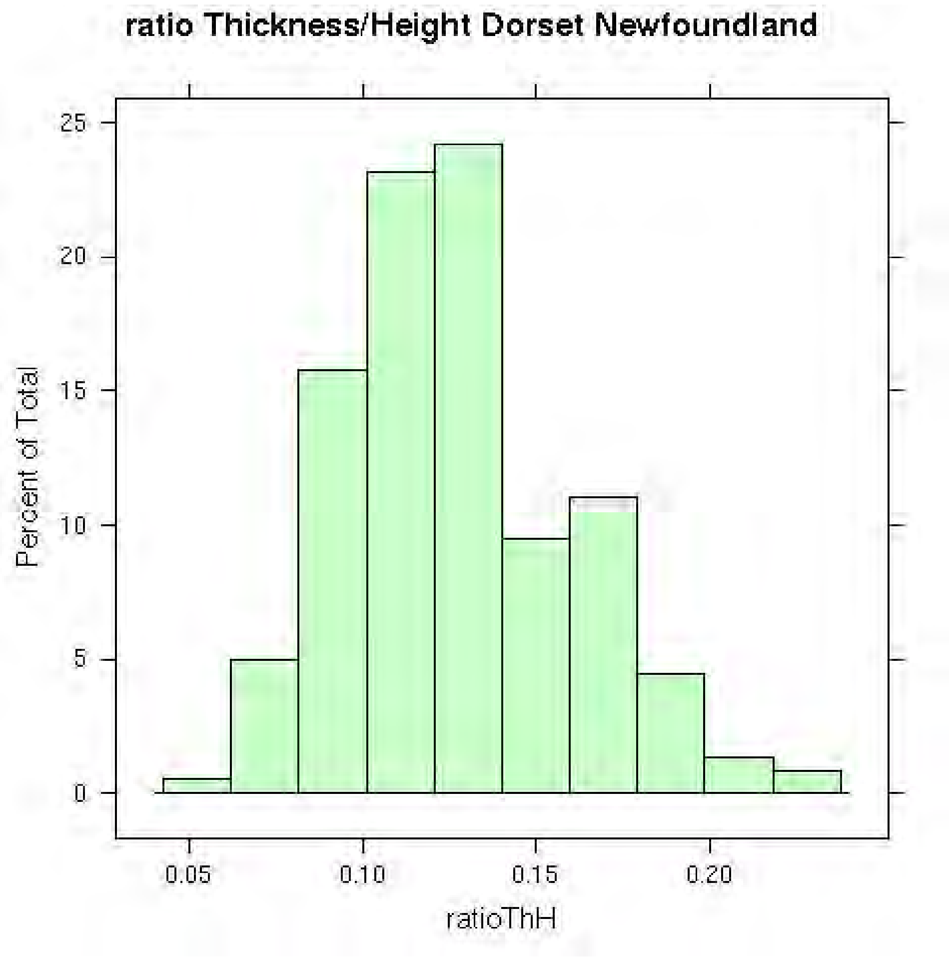


Fig.5.14A. Ratio of Endblade Thickness to Height for Newfoundland

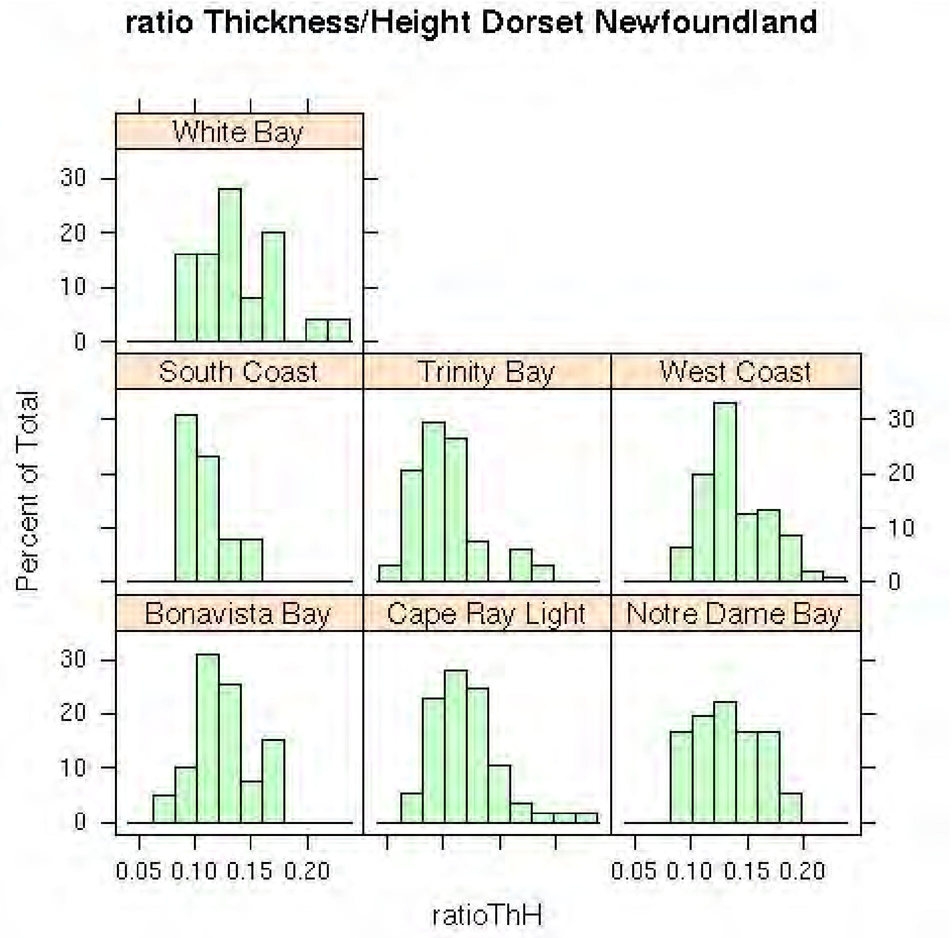


Fig.5.14B. Ratio of Endblade Thickness to Height for Dorset Sites, by Region

Table 5.7. Measures of Central Tendency of Ratio of Thickness to Height of Dorset Endblades for Newfoundland: Mean, Median and Variance

Region	Number	Mean	Median	Variance
Newfoundland	*N=364*	*0.13*	*0.13*	*0.0009*
West Coast	N=137	0.14	0.14	0.0007
White Bay	N=24	0.14	0.14	0.001
Notre Dame Bay	N=35	0.14	0.14	0.0007
South Coast	N=9	0.11	0.11	0.0004
Trinity Bay	N=65	0.1	0.1	0.0008
Bonavista Bay	N=37	0.13	0.13	0.0006
Cape Ray Light	N=57	0.12	0.12	0.001

The means and medians are identical for the ratio of thickness to height. With the exception of Cape Ray Light the variances are extremely small within each region. The height of the Trinity Bay endblades in relation to their thickness yields a small mean height to thickness ratio. There is a bimodal distribution for Trinity Bay and White Bay while there is a nearly normal distribution of the data for West Coast, Cape Ray Light and Newfoundland; this could be due to an even distribution of the ratio or to the fact that these three represent the largest samples of endblades and are reflecting the general tendency that the larger the sample, the more normal the distribution is likely to be. The variance of this ratio is affected by the tightly constrained thickness data.

5.9. Comparing Basal Indentation in Endblades

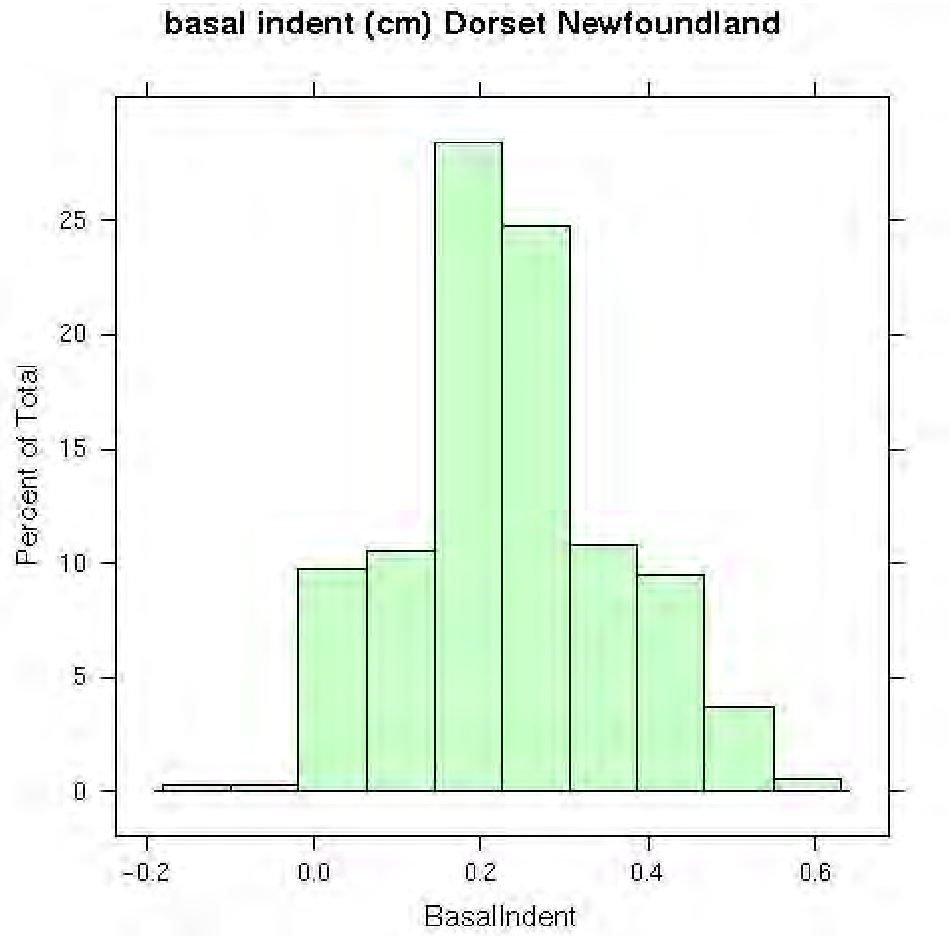


Fig.5.15A. Basal Indent (in Centimeters) of Endblades for Newfoundland

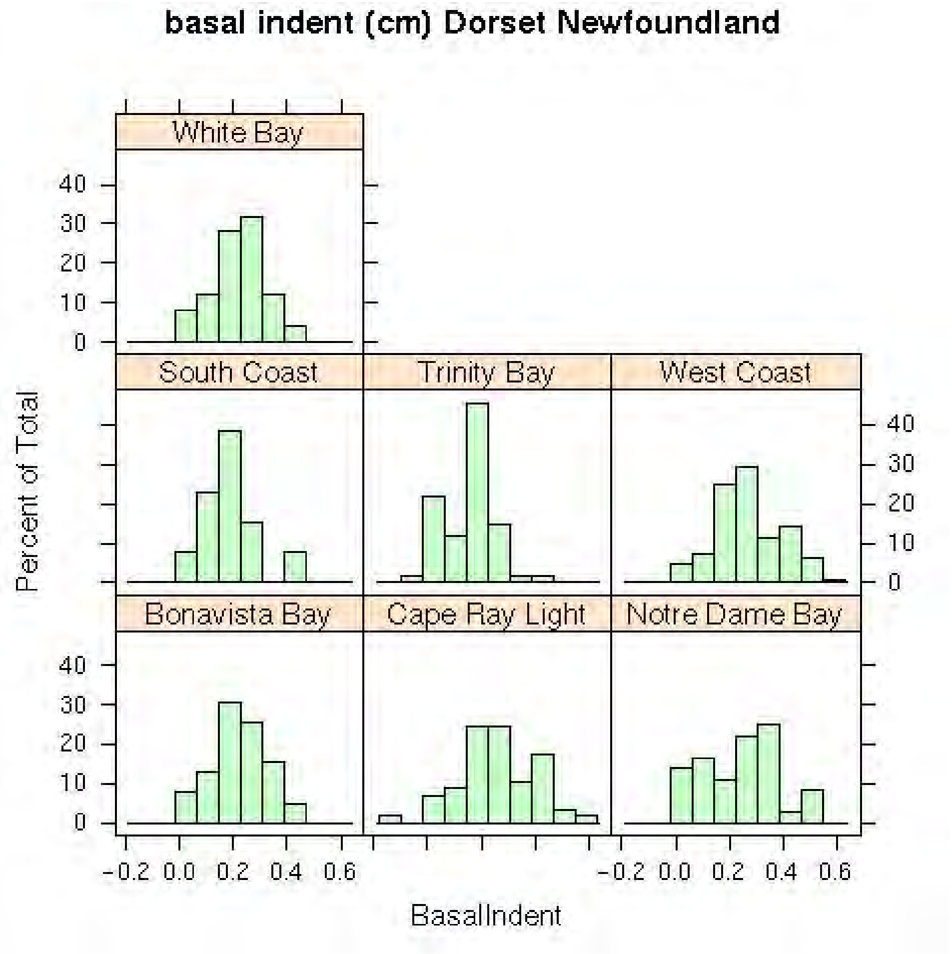


Fig.5.15B. Basal Indent (in Centimeters) of Endblades, by Region

Table 5.8. Measures of Central Tendency for Basal Indent (in Centimeters) of Dorset and Groswater Endblades for Newfoundland, Regions, and Labrador: Mean, Median, and Variance

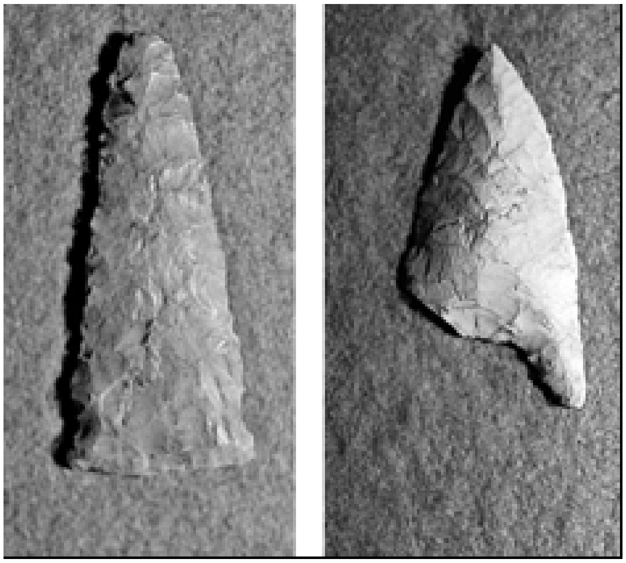
Region	Number	Mean	Median	Variance
Newfoundland	*N=346*	*0.23*	*0.23*	*0.016*
West Coast	N=106	0.27	0.28	0.015
White Bay	N=24	0.23	0.23	0.011
Notre Dame Bay	N=39	0.24	0.29	0.02
South Coast	N=12	0.19	0.19	0.012
Trinity Bay	N=67	0.15	0.18	0.01
Bonavista Bay	N=38	0.22	0.22	0.011
Cape Ray Light	N=60	0.26	0.25	0.021
Labrador	N=22	0.18	0.21	0.09
GW: Factory Cove	N=33	-0.023	0.000	0.009
Postville Pentecostal	N=10	-0.022	0.000	0.004

Although the absolute range of the basal indent is small, the endblades themselves being quite small, the regions show that there are regional patterns: the basal indents of White Bay, Notre Dame Bay, Bonavista Bay, and South Coast fall in the middle, between the steeply indented endblades of West Coast and Cape Ray Light at one end and the minimally indented ones from Trinity Bay at the other. Among the Newfoundland Dorset regions, the means and medians are close for most regions. The greatest mean indent is for the West Coast region (0.27 cm) and the least for Trinity Bay (0.15 cm). Harp observed that a steep basal indent is characteristic of endblades from Phillip's Garden (1964:130).

The mean basal indentation for Newfoundland is 0.23 cm and the variance is 0.016. The great difference in the basal indent could have been a stylistic marker or could have been related to differences in hafting technology. The Dorset in Labrador did not make deep indents.

The statistical signature of the characteristically side-notched endblades of the Groswater is entirely different. The mean indents are negative because there are one or two endblades with convex bases among the more typical straight-based examples. Groswater endblades were hafted by tying them on rather than inserting them into the harpoon head.

The means for the basal indent for all the Newfoundland Dorset regions range from 0.15 to 0.27 centimeters. The histogram shows the basal indents for the Newfoundland Dorset range from a negative indentation (for a few convex-based specimens) to specimens where the indent is over 0.6 cm. Figure 5.16 shows what this looks like: A is one of the few convex endblades; B, despite its missing proximal, can be seen to have a steep indentation; both are from the highly variable Cape Ray Light site.



a. b.

Fig.5.16. These endblades show the range of basal indentation found in the endblades in this study. Endblade a. has negative indent while endblade b. is deeply indented, which can be seen despite the missing left proximal. Both endblades were from Cape Ray Light. Measurements: a: h 3.9 x w 1.62 cm; b: h 3.25 x w 1.7 cm Basal indentations: a: -0.15 cm; b: 0.6 cm

5.10. Ratio of Basal Indent to Height in Dorset Endblades

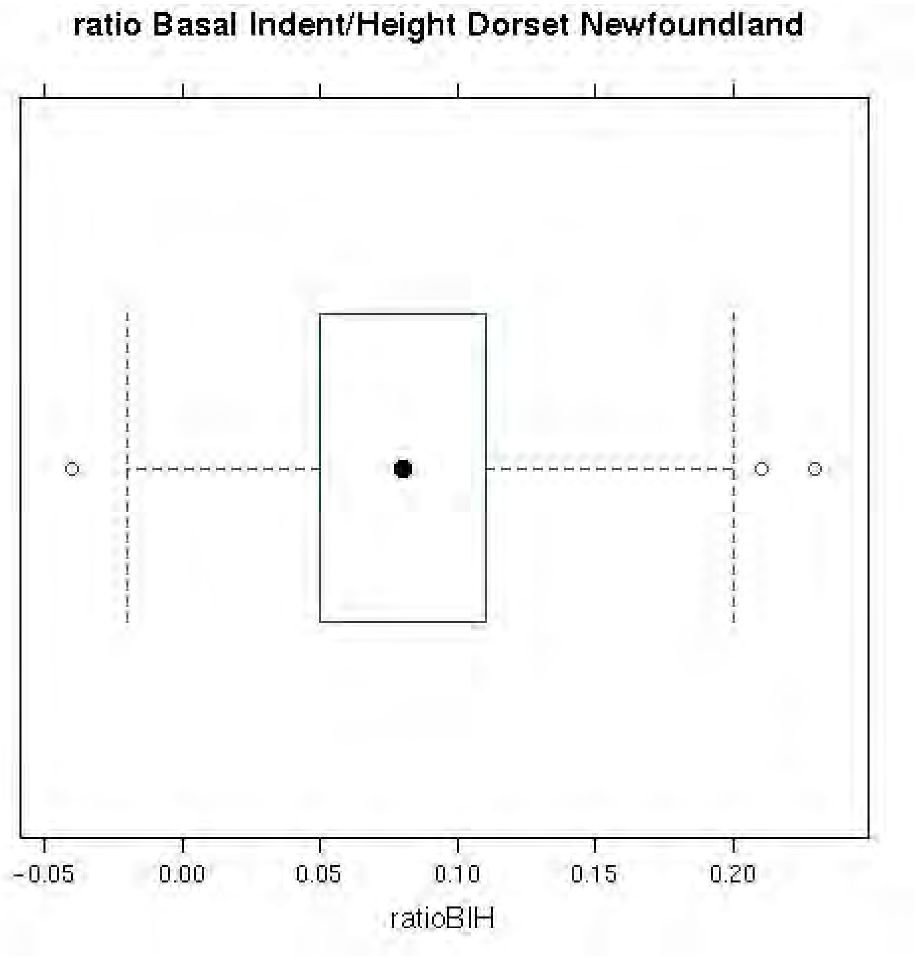


Fig.5.17A. Ratio of Basal Indent to Height for Newfoundland

● = Median

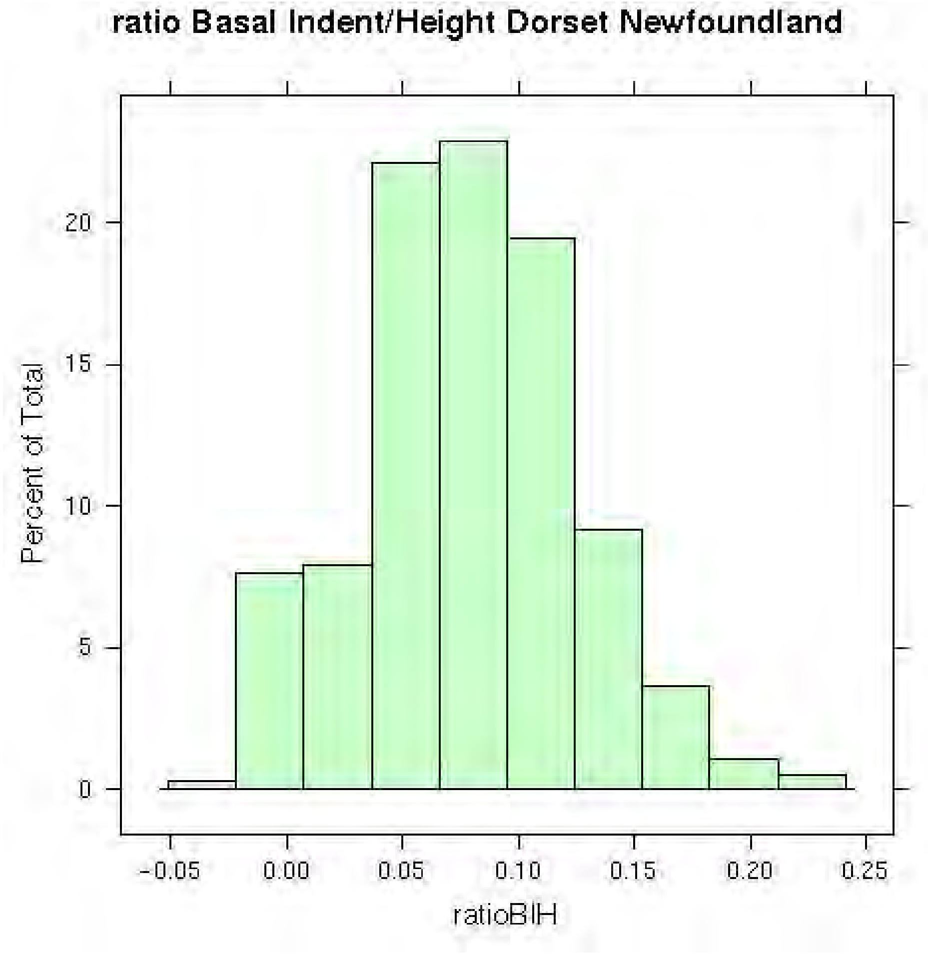


Fig.5.17B. Ratio of Basal Indent to Height for Newfoundland

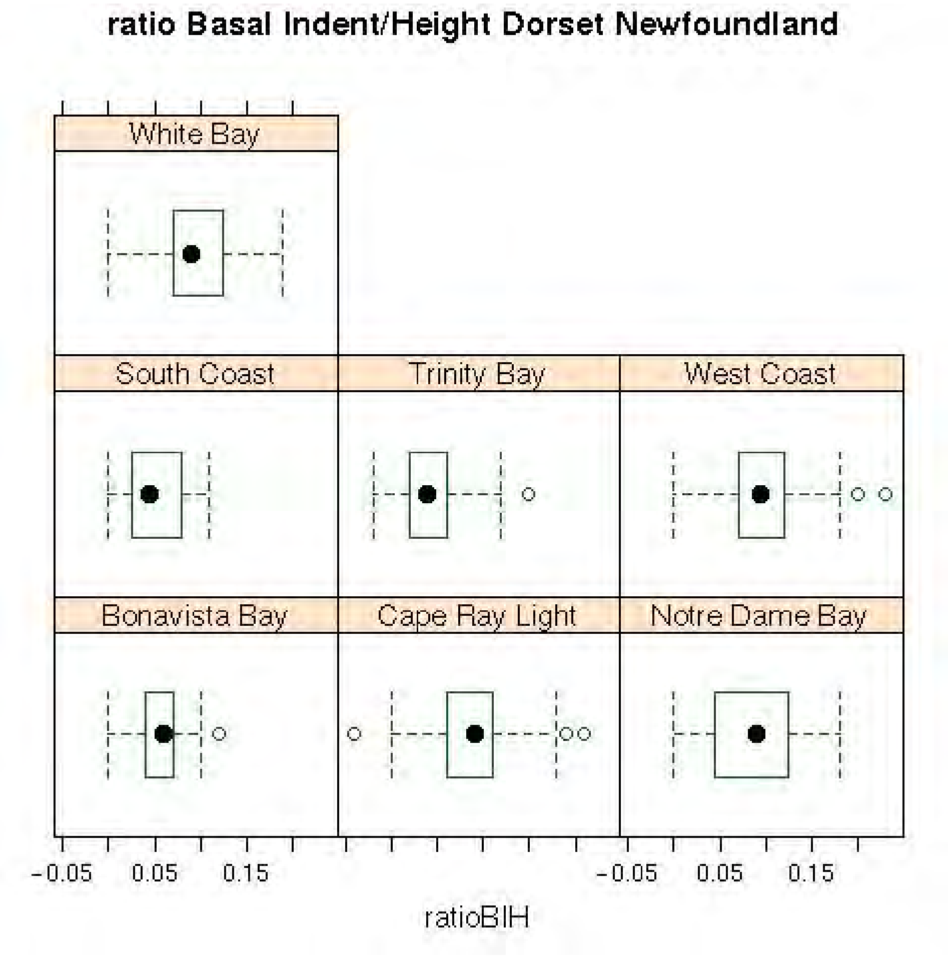


Fig.5.17C. Ratio of Basal Indent to Height, by Region

● = Median

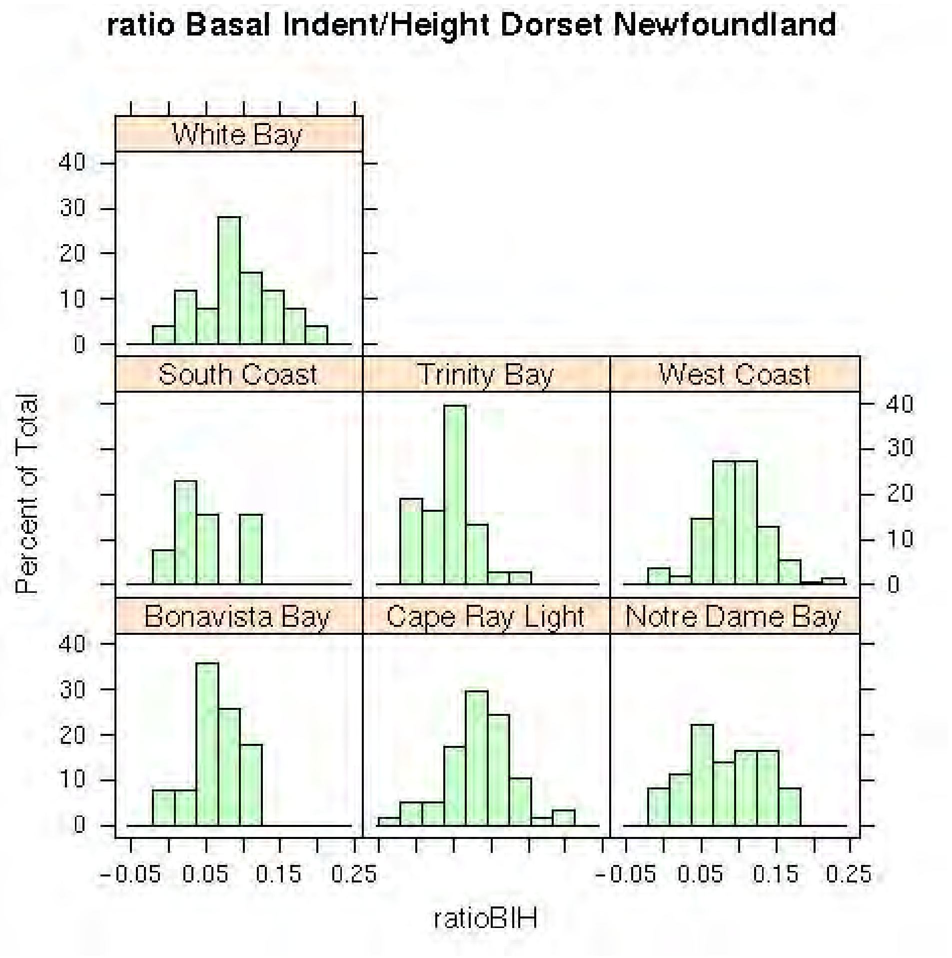


Fig.5.17D. Ratio of Basal Indent to Height, by Region

Table 5.9. Measures of Central Tendency for Ratio of Basal Indent to Height of Dorset and Groswater Endblades for Newfoundland and Labrador

Region	Number	Mean	Median
Newfoundland	*N=332*	*0.08*	*0.08*
West Coast	N=102	0.1	0.1
White Bay	N=23	0.09	0.09
Notre Dame Bay	N=38	0.08	0.09
South Coast	N=8	0.05	0.05
Trinity Bay	N=64	0.04	0.04
Bonavista Bay	N=37	0.06	0.06
Cape Ray Light	N=60	0.09	0.09
Labrador	N=20	0.06	0.08
Groswater (NL, Lab)	N=36	-0.008	0.00

In Table 5.9 the means and medians of the basal indent/height ratio are barely distinguishable statistically with the exception of Notre Dame Bay, Labrador Dorset, and the Groswater regions. (The variancesare all 0 and so are not included in the table.) The differences between each of the means are small but still indicative of differences between regional assemblages, as can be seen in the ranges of the data shown in the histograms.

Some endblades in West Coast, White Bay and Cape Ray Light have a basal indent/height ratio that is 20 to 25 percent of the height of the endblade. The basal indent to height ratio is least for the endblades from Bonavista Bay, South Coast and Trinity Bay, where fifty percent of the endblades have ratios of about 0.05, or very small basal indent to height ratios.

5.11. Qualitative Attributes – Grinding

The Dorset used both flaking and grinding in the manufacture of their lithic tools. Ground endblades appear in several sites around the island but grinding was not the dominant technique used by the Newfoundland Dorset. Many of the tools designated as ground were produced exclusively by grinding; others were both ground and flaked.

Table 5.10. Sites with Ground Endblades in Newfoundland

Bonavista Bay	*39*	*12*
Beaches	17	6
Shambler's Cove	21	6
Cape Ray Light	*60*	*3*
Notre Dame Bay	*34*	*16*
Swan Island	24	14
Thomas Rowsell I.	10	2
South Coast	*15*	*4*
Bay de Vieux II	3	1
Eagle Point	8	3
Trinity Bay	*68*	*39*
Dildo Island	42	25
Frenchman's Island	19	11
Stock Cove	7	3
West Coast	*142*	*1*
Peat Garden	2	1

Table 5.10 shows the distribution of ground endblades found in all of the samples included in this study. Of the endblades from the 31 Newfoundland Dorset sites in this

study, only 11 sites have endblades that have been ground. There are none in White Bay or in my sample from the large site of Phillip's Garden. In Harp's inventory of the material culture of the Dorset, he commented on how few ground tools had been found at West Coast sites and that only one of them (at the time of publication of his major report on the Newfoundland Dorset in 1964) might have been an endblade of some sort (62-63).

If the minimal presence (2 or less) of ground endblades in the West Coast and Cape Ray Light regions is discounted, then ground endblades are found in meaningful numbers in only four regions – Notre Dame Bay, Bonavista Bay, Trinity Bay and South Coast. They are most common in Trinity Bay Region followed by the regions of Bonavista Bay and Notre Dame Bay. Rast and others observed that ground blades are more common in sites where the Dorset were hunting marine prey, other than migratory harp seals, and perhaps terrestrial mammals as well (Rast 1999:55).

The raw material used for the ground endblades from these regions is often a distinctive chert (LeBlanc 1999:99). The material does not leave a chalky residue but it looks and feels as if it would. It is white or beige, often discolored by material in the soil in which it has lain for centuries. From my observation, this toolstone is more fragile than other cherts used in Newfoundland as evidenced by the higher incidence of refitted tools (excavated as two pieces, given separate artifact numbers, and later refitted) and artifacts broken after excavation (broken artifacts that have not been refitted are seen in storage boxes; only one part has been given an artifact number). Perhaps its fragility is the result of post-depositional conditions since it was sufficiently strong to be used in hunting weapons.

The proportion of ground endblades from these regions may have been underestimated. Several endblades in the sample may be more correctly considered preforms; perhaps they might have been ground if they had been completed (assuming grinding occurred late in the production process). Some endblades are quite weathered and worn; while in their present condition they do not look ground, perhaps grinding was used to remove some raw material before flaking.

While the South Coast sample is very small, ground endblades are present. Besides raising questions about the relationship between endblade technology and prey, it also suggests the possibility of connections between the Dorset groups from northeast Newfoundland, where grinding was commonly used, and those of the South Coast.

Was this regionally distinctive use of grinding a matter of change over time, of technological evolution? The endblades from Phillip's Garden in West Coast region are not ground while those of Stock Cove in Trinity Bay often are. Robbins investigated whether grinding might represent a stylistic development over time. By looking at radiocarbon dates from the two sites, however, he determined that the two assemblages that he examined from these sites are contemporaneous, making it unlikely, at least in this case, that these two lithic manufacturing techniques reflected stages of technological development (Robbins 1986:123).

Large ground slate tools have been found at Cape Ray Light (see Fig.1.3 for a few examples that I did not include in this study), at Norris Point, and at Port au Choix (where Phillip's Garden is located). Harp included pictures of slate points which he called “beveled points with basal notches” in his report (1964:63); these resemble the beveled point with basal notches in Fig.1.3 from Cape Ray Light.

5.11.1. Attributes of Ground Endblades

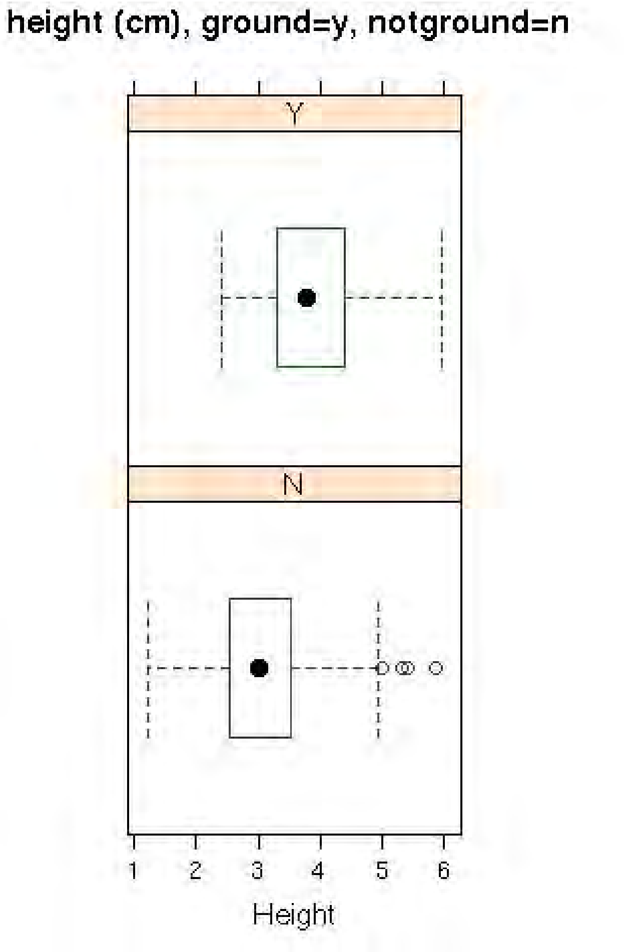


Fig.5.18. Height of Ground versus Height of Unground Dorset Endblades in Newfoundland

● = Median

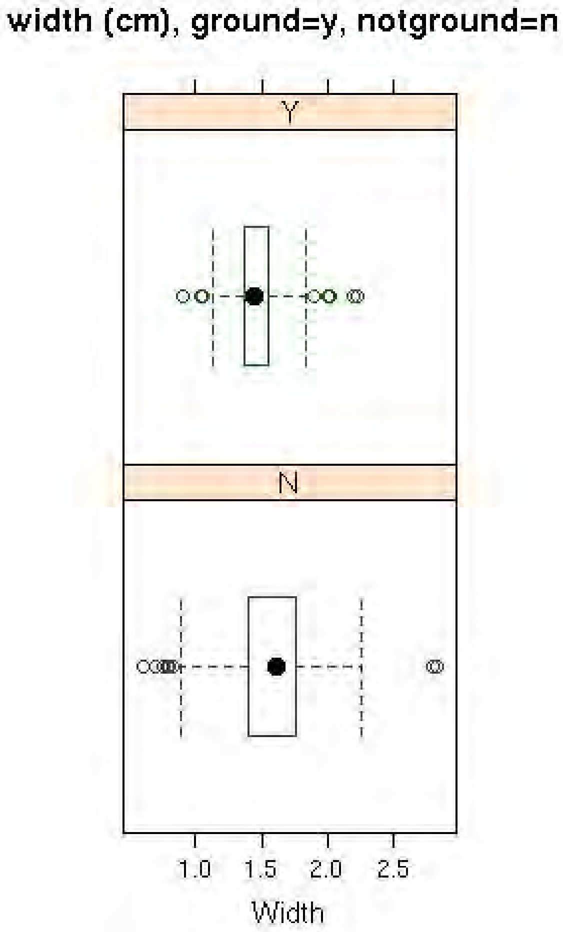


Fig.5.19. Width of Ground versus Width of Unground Dorset Endblades in Newfoundland

● = Median

Table 5.11. Mean Height, Width, and Ratio of Width to Height of Ground v. Unground Dorset Endblades in Newfoundland

Manufacturing Style	Mean Height	Mean Width	Mean Ratio Width/Height
Ground N=71	3.86 cm	1.47 cm	0.4
Not ground=309	3.04 cm	1.57 cm	0.54

The means of height and width of ground and unground endblades are different. The means of ground endblades are longer and narrower than those that are not ground. About half of the ground endblades are between 3.2 and 4.3 cm high while half the unground are between 2.5 and 3.4 cm. The ground endblades exhibit less variation in width than the unground – about 50 percent of the ground endblades have a width between 1.4 and 1.5 cm wide while half the unground endblades range from 1.4 and 1.7 cm. None of the Groswater endblades are ground. Grinding may have enabled an artisan to make longer (and possibly thinner) endblades then did flaking.

5.12. Ramah Chert Use

A study of Dorset endblades would not be complete without a mention of Ramah chert. Ramah chert was used for tools for at least 7500 years by all the indigenous peoples along the Labrador coast and Newfoundland (McAleese 2002). It is found in Maritime Indian contexts as far south as Maine and as far west as Trois Rivières, Quebec. Such a wide geographic distribution required an extensive trade network because the only known deposits of Ramah chert are found in a very limited area on Ramah Bay on the northern Labrador coast.

Ramah chert has a distinctive appearance; no matter what the dominant color – gray, white, clear, or brown, it is semi-translucent, sometimes with darker, parallel bands running through it, and occasionally with inclusions of iron. While its flaking properties made it desirable for sharp-edged stone tools, it may have been its unique appearance and perhaps the distant location of the quarry that contributed to its widespread appeal (McAleese 2002).

Ramah chert was traded widely by the Palaeoeskimos. It is found in Dorset sites west of Ungava Bay in northern Quebec as well as in many Groswater and Dorset contexts throughout coastal Labrador and Newfoundland (McAleese 2002). Newfoundland cherts found in many Dorset sites in Labrador attest to a reciprocal trade in lithic raw material (Nagle 1986:100). The very small endblade in Fig.5.1 is made of Ramah chert. There are also several Ramah chert endblades in the illustrations in Appendix A.

Table 5.12. Distribution of Dorset and Groswater Endblades of Ramah Chert in Newfoundland and Labrador

Region	Number	Endblades of Ramah	Ratio: Ramah/Number
West Coast	N=133	36	0.27
White Bay	N=26	11	0.42
Notre Dame Bay	N=40	None	
South Coast	N=14	None	
Trinity Bay	N=68	None	
Bonavista Bay	N=39	None	
Cape Ray Light	N=60	3	0.05
Labrador Dorset	N=26	17	0.65
Factory Cove (Groswater, NL)	N=32	6	0.18
Postville (Groswater, Lab)	N=12	8	0.67

Table 5.12 based on the selection of endblades in this study shows that Ramah chert use may have followed the principle that the frequency decreases as distance from the source increases. In this case the farther from the Ramah chert quarry in northern Labrador the lower the frequency of Ramah chert in assemblages, as Nagle observed for Dorset sites along the coast of Labrador (1986:98). No endblades of Ramah chert are

among the Dorset endblades from Notre Dame Bay, Bonavista Bay, Trinity Bay, and South Coast, the regions farthest away from Ramah Bay. Distance may be neither the primary, nor the only, explanation for the absence of Ramah chert endblades from these regions, however. Given the distant location of Ramah Bay, the additional distance between White Bay (where many Ramah chert endblades) and Notre Dame Bay (with none) is negligible.

The Labrador Groswater site of Postville Pentecostal and the Labrador Dorset region has the highest ratio of endblades of Ramah chert to endblades of other materials. This may be because it was easier to obtain Ramah chert for the Dorset in these regions or it may reflect a preference for this material among both Groswater and Dorset Palaeoeskimos living relatively close to the Ramah chert source. It may be an artifact of excavation because its distinct appearance makes it hard to miss a Ramah chert endblade in the soil or even in a pebble beach deposit.

The Newfoundland Groswater site of Factory Cove is located, most likely not by chance, in the midst of limestone outcrops containing high grade Cow Head chert. At Factory Cove Ramah chert wis less common than at the Labrador Groswater site of Postville Pentecostal, which is located closer to Ramah Bay.

In Dorset contexts in western Newfoundland there is a wide variation in Ramah chert use – only a few of the endblades from Cape Ray are made from Ramah chert, while nearly half of those from White Bay and a quarter of those from West Coast are. Distance is not likely to have been the only factor affecting the relative popularity of Ramah chert.

5.12.1. Ramah Chert at Phillip's Garden

Table 5.13. Frequency of Ramah Chert at Phillip's Garden, by Houses/Features Dated in Calibrated Radiocarbon Years BP

House or Feature	Number	Ramah Chert	Ratio of Ramah chert/N	Calibrated Radiocarbon Dates
Feature 14	N=14	5	0.36	2310-1986
House 18	N=1	1	1	1981-1835
House 6	N=14	2	0.14	1579-1480; 1547-1417
House 10	N=6	1	0.17	1536-1409; 1692-1545
House 4	N=9	2	0.2	1529-1400
House 12	N=10	3	0.3	1508-1346; 1482-1353
House 2	N=11	3	0.28	1440-1324; 1533-1406 1704-1558; 1603-1517
Harp House 17	N=10	1	0.1	1395-1300; 1391-1292
Feature 55	N=8	4	0.5	1388-1265; 1333-1184
Total for Above	N=83	22	0.27	

Calibrated Radiocarbon dates from Erwin 1995:132-133.

Table 5.13 juxtaposes some of the radiocarbon dates available for Phillip's Garden with frequency of Ramah chert endblades to see if there appears to be any relationship between the dates and the use of Ramah chert. If so, it could be evidence of ongoing or sporadic connections between Newfoundland and Labrador Dorset populations.

Discounting House 18 with one tool in the sample, the oldest (Feature 14, a possible hearth), dated at 2310-1986 BP, and the newest (Feature 55, a house), dated at 1388-1184 BP, show the highest frequency of Ramah chert endblades, 0.5 and 0.36 respectively. The features that are dated in the period between the oldest and youngest features have fewer Ramah chert endblades. The limitations of the data are very great: There is the considerable overlap in the radiocarbon dates, complicated by the marine reservoir effect, as well as the effects of very small sample subsets. (There is a large collection at Memorial University which could be studied if this has not already been examined.) The pattern of greater use at the beginning and end of the period of occupation could be accurate but the small amount of data does not permit any conclusions.

5.13. Incipient Notches and Side Notches

While notches are not generally associated with the image of the classic Dorset endblade, they appear with some frequency. Two types of notches – incipient and side – are seen in Dorset specimens; among the endblades included in this study the fully expressed side notches occurred slightly more frequently than the incipient notches. Harp mentioned notches in his description of the assemblage he examined from West Coast sites (1964:141). In addition to prominence of the notching (incipient versus full side notches), there are different numbers of notches (one to four) and the notches can occasionally appear close to the distal end of the endblade. If there is only one side notch, it was slightly more likely to be on the right lateral than the left lateral (when looking at the endblade on the dorsal face).

In some cases it was difficult to decide whether there were notches, or whether what appeared as incipient notching was not actually thinning or thinning gone awry. Since there was a tendency not to consider a tool notched if there was only one notch, there may have been some undercounting of notched endblades.

Table 5.14. Occurrences of Notches on Endblades: Newfoundland and Regions with Groswater and Labrador Dorset for Comparison

Region	N= (See Note)	N w/ side notches	% w/ notches	1 notch	2 notches	3 notches	4 notches
Newfoundland Dorset	*N=373*	*43*	*12 %*	*25*	*16*		*2*
West Coast	N=143	12	8 %	7	4		1
White Bay	N=26	4	15 %	4			
Notre Dame Bay	N=41	4	10 %		3		1
South Coast	N=13	0	None				
Trinity Bay	N=70	6	9 %	3	3		
Bonavista Bay	N=39	5	13 %	4	1		
Cape Ray Light	N=60	12	20 %	7	5		
Labrador Dorset	N=24	3	13 %	2	1		
Groswater: Factory Cv	N=34	30	85 %	3	16	1	
Groswater: Postville Pentecostal	N=11	11	100 %		11		

[Note on "number": Some endblades not otherwise included for analysis elsewhere in this study were complete enough to count number of notches and so were included in this count.]

The Dorset and Groswater had different approaches to notching their endblades. While both produced notched endblades, the Groswater endblade would probably have a straight-sided base while the Dorset often notched the sides of triangular endblades, resulting in a base that is usually wider than the point at which the notches are placed.

5.14. Summary

In Table 5.15 the statistical means for many of the attributes examined in this study are brought together with the observations of archaeologists who excavated and analyzed sites in each of the Newfoundland Dorset regions. Their qualitative observations are generally in agreement with what the metric and statistical analysis of this study has found. The results of the study, however, go further than the non-metric observations in that the method and data from the study have the potential for facilitating comparisons across sites, regions, and traditions. In particular it is now possible to compare the regional data as well as that of the Newfoundland Dorset variant as a whole with other endblade assemblages in the Arctic and sub-Arctic.

One interesting observation from Table 5.15 is how closely the means for Notre Dame Bay endblades resemble those for the island-wide Newfoundland assemblage. For several decades most archaeological work on the island focused on the large and significant sites along the Strait of Belle Isle, forming the picture that the steeply indented, relatively short and broad endblades characteristic of these sites are characteristic of the Newfoundland Dorset. The data in this study suggest that the addition of data from many sites around Newfoundland would call for redrafting this image of the prototypical Newfoundland Dorset endblade.

Table 5.15. Regional Variation: Comparison of Means with Qualitative Observations

Data	***Newfoundland***	***West Coast***	***White Bay***	***Notre Dame Bay***	***South Coast***	***Trinity Bay***	***Bonavista Bay***	***Cape Ray Light***
Height	3.18	2.91	2.61	3.07	3.42	3.73	3.71	3.14
Qualitative Observations		*shorter*	*short*	*longer*	*heterogeneous*		*much longer*	*variety of sizes*
Width	1.55	1.64	1.47	1.55	1.49	1.42	1.55	1.55
Qualitative Observations		*broader*	*broad*	*more slender*	*heterogeneous*			*variety of sizes*
Thickness	0.39	0.4	0.35	0.41	0.38	0.37	0.46	0.37
Qualitative Observations			*extremely thin*	*thick*			*thick*	
Basal Indent	0.21	0.27	0.23	0.23	0.19	0.15	0.22	0.26
Qualitative Observations		*basal concavity, in some quite pronounced*	*slightly concave base*	*little or no basal concavity*		*base straight or slightly concave*	*base straight or slightly concave*	*basal concavity*
W/H Ratio	0.51	0.57	0.6	0.53	0.39	0.4	0.43	0.53
Qualitative Observations								*variety of sizes, shape remains the same*
Th/H Ratio	0.13	0.14	0.14	0.14	0.11	0.1	0.13	0.12
No qual. observ.								
BI/Height	0.08	0.1	0.09	0.08	0.05	0.04	0.06	0.09
No qual. observ.								

Qualitative observations as summarized by LeBlanc 2000:97-100. LeBlanc used the observations made by C.O. Evans, L.M. Fogt, E. Harp, S. LeBlanc, U. Linnamae, R. Pastore, M.A.P. Renouf, D.T. Robbins, J.A. Tuck, and W.J. Wintemberg.

Chapter 6: Conclusions

Like many prehistoric people, the Dorset are a cultural construct defined by an assemblage of artifacts and site characteristics. Similar assemblages and sites attributed to the Dorset are found at hundreds of places around the North American Arctic and sub-Arctic. Whatever has been learned about the lifeways of the people who made these artifacts has been derived in some way from their assemblages or general environmental data because there is no known descendant population.

The purposes of this study are: (1) to explore and quantify characteristics of Dorset endblades in order to compare them statistically; (2) to measure and analyze a broad regional sample of endblades from around the island to find out the characteristics of the regional assemblages as well as the characteristics of a representative island-wide Dorset assemblage; (3) to see what, if anything, could be learned about the Dorset tradition through analyzing these measurements.

My conclusions are: (1) there are some distinct regional variations within the Newfoundland variant but there are strong unifying characteristics that are shared by all regional assemblages; within the regional assemblages there is also a range of variation so endblade styles overlap from one region to another; (2) color of the tool stone used is quite distinct in some regions; (3) use of Ramah chert and grinding are common in some regions and completely absent, or nearly so, from others; (4) endblades are not sufficiently stylistically elaborated to use alone as markers for regional differentiation; (5) an unanticipated finding is that the proximal right and proximal left angles are not equal; the proximal right angle is greater than the proximal left angle to a statistically significant degree.

Variation in assemblages is often attributed to changes in technique, prey, style and raw material that occur over time. However, time is an elusive factor in Dorset archaeology, particularly in Newfoundland. Radiocarbon dating is hampered by the lack of datable material due to poor organic preservation and the problems related to establishing a correct marine radiocarbon reservoir offset for the marine mammal material (bones and fat) which is available. Sites are most often shallow and presumed to be the result of a brief period of occupation. Seriation is not useful as a technique of relative dating because the lithic objects which have survived are not stylistically elaborated artifacts; associated objects, such as the harpoon head, which might carry stylistic information, have not survived the acid soil conditions. (Where there are sequences of stylistically variable bone and ivory harpoon heads in the Arctic, the seriations have not withstood the test of the developing artifact record.) Better dating must await the development of new or refined methodologies and techniques. For now archaeologists assume that the Dorset were culturally static during their presence in Newfoundland.

The concept of creating regional “sites” appears to have been a valid way to include the smaller sites in the study. Looking again at Table 5.15, where the qualitative descriptions of endblades are compared to the statistical profiles, there is general agreement between the statistical profiles and the descriptions from archaeologists who have worked on the major sites of the different regions. The generally small amount of variance for each of the attributes within the regions also suggests that combining sites regionally brought together similar sites, perhaps indicating connections between them.

The first stage of this study was data collection to identify, describe and measure a large and regionally diversified sample of endblades from all over Newfoundland. The purpose of this was to develop a statistical picture of Dorset endblades that could then be analyzed. Besides constructing the statistical pictures of the "typical" regional and Newfoundland endblade, the study led to the development of a simple, repeatable, inexpensive way to measure even the tinest Dorset tools (the enlarged digital photo, the ruler and the calipers) including a way to measure the basal indent attribute. It also brings together data from well studied sites of Port au Choix as well as many smaller sites in an island-wide comparative study and contributes to the growing body of quantitative work that will facilitate future comparative studies.

The statistical means of endblades from Notre Dame Bay are most similar to the means of the Newfoundland endblade. This is despite the presence of a much greater number of West Coast and Cape Ray Light specimens in the island-wide sample.

The attribute that is most similar across all the regions is endblade thickness. The variance and range of variation of this attribute is slight. The reasons can be the similarity of thinning techniques, the limitations of the raw material, the similarity of hafting requirements, or the desire for a nearly interchangeable tool.

In examining the regional composites of endblade pictures that I had made (see the Appendix), I am struck by how some the Dorset and Groswater in some regions used colorful tool stone while others did not. Use of Ramah chert, often associated with the Dorset, also varies regionally. For example, the concentration of Ramah and gray cherts in the Labrador Dorset region is in sharp contrast with colorful chert endblades found at Cape Ray Light and the endblades of whitish chert in sites from Trinity Bay region.

There was no Ramah chert in some sites while others made much use of it. The reasons for this could have included raw material availability, or cultural or individual preferences.

The attraction of working on the raw material used in tool production is that, if sufficient geological information is available about an area, there is an outside body of data to draw on for inferences and correlations. However, to go beyond making a few, essentially deterministic observations would require looking at a broader range of information about the Dorset than the endblades of this study. Because I lack the necessary geological familiarity with Newfoundland and Labrador and with the tool stone from which the Dorset made their endblades, I do not make raw material a focus of this study.

But after all the work is done, is this just a long way of arriving at the same picture of Newfoundland endblade variability as could have been found in a literature search? No, I do not think so. First of all, the assessments in the literature come from archaeologists who gained their understanding after devoting many years to one or a few sites. Secondly, because of the lack of objective measures, these well-grounded but still subjective assessments do not lend themselves to broad comparisons of endblades from other Dorset regions and from non-Dorset traditions. Finding a way to objectively compare artifacts is necessary to advance such work.

Overall, the Dorset endblades in Newfoundland do not appear to have been sufficiently stylistically elaborated to have carried a culturally specific message in the manner described by Wobst and Wiessner. Deposited along with other cultural material in an assemblage, they can serve as markers for Dorset occupation but it is not likely that alone the endblades can tell much about Dorset regional groups. The exception to this might be the consistently anomalous endblades of the Trinity Bay region.

I can only speculate about the significance or usefulness of the unequal proximal angles to the Dorset hunters. One possibility is that it was not functionally useful but the result of handedness. For this to have been true, a maker's handedness would have to affect endblade angles; for one angle to predominate, there would have to have been a non-standard distribution of right-handed or left-handed people among Dorset artisans. To explore the affect of handedness, it would be possible to measure the output of contemporary experimental archaeologists whose hand preferences are known, as suggested by Elaine Anton (August 6, 2006: personal communication).

The unequal proximal angle may also reflect a hafting modification that made it easier for the hunter to quickly insert, firmly seat, and visually straighten the endblade, while wearing bulky hand protection and working out on the ice. Making one proximal angle slightly larger could have been a long-standing tradition, an aspect of the "mental template." If this were the case it will be seen in collections of endblades from older Arctic Dorset sites as in fact I saw when I measured the proximal angles of two endblades from Cape Dorset illustrated in Jenness' article. Neither of these explanations precludes the unequal proximal angle being a functional attribute. Examining endblades pictured in journal articles, site reports, and endblades in other collections around the island and around Canada could extend our knowledge of how common this attribute is.

The Dorset artisan would not have needed measuring equipment to make a tool with one angle somewhat greater than the other because the distal end gives a good clue about angle inequality. By looking at Figs.5.6, 5.7 and 5.8, the angle difference can be seen in the way the base line intersects a line drawn through the distal angle: where the proximal right is greater, the distal point is off center toward the right; where the left proximal angle is greater, the distal point is off center to the left. The slope of the base, which for purposes of making this measurement is established by the furthest extension of the tangs, also influences this measurement.

There are several ways to expand the regional data collected here. The focus of study could remain regional but be broadened to include additional tool types, raw material utilization, issues relating to site selection and structure, and tool manufacturing techniques. Specimens dug by non-professionals without systematic proveniencing could contribute to the picture of regional variation as long as it is known the region from which they were excavated.

A case can be made for including in a study such as this some observations on the existence of tip fluting, which is often mentioned in qualitative descriptions of Dorset endblades. For this reason I included tip fluting in my data collection but as I moved along with the study, I became very concerned about the quality of the data. I realized that I did not know when a flute is an example of the characteristic “tipfluting” and when the fluting is simply part of the overall thinning process. I encountered fluting that ranged from one or two little nicks on the distal point to flutes that run the full length of the tool. While I was still engaged in the early stages of measuring endblades in the daytime, I was looking through the literature at night for a clear definition of tipfluting. I did not find a satisfactory working definition of “tipfluting” so I stopped noting anything other than tiny flutes. Some of what is thought to be tip-fluting might be the result of impact damage. In retrospect I might have been able to resolve the question after data collection had I photographed the ventral side of each endblade as well as the dorsal side and later developed a way to incorporate the fluting evidence from the photographs.

The purpose of this study is not to answer open questions on the nature and origin of regional variation among the Newfoundland Dorset but to quantify evidence that would be useful in the future to resolving some of these questions. Do regional variations originate in different "ethnicities" (in the generic meaning of culture groups held together by commonalities of identifiable social groups) that were based in separate regions? Was there a desire or need to express difference through material culture because of the presence of non-Dorset people nearby? Are the regionally specific choices of raw material (the whitish chert, the rhyolites, the Ramah chert) a reflection of supply or choice, of long-distance trade or long-distance travel, or of isolation? Are the endblades of Trinity Bay and Bonavista Bay made long, slender, and ground because the raw material permitted it or the prey required it, or did the Dorset living in those regions develop this style for other reasons entirely? Answers to these and other behavioral questions require information beyond the specific endblade metric data generated and analyzed here. However, we are closer to these answers and will have a better grounding for them because of the finer focus brought to the picture of regional diversity by this metric study.

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2006 R: A Language and Environment for Statistical Computing. R Foundation for Statistical Computing, Vienna, Austria. URL http://www.R-project.org.

Appendices:

A. Sample Endblades from Regions

1. West Coast Region
2. White Bay Region
3. Notre Dame Bay Region
4. Bonavista Bay Region
5. Trinity Bay Region
6. South Coast Region
7. Cape Ray Region
8. Labrador Dorset Region
9. Newfoundland Groswater
10. Labrador Groswater

B. Sample Data Collection Sheet

C. Raw Data Tables

I. West Coast Region

A. Phillip's Garden (PG) – 389.[1] - This endblade approximates the statistical mean for West Coast Region. B. PG – 382; C. PG - 383; D. PG – 425; E. PG - 388 F. PG – 423
For endblades on the following Page:
G. PG – 432; H. PG – 439; I. Norris Point 1, Donovan's Point – 398; J. Three Bar – 350; K. PG – 324; L. PG - 320

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[1] Number is crossreferenced to Raw Data Table in Appendix C.

1. West Coast Region (cont'd)

2. White Bay Region

A. Cow Cove-3 – 186. This endblade approximates the statistical mean for White Bay Region
B. Jackson's Arm – 154
C. Cow Cove-3 – 180
D. Cow Cove-3 – 179
E. Cow Cove-3 - 169
F. Cow Cove-3 - 187

3. Notre Dame Bay Region

A. Rattling Brook – 521. This endblade approximates the statistical mean for Notre Dame Bay Region.
B. Swan I – 444
C. Swan I – 451
D. Rattling Brook – 526
E. Swan I – 465
F. Swan I - 461

4. Bonavista Bay Region

A. Shambler's Cove (SC) – 494. This endblade approximates the statistical mean for Bonavista Bay.
B. SC – 503; C. SC – 498; D: Beaches – 468; E: SC – 500; F: SC - 505

5. Trinity Bay Region

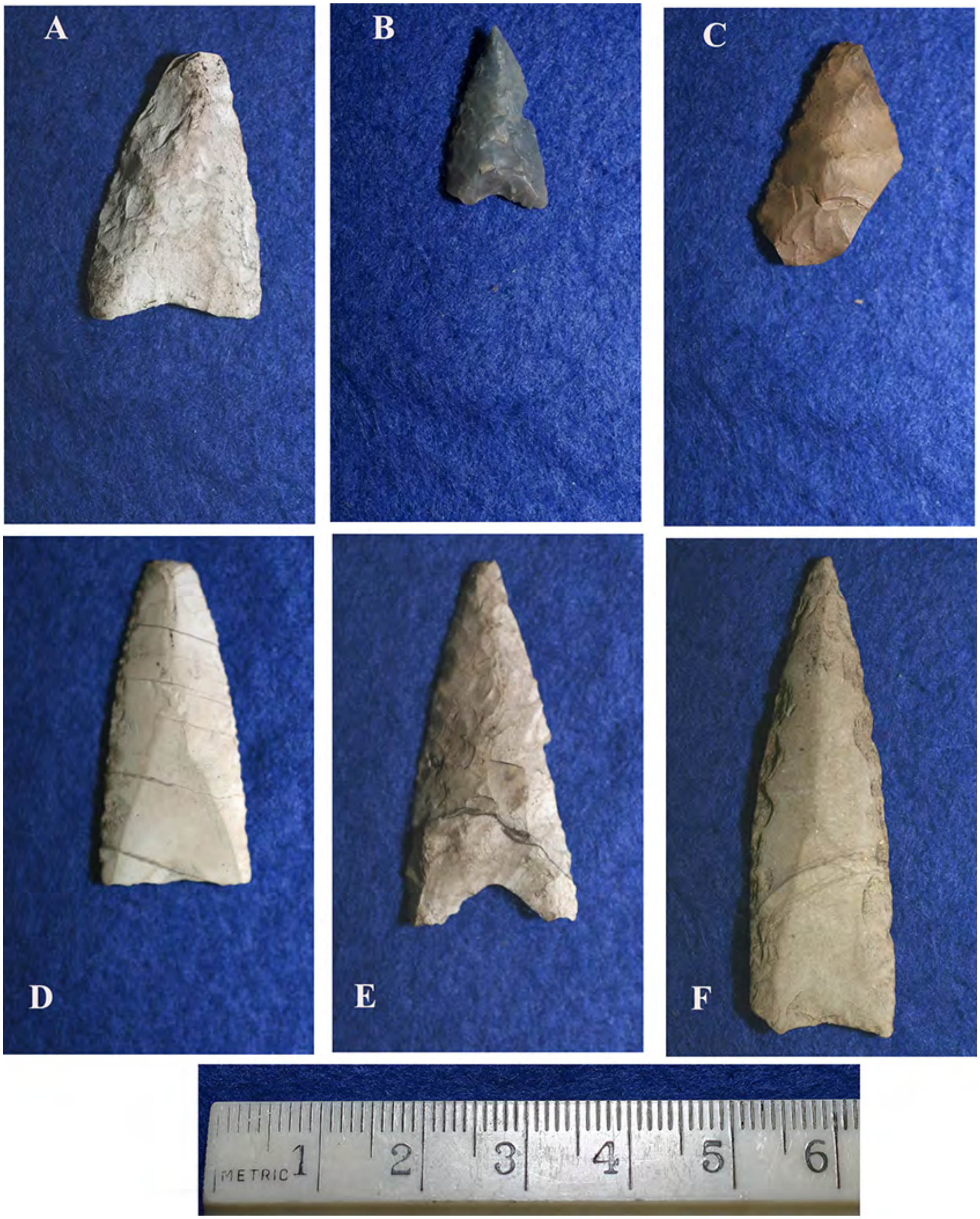
A. Dildo I – 226. This endblade approximates the statistical mean for Trinity Bay Region.
B. Dildo I – 215;
C. Dildo I – 298
D. Dildo I - 292
E. Dildo I – 98
F. Dildo I - 105

5. Trinity Bay Region (cont'd)

G. Frenchman's I - 95
H. Dildo I - 285
I. Frenchman's I - 311

J. Dildo I - 281
K. Dildo I - 214
L. Dildo I - 72

6. South Coast Region

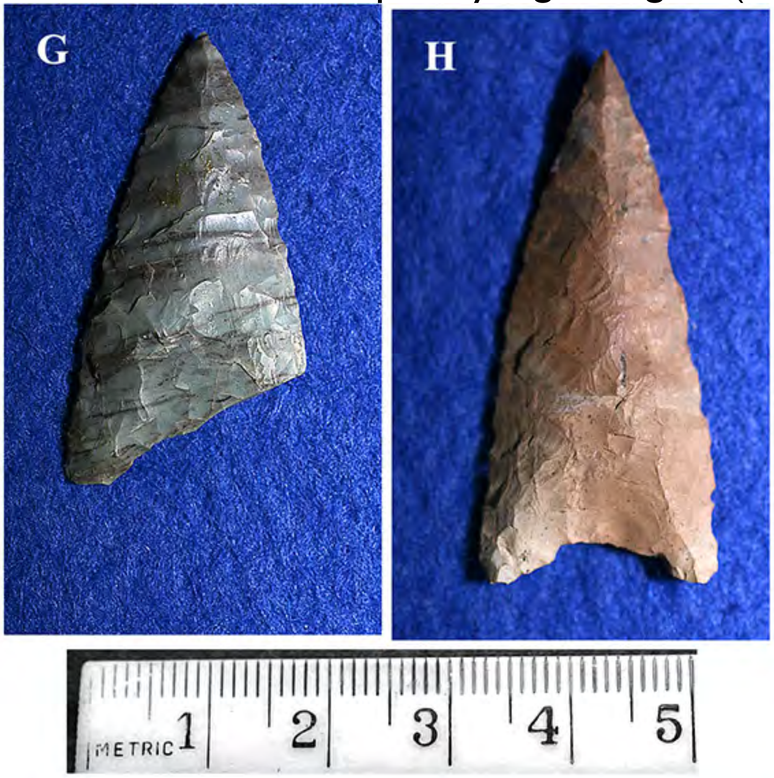


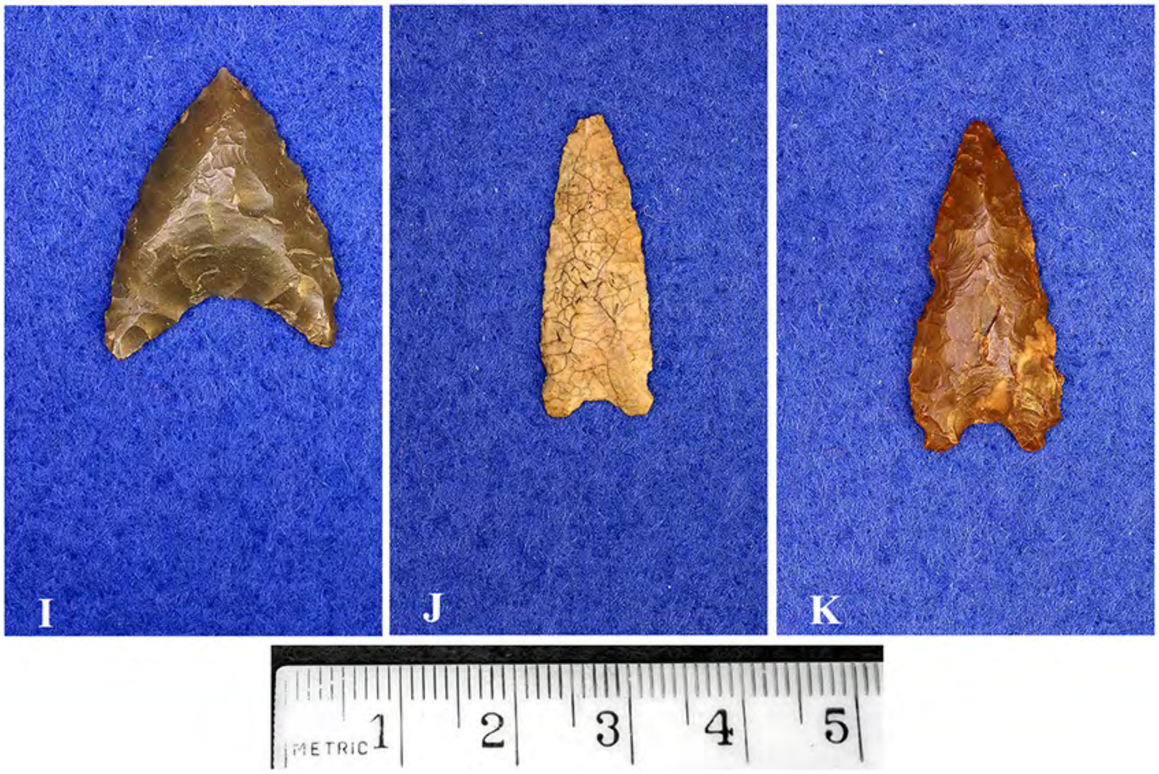
A. Isle aux Morts – 133
B. Bay de Vieux-2 – 134
C. Bay de Vieux-2 – 136
D. Eagle Point – 75
E. Eagle Point – 88
F. Bay de Vieux-2 – 135

7. Cape Ray Light Region

All endblades are from the site of Cape Ray Light.
A. 51. This endblade approximates the statistical mean for Cape Ray Light region.
B. 319; C. 42; D. 41; E. 36; F. 56;
For Endblades on Page A-11
G: 252; H. 57; I. 537; J. 547 K. 551

7. Cape Ray Light Region (cont'd)





7. Cape Ray Light Region (cont'd)

L. 533
M. 540

N. 543
O. 534

P. 546

8. Labrador Dorset

A. Shuldham I-9 – 85
B. Shuldham I-7 – 87
C. Solomon Island – 159

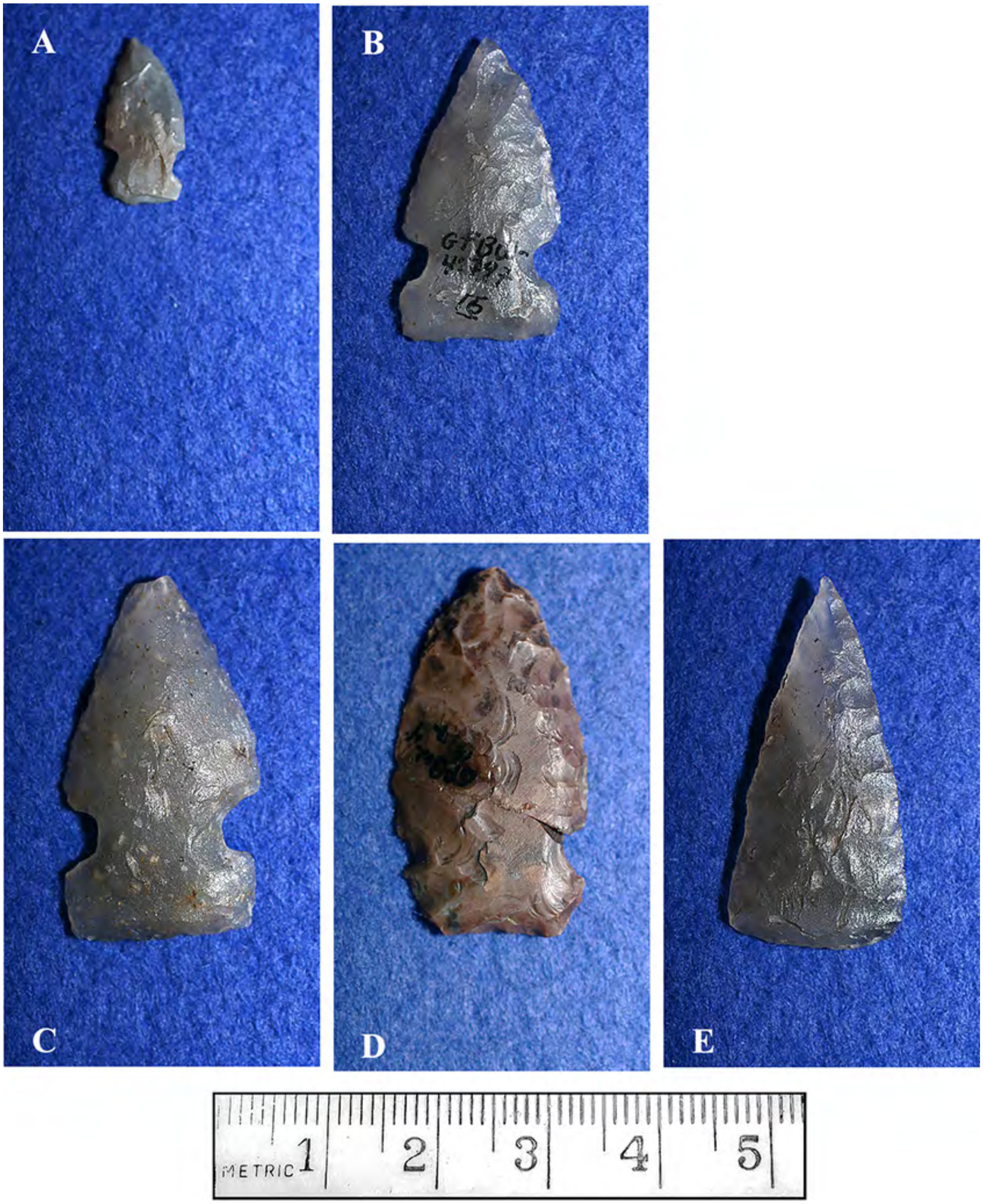
D. St. Francis Harbour Bight I - 196
E. Shuldham I-9 – 84
F. Black Tickle 2 – 203

9. Newfoundland Groswater

All endblades are from Factory Cove, a Groswater site in Newfoundland.

A. 125	B. 263	C. 255
D. 256	E. 129	F.262

10. Labrador Groswater



All endblades are from the Labrador Groswater site of Postville Pentecostal.
A. 277; B. 270; C. 273; D. 276; E. 269

Photo # 500

Site Shambler's Cove [✓ Dorset]
Groswater

Artifact # DjAj-1: 207

weight 1.5

height 4.07 max. width 1.44 thickness 0.35

distal ∠ 43 prox. ∠ Left 81 prox. ∠ rt 81
[dorsal side facing observer]

Base type: stem width ______ stem length ______

~~triangular~~ basally thinned
~~basally thinned~~

box

side notched

double notched

[✓ concave]

basally notched

lanceolate

corner notched

other: ______

BI 0.15

Material:

[✓ CHERT]
local chert

exotic chert

Ramah chert

quartzite

quartz crystal

rhyolite

slate

other: ______

color: ~~tan~~ White

Further description:

unifacial

[✓ bifacial]

fluted, partial

NO fluted, full length of pt

[✓ retouched]

[✓ ground]

[✓ serrated]

L prox E
[✓ broken] R prox tip

other comment: ______

ventral ridge

Comment:

B-1

Meaning of Headers on Raw Data Tables

PH #	Photo Number (assigned for this study)
Art #	Artifact Number (complete, with Borden Number)
D/G	Dorset or Groswater
Wt	Weight (gr)
Ht	Height (cm)
Wdh	Width (cm)
Thck	Thickness (cm)
Distl	Distal Angle
PrxL	Proximal Left Angle
PrxR	Proximal Right Angle
BaseType	Base Type
bWdt	Width of Base
hWdt	Width of Hafting (between notches left and right)
material	Raw Material
color	Color of Raw Material
fcl	Unifacially or Bifacially worked
flu	Fluted
Rtch	Retouched
Grnd	Ground
Ser	Serrated edge
balIn	Basal Indent (cm)
#SideN	Number of Side Notches
hL-1/N	Height of 1st Left Side Notch from Base (cm)
hR-1/N	Height of 1st Right Side Notch from Base (cm)
hl1N	Height of 1st Notch on Left (cm) (measure of notch itself)
hr1N	Height of 1st Notch on Right(cm) “
nType1	Type of Notching for 1st Notch(es)
hL-2/N	Height of 2nd Left Side Notch from Base (cm)
hR-2/N	Height of 2nd Right Side Notch from Base (cm)
hl2N	Height of 2nd Notch on Left (cm) (measure of notch itself)
hr2N	Height of 2nd Notch on Right(cm) “
nType2	Type of Notching for 2nd Notch(es)

PH #	Art #	SiteName	D/G	Wt	Ht	Wdh	Thck	Dstl	PrxL	PrxR
10	CjBt-1:4411	Cape Ray Light	D	1.3	2.7	1.75	0.39	73	74	75
11	CjBt-1:4412	Cape Ray Light	D	2.0	3.8	1.71	0.41	65	80	78
14	CjBt-1:4414	Cape Ray Light	D	1.3	3	1.49	0.45	65	74	NA
17	CjBt-1:4419	Cape Ray Light	D	1.0	2.8	1.29	0.38	63	78	80
18	CjBt-1:4420	Cape Ray Light	D	1.1	2.46	1.37	0.28	55	75	73
19	CjBt-1:4422	Cape Ray Light	D	0.5	2.3	1.07	0.32	48	84	70
20	CjBt-1:5133	Cape Ray Light	D	1.8	3.6	1.64	0.49	54	NA	75
21	CjBt-1:5134	Cape Ray Light	D	1.2	2.86	1.6	0.33	55	73	76
22	CjBt-1:5136	Cape Ray Light	D	0.8	3.2	1.71	0.22	NA	71	76
23	CjBt-1:5137	Cape Ray Light	D	2.0	3.4	1.8	0.38	60	78	75
24	CjBt-1:5138	Cape Ray Light	D	2.5	4.1	1.77	0.48	55	77	80
29	CjBt-1:2001 F	Cape Ray Light	D	2.4	3.9	1.62	0.4	73	82	80
31	CjBt-1:1988 E	Cape Ray Light	D	0.9	3.2	1.43	0.3	45	78	79
33	CjBt-1:2005 E	Cape Ray Light	D	1.7	2.95	1.63	0.45	60	75	79
35	CjBt-1:5268	Cape Ray Light	D	2.2	3.9	1.5	0.45	49	83	76
36	CjBt-1:5221	Cape Ray Light	D	1.0	2.8	1.59	0.33	55	74	75
37	CjBt-1:1722 S	Cape Ray Light	D	3.2	4.2	1.84	0.59	46	78	79
39	CjBt-1:NN1	Cape Ray Light	D	1.4	3.26	1.7	0.3	73	76	80
40	CjBt-1:NN2	Cape Ray Light	D	1.7	3.1	1.67	0.4	70	74	79
41	CjBt-1:NN3	Cape Ray Light	D	0.9	2.6	1.25	0.34	63	75	81
42	CjBt-1:NN4	Cape Ray Light	D	0.3	1.55	1	0.25	53	73	75
44	CjBt-1:12056	Cape Ray Light	D	2.7	4.5	1.66	0.43	60	80	82
46	CjBt-1:2087	Cape Ray Light	D	2.1	3.84	1.61	0.4	55	77	82
47	CjBt-1:2095 E	Cape Ray Light	D	3.3	3.7	2.1	0.51	67	75	77
48	CjBt-1:2097 E	Cape Ray Light	D	1.5	3.25	1.7	0.45	70	75	78
50	CjBt-1:2061	Cape Ray Light	D	2.2	4.5	1.94	0.42	NA	78	80
51	CjBt-1:2068	Cape Ray Light	D	1.4	3.02	1.54	0.41	61	76	77
52	CjBt-1:2074	Cape Ray Light	D	2.2	3.3	1.78	0.48	72	76	77
54	CjBt-1:2240	Cape Ray Light	D	0.7	1.86	0.8	0.39	66	71	77
55	CjBt-1:2237	Cape Ray Light	D	0.9	2.36	1.45	0.35	60	73	72
56	CjBt-1:2227	Cape Ray Light	D	2.1	3.4	1.95	0.4	53	76	73
57	CjBt-1:5790	Cape Ray Light	D	2.5	4.13	1.84	0.45	52	77	79
63	EdBh-2:22	Keppel Isl. 3/Cod.	D	1.7	3.1	1.54	0.49	51	77	76
64	EeBh-1:02	St. John Island	D	0.6	2.3	0.92	0.36	38	77	79
65	EdBh-2:19	Keppel Isl. 3/Cod.	D	0.7	2.19	0.89	0.4	54	76	83
66	EbBj-6:25	Daniel's Harbour	D	1.7	NA	1.8	0.44	NA	77	75
67	EbBj-6:24	Daniel's Harbour	D	1.4	2.7	1.9	0.32	51	68	73
70	DhAi-6:425	Cape Cove-2	D	1.4	3.2	1.6	0.35	49	76	75
71	EeBi-1:11389	Phillip's Garden	D	2.2	3.3	1.75	0.44	63	76	76

PH #	Art #	SiteName	D/G	Wt	Ht	Wdh	Thck	Dstl	PrxL	PrxR
72	CjAj-2:222	Dildo Island	D	3.0	5.8	1.68	0.39	39	84	81
73	CjAj-2:131	Dildo Island	D	1.8	4.16	1.41	0.33	48	79	84
75	CjAw-1:17	Eagle Point	D	1.9	3.6	1.52	0.38	NA	80	81
76	ClAl-1:723	Frenchman's Island	D	1.9	4.5	1.49	0.34	43	82	80
77	EeBi-1:11396	Phillip's Garden	D	1.0	2.28	1.58	0.34	71	71	69
78	EeBi-1:11395	Phillip's Garden	D	1.2	2.2	1.72	0.4	90	77	74
79	EeBi-1:11391	Phillip's Garden	D	3.5	3.8	2.2	0.75	60	76	77
80	EeBi-1:11390	Phillip's Garden	D	1.5	2.55	1.72	0.37	102	73	76
83	IdCq-22:5779	Shuldham Island-9	D	3.2	3.75	1.82	0.6	51	78	78
84	IdCq-22:5050	Shuldham Island-9	D	2.0	3.8	1.43	0.46	75	81	82
85	IdCq-22:4813	Shuldham Island-9	D	1.9	2.24	1.98	0.37	88	66	68
86	IdCq-20:24	Shuldham Island-7	D	1.8	3.06	1.57	0.49	68	78	80
87	IdCq-20:12	Shuldham Island-7	D	1.8	3	1.73	0.44	59	74	75
88	CjAw-1:1	Eagle Point	D	1.7	3.5	1.65	0.4	55	78	79
91	CkAl-3:10	Stock Cove	D	1.7	3.35	1.79	0.35	72	82	70
93	CkAl-3:3000	Stock Cove	D	2.1	3.9	1.55	0.51	48	80	80
94	ClAl-1:234	Frenchman's I	D	2.0	4.6	1.35	0.38	43	82	83
95	ClAl-1:732	Frenchman's I	D	1.9	NA	1.4	0.4	72	78	81
97	CjAj-2:240	Dildo Island	D	1.9	4	1.4	0.43	52	80	83
98	CjAj-2:132	Dildo Island	D	1.3	3.3	1.48	0.35	54	78	79
99	CjAj-2:564	Dildo Island	D	1.5	3.2	1.44	0.4	55	77	79
100	CjAj-2:547	Dildo Island	D	3.0	4.2	2.2	0.43	59	78	75
101	CjAj-2:259	Dildo Island	D	1.4	3.58	1.56	0.29	60	80	79
102	CjAj-2:549	Dildo Island	D	1.8	4.4	1.45	0.4	53	81	84
103	CjAj-2:545	Dildo Island	D	0.6	2.05	1.15	0.33	65	73	77
105	CjAj-2:235	Dildo Island	D	1.7	3.43	1.83	0.35	65	76	77
106	DlBk-3:1463	Factory Cove	G	1.5	3.4	1.17	0.46	57	86	80
107	DlBk-3:1022	Factory Cove	G	1.3	3.19	1.3	0.29	57	82	81
108	DlBk-3:1226	Factory Cove	G	1.3	NA	1.3	0.39	NA	88	77
109	DlBk-3:1809	Factory Cove	G	1.8	3.75	1.2	0.42	57	80	86
112	DlBk-3:1814	Factory Cove	G	1.1	3.2	1.16	0.34	NA	83	80
113	DlBk-3:2106	Factory Cove	G	1.1	2.98	1.24	0.31	68	83	80
114	DlBk-3:906	Factory Cove	G	1.3	3.3	1.14	0.31	65	86	84
117	DlBk-3:1477	Factory Cove	G	1.0	2.7	1	0.38	61	83	84
118	DlBk-3:788	Factory Cove	G	0.4	2.15	0.8	0.26	50	82	82
119	DlBk-3:1766	Factory Cove	G	1.0	2.73	1	0.37	50	80	83
120	DlBk-3:998	Factory Cove	G	0.8	2.52	1.02	0.37	57	85	83
122	DlBk-3:1910	Factory Cove	G	0.9	2.98	1.12	0.35	43	79	78
123	DlBk-3:1124	Factory Cove	G	0.8	2.4	1.16	0.33	63	79	78
124	DlBk-3:830	Factory Cove	G	2.2	3.97	1.55	NA	52	79	NA

PH #	Art #	SiteName	D/G	Wt	Ht	Wdh	Thck	Dstl	PrxL	PrxR
125	DlBk-3:1179	Factory Cove	G	0.4	NA	1.07	0.22	NA	72	75
126	DlBk-3:1070	Factory Cove	G	1.4	3	1.33	0.43	63	81	82
129	DlBk-3:822	Factory Cove	G	1.2	3.64	1.02	0.38	48	84	83
130	DlBk-3:1029	Factory Cove	G	1.9	3.37	1.4	0.45	59	77	82
131	DlBk-3:1104	Factory Cove	G	0.9	NA	1.1	0.3	NA	83	79
133	CjBr-1:22	Isle aux Morts	D	1.7	NA	1.69	0.44	NA	66	82
134	CjBh-1:32	Bay de Vieux II	D	0.5	1.8	1.02	0.25	53	74	76
135	CjBh-1:3	Bay de Vieux II	D	3.0	4.85	1.45	0.45	52	82	83
136	CjBh-1:8	Bay de Vieux II	D	0.9	2.16	NA	0.33	70	66	73
140	CjBj-25:4	Eclipse Island	D	3.1	NA	1.77	0.5	NA	79	83
141	CjBj-25:25	Eclipse Island	D	1.0	3.05	1.02	0.33	46	84	85
142	DiAu-1:25	Thomas Rowsell Island	D	3.4	3.2	2	0.53	103	80	72
143	DiAu-1:117	Thomas Rowsell Island	D	3.4	3.6	2	0.5	103	74	81
144	DiAu-1:125	Thomas Rowsell Island	D	0.7	2.02	1.52	0.32	NA	73	70
145	DiAu-1:111	Thomas Rowsell Island	D	6.0	5.3	1.75	0.6	95	83	85
147	DiAu-1:121	Thomas Rowsell Island	D	1.3	2.42	1.46	0.33	72	77	73
148	DiAu-1:98	Thomas Rowsell Island	D	2.1	3.2	1.51	0.37	NA	79	82
149	DiAu-1:137	Thomas Rowsell Island	D	1.0	2.5	1.82	0.31	NA	71	76
150	DiAu-1:129	Thomas Rowsell Island	D	0.9	2.6	1.6	0.3	NA	NA	68
151	DiAu-1:138	Thomas Rowsell Island	D	0.9	2.35	1.7	0.35	68	68	74
152	DiAu-1:116	Thomas Rowsell Island	D	0.7	2.35	1.4	0.29	57	73	73
154	DlBe-1:1	Jackson's Arm 1	D	0.9	2.57	1.25	0.34	62	74	77
155	DlBe-1:2	Jackson's Arm 1	D	1.0	2.45	1.5	0.38	76	72	76
157	EaBa-12:5	Plat Bay Cove 2	D	2.6	3.58	1.54	0.5	68	79	82
158	GlCe-5:1	Solomon Island-1	D	3.7	3.6	2.12	0.57	83	73	78
159	GlCe-5:3	Solomon Island-1	D	1.7	3.15	1.65	0.45	58	70	79
160	GlCe-5:2	Solomon Island-1	D	1.5	2.8	1.48	0.41	64	72	81
161	HdCh-14:5	Dog Island West Spur L	D	1.8	3.17	1.68	0.47	57	78	74
164	HdCh-13:37	Dog Island West Spur L	D	1.7	NA	1.6	0.43	NA	80	74
165	HdCh-13:28	Dog Island West Spur L	D	1.1	NA	1.6	0.36	45	75	74
166	EaBa-16:13	Cow Cove-3	D	0.8	2.25	1.57	0.29	74	71	72
167	EaBa-16:50	Cow Cove-3	D	1.1	2.65	1.45	0.35	NA	74	74
168	EaBa-16:307	Cow Cove-3	D	0.7	2.4	1.18	0.35	68	78	79
169	EaBa-16:432	Cow Cove-3	D	2.7	3.83	1.67	0.4	58	78	80
171	EaBa-16:1139	Cow Cove-3	D	1.1	3.15	1.6	0.31	NA	77	73
172	EaBa-16:1207	Cow Cove-3	D	0.5	1.55	1.94	0.36	51	73	74
173	EaBa-16:1812	Cow Cove-3	D	1.4	1.92	1.42	0.39	73	80	80
174	EaBa-16:1824	Cow Cove-3	D	0.6	1.6	1.53	0.26	115	70	75
176	EaBa-16:2067	Cow Cove-3	D	1.2	3.3	1.6	0.33	51	72	79

PH #	Art #	SiteName	D/G	Wt	Ht	Wdh	Thck	Dstl	PrxL	PrxR
177	EaBa-16:2117	Cow Cove-3	D	1.0	2.7	1.61	0.36	60	68	66
178	EaBa-16:2651	Cow Cove-3	D	1.1	2.58	1.61	0.32	71	71	73
179	EaBa-16:4712	Cow Cove-3	D	1.5	2.83	1.55	0.47	61	75	78
180	EaBa-16:4011	Cow Cove-3	D	1.1	2.76	1.44	0.4	50	71	79
181	EaBa-16:2747	Cow Cove-3	D	0.6	2	1.29	0.32	63	70	75
182	EaBa-16:6942	Cow Cove-3	D	0.6	2	1.3	0.27	62	71	75
183	EaBa-16:7358	Cow Cove-3	D	1.0	2.7	1.69	0.28	69	71	74
186	EaBa-16:6444	Cow Cove-3	D	0.9	2.6	1.5	0.4	60	73	76
187	EaBa-16:6672	Cow Cove-3	D	2.6	4.5	1.47	0.5	NA	80	84
188	EaBa-16:5234	Cow Cove-3	D	0.5	1.9	1	0.3	56	74	78
189	EaBa-16:6003	Cow Cove-3	D	0.3	1.66	0.95	0.2	54	76	75
190	EaBa-16:5214	Cow Cove-3	D	0.5	NA	1.3	0.29	NA	77	69
191	EaBa-16:4891	Cow Cove-3	D	1.1	3.15	1.7	0.34	NA	76	75
192	FbAv-12:18	Sand Cove 1 (Lab)	D	2.7	3.64	2.1	0.45	64	75	75
194	FbAv-12:2	Sand Cove 1 (Lab)	D	1.6	3.1	1.3	0.5	NA	80	80
195	FcAv-4:1	Pardy (Lab)	D	1.2	2.6	1.51	0.41	64	73	78
196	FdAw-5:9	St. Francis Hrbr Bight	D	2.9	3.4	2.16	0.59	57	70	76
197	FdAw-5:14	St. Francis Hrbr Bight	D	0.9	2.29	1.29	0.41	NA	78	76
198	FdAw-5:10	St. Francis Hrbr Bight	D	1.7	3.9	1.67	0.48	66	75	76
199	FdAw-5:11	St. Francis Hrbr Bight	D	1.4	3.4	1.8	0.37	NA	75	77
200	FbAv-7:2	Cape Charles-2	D	0.3	1.45	0.8	0.2	64	73	77
201	FiAw-3:7	Black Tickle-2 Lab	D	1.6	3.15	1.73	0.35	NA	76	71
202	FiAw-3:11	Black Tickle-2 Lab	D	0.9	2.1	1.46	0.39	72	65	75
203	FiAw-3:2	Black Tickle-2 Lab	D	2.1	3.55	2	0.4	72	74	80
204	FiAw-3:9	Black Tickle-2 Lab	D	1.2	2.79	1.9	0.39	68	88	86
214	CjAj-2:882	Dildo Island	D	2.7	4.73	1.7	0.4	61	83	79
215	CjAj-2:809	Dildo Island	D	0.7	2.45	1.08	0.33	NA	77	80
216	CjAj-2:1084	Dildo Island	D	1.5	3.5	1.46	0.38	55	79	78
217	CjAj-2:1018	Dildo Island	D	0.4	1.7	0.9	0.28	57	76	76
219	CjAj-2:808-90	Dildo Island	D	1.2	4.1	1.06	0.29	46	84	85
220	CjAj-2:998	Dildo Island	D	1.6	3.5	1.35	0.38	60	80	82
224	CjAj-2:905-10	Dildo Island	D	1.1	3.3	1.15	0.38	48	79	84
226	CjAj-2:987-99	Dildo Island	D	1.2	3.7	1.4	0.35	48	82	81
227	CjAj-2:1065	Dildo Island	D	2.3	4	1.65	0.45	59	79	82
228	CjAj-2:1012-1	Dildo Island	D	2.5	5.75	1.45	0.4	NA	81	87
231	CjAj-2:1066	Dildo Island	D	1.4	3.7	1.47	0.33	NA	76	82
232	CjAj-2:1245	Dildo Island	D	1.4	3.67	1.28	0.32	54	81	81
236	CjAj-2:896	Dildo Island	D	0.5	2.1	0.96	0.4	51	75	82
237	CjAj-2:1015	Dildo Island	D	0.2	1.45	0.7	0.16	NA	78	78

PH #	Art #	SiteName	D/G	Wt	Ht	Wdh	Thck	Dstl	PrxL	PrxR
238	EgBf-12:NN	Bird Cove	D	1.6	2.95	1.54	0.41	61	75	77
239	EgBf-12:156	Bird Cove	D	2.2	3.65	1.85	0.49	60	77	77
240	EgBf-12:84	Bird Cove	D	1.1	2.6	1.5	0.34	NA	79	70
241	EgBf-12:210	Bird Cove	D	0.0	3.8	1.29	0.46	45	81	83
242	EgBf-12:261	Bird Cove	D	1.0	2	1.5	0.41	65	71	71
243	EgBf-12:127	Bird Cove	D	1.6	3.1	1.8	0.4	60	70	74
245	EgBf-12:21	Bird Cove	D	0.8	2.46	1.4	0.3	60	75	74
246	EgBf-12:189	Bird Cove	D	0.8	2.4	1.05	0.35	45	78	81
247	CjBt-1:6773	Cape Ray Light	D	2.3	3.73	2.02	0.36	60	75	74
248	CjBt-1:5059	Cape Ray Light	D	1.6	3.3	1.6	0.35	63	72	79
249	CjBt-1:6793	Cape Ray Light	D	0.4	1.69	1.1	0.25	63	67	79
250	CjBt-1:1890	Cape Ray Light	D	1.1	2.65	1.47	0.34	57	75	77
251	CjBt-1:1884	Cape Ray Light	D	1.1	2.8	1.55	0.35	64	67	82
252	CjBt-1:1874	Cape Ray Light	D	1.9	3.6	1.9	0.4	62	72	80
253	CjBt-1:1873	Cape Ray Light	D	1.1	2.95	1.43	0.29	57	72	80
254	DlBk-3:1130	Factory Cove	G	1.2	2.8	1.4	0.35	53	85	71
255	DlBk-3:205	Factory Cove	G	1.6	3.12	1.29	0.38	52	75	84
256	DlBk-3:1140	Factory Cove	G	2.1	3.37	1.33	0.47	58	78	84
257	DlBk-3:332	Factory Cove	G	2.8	3.45	1.43	0.54	85	85	81
258	DlBk-3:1161	Factory Cove	G	1.5	3.05	1.15	0.4	70	80	86
259	DlBk-3:188	Factory Cove	G	1.8	2.88	1.5	0.45	67	83	75
260	DlBk-3:179	Factory Cove	G	1.8	2.92	1.52	0.44	81	78	83
261	DlBk-3:187	Factory Cove	G	2.0	3.4	1.29	0.45	63	80	84
262	DlBk-3:3	Factory Cove	G	2.1	3.74	1.5	0.41	66	79	NA
263	DlBk-3:1026	Factory Cove	G	1.6	3.06	1.34	0.43	66	76	83
264	DlBk-3:1368	Factory Cove	G	2.0	4.08	1.41	0.35	52	80	83
265	DlBk-3:744	Factory Cove	G	2.0	3.09	1.52	0.4	67	78	79
266	DlBk-3:1509	Factory Cove	G	2.5	3.87	1.67	0.38	58	78	77
267	GfBw-4:1702	Postville Lab	G	3.6	NA	1.8	0.53	NA	82	81
268	GfBw-4:447	Postville Lab	G	1.8	3.05	1.47	0.37	68	79	79
269	GfBw-4:1717	Postville Lab	G	2.4	3.51	1.7	0.42	53	76	78
270	GfBw-4:797	Postville Lab	G	1.7	2.83	1.51	0.4	68	74	80
271	GfBw-4:63	Postville Lab	G	1.7	2.87	1.62	0.37	63	73	75
273	GfBw-4:767	Postville Lab	G	3.7	3.6	1.82	0.57	58	76	77
276	GfBw-4:1417	Postville Lab	G	3.1	3.42	1.82	0.4	95	83	80
277	GfBw-4:909	Postville Lab	G	0.3	1.58	0.77	0.22	65	82	78
278	GfBw-4:875	Postville Lab	G	1.9	NA	1.55	0.5	NA	84	83
279	GfBw-4:1181	Postville Lab	G	1.5	NA	1.13	0.5	NA	80	85
280	CjAj-2:162	Dildo Island	D	2.0	4.05	1.45	0.34	67	80	82

PH #	Art #	SiteName	D/G	Wt	Ht	Wdh	Thck	Dstl	PrxL	PrxR
281	CjAj-2:181	Dildo Island	D	4.5	4.7	1.89	0.54	66	81	78
282	CjAj-2:173	Dildo Island	D	1.8	4	1.38	0.46	NA	76	86
283	CjAj-2:276	Dildo Island	D	0.9	2.56	1.32	0.34	61	76	78
284	CjAj-2:158	Dildo Island	D	1.1	3.5	1.18	0.18	NA	93	80
285	CjAj-2:52	Dildo Island	D	2.0	4.29	1.37	0.38	51	83	80
288	CjAj-2:14	Dildo Island	D	2.7	5.3	1.41	0.43	NA	81	86
291	CjAj-2:3	Dildo Island	D	2.0	3.57	1.71	0.36	66	77	78
292	CjAj-2:125	Dildo Island	D	0.4	3.2	0.61	0.18	30	82	88
294	CjAj-2:229	Dildo Island	D	2.0	5	1.56	0.39	NA	82	82
296	CjAj-2:246	Dildo Island	D	2.0	3.6	1.67	0.42	59	76	80
297	CjAj-2:163	Dildo Island	D	0.7	2.5	1.2	0.25	NA	83	73
298	CjAj-2:120	Dildo Island	D	0.7	2.62	1.05	0.26	49	82	77
299	CjAj-2:129	Dildo Island	D	1.2	3.22	1.26	0.35	NA	82	80
301	CjAw-1:7	Eagle Point	D	0.7	2.8	1.05	0.29	50	80	81
302	CjAw-1:98	Eagle Point	D	1.7	4.3	1.38	0.37	43	84	79
303	CjAw-1:4	Eagle Point	D	1.7	NA	1.4	0.34	53	NA	NA
304	CjAw-1:9	Eagle Point	D	3.0	4.7	1.6	0.45	NA	80	83
305	CjAw-1:2	Eagle Point	D	2.1	NA	1.79	0.4	NA	72	85
306	CjAw-1:16	Eagle Point	D	1.6	NA	1.9	0.36	NA	83	77
308	ClAl-1:726	Frenchman's Island	D	0.6	2.8	0.98	0.31	NA	81	81
309	ClAl-1:780	Frenchman's Island	D	1.5	4.2	1.25	0.38	52	81	85
310	ClAl-1:765	Frenchman's Island	D	1.6	NA	1.38	0.37	NA	84	83
311	ClAl-1:129	Frenchman's Island	D	1.9	4.4	1.5	0.4	50	81	80
312	ClAl-1:716	Frenchman's Island	D	1.8	NA	1.5	0.36	NA	85	84
313	ClAl-1:201	Frenchman's Island	D	1.7	3.8	1.71	0.35	63	79	76
314	ClAl-1:244	Frenchman's Island	D	2.9	3.63	1.52	0.63	50	76	87
315	ClAl-1:652	Frenchman's Island	D	1.5	4	1.44	0.42	58	83	81
316	ClAl-1:724	Frenchman's Island	D	2.5	4.25	1.63	0.4	NA	85	76
317	ClAl-1:663	Frenchman's Island	D	1.6	5	1.2	0.38	NA	86	81
318	ClAl-1:254	Frenchman's Island	D	1.8	3.8	1.7	0.39	NA	86	69
319	CjBt-1:2200 E	Cape Ray Light	D	0.4	1.52	1.1	0.35	60	69	69
320	EeBi-1:13728	Phillip's Garden	D	3.4	4	1.74	0.44	71	82	80
321	EeBi-1:11362	Phillip's Garden	D	2.6	3.84	1.75	0.45	67	74	82
322	EeBi-1:11418	Phillip's Garden	D	2.8	3.54	2.1	0.35	92	76	76
323	EeBi-1:18293	Phillip's Garden	D	1.2	2.85	1.52	0.29	62	76	76
324	EeBi-1:11371	Phillip's Garden	D	2.6	4	1.85	0.55	54	74	82
326	EeBh-9:1	Flat Point	D	3.5	3.13	2.11	0.61	87	69	78
327	EeBh-8:3	Charmaine	D	1.7	3.23	1.8	0.45	52	79	75
328	EeBh-8:1	Charmaine	D	1.8	NA	NA	0.56	58	NA	NA

PH #	Art #	SiteName	D/G	Wt	Ht	Wdh	Thck	Dstl	PrxL	PrxR
329	EeBh-15:12	Squall	D	5.7	4.63	2.26	0.58	70	82	73
330	EeBh-15:16	Squall	D	1.5	2.72	1.62	0.45	58	69	78
331	EeBh-15:25	Squall	D	1.1	2.9	1.76	0.28	61	70	78
332	EeBh-15:1	Squall	D	1.2	2.67	1.9	0.32	71	72	69
333	EeBh-15:26	Squall	D	2.3	2.21	1.8	0.5	74	75	75
334	EeBh-15:85	Squall	D	1.0	2.63	1.66	0.36	65	70	77
335	EeBh-10:240	Lobe C	D	1.3	3.1	1.45	0.44	64	78	78
336	EeBh-10:241	Lobe C	D	2.4	3.6	1.7	0.58	57	80	75
338	EeBh-12:2	Clam	NA	1.6	3	1.5	0.47	NA	78	74
339	EeBh-16:7	Three Bar	D	1.7	3.5	1.53	0.5	48	75	82
340	EeBh-16:36	Three Bar	D	1.2	NA	NA	0.45	59	NA	NA
341	EeBh-16:6	Three Bar	D	1.5	3.2	1.45	0.37	55	78	79
342	EeBh-16:44	Three Bar	D	3.0	4.57	1.91	0.44	56	78	81
343	EeBh-16:35	Three Bar	D	1.4	3.25	1.68	0.33	NA	75	77
344	EeBh-16:45	Three Bar	D	2.2	3.57	1.79	0.4	60	73	81
345	EeBh-16:39	Three Bar	D	2.1	2.93	1.95	0.43	62	70	74
346	EeBh-16:32	Three Bar	D	2.0	3.3	1.65	0.46	67	75	81
347	EeBh-16:1	Three Bar	D	1.9	3.05	1.9	0.41	61	74	70
348	EeBh-16:49	Three Bar	D	1.6	2.9	1.79	0.36	84	72	80
349	EeBh-16:34	Three Bar	D	2.3	3.75	1.86	0.45	68	79	75
350	EeBh-16:2	Three Bar	D	2.7	3.75	1.94	0.5	64	78	73
351	EeBh-16:33	Three Bar	D	2.2	3.43	1.85	0.38	69	79	86
352	EeBh-16:48	Three Bar	D	1.7	3.13	1.58	0.43	70	80	74
353	EeBh-16:3	Three Bar	D	2.1	3.93	1.81	0.39	56	78	78
354	EeBh-16:46	Three Bar	D	1.7	2.95	1.81	0.37	62	74	71
355	EeBh-16:41	Three Bar	D	2.3	3.45	1.83	0.45	64	74	78
356	EeBh-16:42	Three Bar	D	1.7	2.82	1.93	0.42	68	70	73
357	EeBi-1:4263	Phillip's Garden HH 17	D	1.1	2	1.62	0.34	110	63	76
358	EeBi-1:18339	Phillip's Garden HH 17	D	1.4	2.56	1.33	0.39	75	77	79
359	EeBi-1:4256	Phillip's Garden HH 17	D	2.0	3.51	1.54	0.47	73	83	77
360	EeBi-1:4198	Phillip's Garden HH 17	D	2.0	3.35	1.54	0.48	77	82	79
361	EeBi-1:4199	Phillip's Garden HH 17	D	3.3	3.47	2.06	0.61	77	75	76
362	EeBi-1:18330	Phillip's Garden HH 17	D	1.4	2.27	1.69	0.42	106	69	76
363	EeBi-1:18324	Phillip's Garden HH 17	D	2.0	3.19	1.8	0.44	66	74	76
364	EeBi-1:18294	Phillip's Garden HH 17	D	2.3	3.06	1.98	0.47	83	76	73
365	EeBi-1:4273	Phillip's Garden HH 17	D	1.9	2.78	1.82	0.49	74	75	70
366	EeBi-1:18278	Phillip's Garden HH 17	D	1.4	2.4	1.6	0.37	94	68	85
367	EeBi-1:7A368B	Phillip's Garden H 55	D	2.4	3.14	1.99	0.46	77	75	74
368	EeBi-1:7A368B	Phillip's Garden H 55	D	1.8	3.11	1.78	0.4	73	74	76

PH #	Art #	SiteName	D/G	Wt	Ht	Wdh	Thck	Dstl	PrxL	PrxR
369	EeBi-1:7A367D	Phillip's Garden H 55	D	1.5	3.07	1.42	0.41	61	79	78
370	EeBi-1:7A368C	Phillip's Garden H 55	D	2.0	3.21	2.01	0.45	64	75	72
371	EeBi-1:7A368C	Phillip's Garden H 55	D	1.0	2.65	1.31	0.28	56	74	80
372	EeBi-1:7A368C	Phillip's Garden H 55	D	0.5	1.68	1.23	0.26	70	66	73
373	EeBi-1:7A368C	Phillip's Garden H 55	D	0.7	2.1	1.36	0.25	111	74	75
374	EeBi-1:7A368B	Phillip's Garden H 55	D	0.8	NA	1.2	0.31	NA	78	82
376	EeBi-1:551	Phillip's Garden H 10	D	1.6	2.8	1.8	0.35	76	74	73
377	EeBi-1:1567	Phillip's Garden H 10	D	1.0	2.41	1.52	0.33	70	71	76
378	EeBi-1:1558	Phillip's Garden H 10	D	0.9	2.24	1.38	0.36	60	73	74
379	EeBi-1:1590	Phillip's Garden H 10	D	1.9	2.8	1.26	0.46	70	90	71
381	EeBi-1:1553	Phillip's Garden H 10	D	1.7	2.74	1.88	0.43	74	65	76
382	EeBi-1:78294A	Phillip's Garden F14	D	0.2	1.25	0.79	0.2	60	72	73
383	EeBi-1:7A294A	Phillip's Garden F14	D	0.2	1.22	0.84	0.21	70	68	73
384	EeBi-1:7A294D	Phillip's Garden F14	D	1.8	3.09	1.68	0.41	59	75	75
385	EeBi-1:7A295D	Phillip's Garden F14	D	0.7	1.89	1.32	0.35	75	72	70
386	EeBi-1:7A294C	Phillip's Garden F14	D	0.7	1.95	1.2	0.4	67	76	72
387	EeBi-1:7A294A	Phillip's Garden F14	D	1.5	2.87	1.65	0.52	59	79	73
388	EeBi-1:7A294C	Phillip's Garden F14	D	1.8	3.12	1.72	0.41	60	70	81
389	EeBi-1:7A294C	Phillip's Garden F14	D	1.5	2.9	1.65	0.38	59	71	77
390	EeBi-1:7A294D	Phillip's Garden F14	D	1.5	2.67	1.68	0.37	65	72	72
391	EeBi-1:7A294C	Phillip's Garden F14	D	1.3	2.69	1.65	0.38	71	73	76
392	EeBi-1:7A295D	Phillip's Garden F14	D	1.1	2.2	1.79	0.4	100	70	70
393	EeBi-1:7A294A	Phillip's Garden F14	D	0.2	1.4	0.76	0.21	39	78	70
394	EeBi-1:7A294D	Phillip's Garden F14	D	1.6	3.4	1.6	0.46	51	77	78
395	EeBi-1:7A293B	Phillip's Garden F14	D	1.0	2.88	1.19	0.36	52	73	73
396	EeBi-1:7A249B	Phillip's Garden F14	D	0.3	1.32	0.91	0.25	73	69	70
397	EeBi-1:2043	Phillip's Garden HH 4	D	0.5	1.85	1.16	0.27	104	72	79
398	EeBi-1:2613	Phillip's Garden HH 4	D	1.5	2.78	1.46	0.42	66	79	78
399	EeBi-1:2639	Phillip's Garden HH 4	D	2.4	3.41	1.97	0.42	74	77	75
400	EeBi-1:2640	Phillip's Garden HH 4	D	1.4	2.78	1.71	0.4	60	75	73
401	EeBi-1:2621	Phillip's Garden HH 4	D	1.6	2.54	1.7	0.44	81	72	73
402	EeBi-1:2473	Phillip's Garden HH 4	D	1.8	3.4	1.62	0.44	57	80	74
403	EeBi-1:2518	Phillip's Garden HH 4	D	2.5	3.61	1.92	0.5	69	75	78
404	EeBi-1:2643	Phillip's Garden HH 4	D	1.7	2.75	1.68	0.42	70	72	77
405	EeBi-1:2478	Phillip's Garden HH 4	D	2.4	3.47	1.85	NA	52	77	77
406	EeBi-1:11768	Phillip's Garden H6	D	1.6	3.04	1.83	0.38	65	74	78
407	EeBi-1:11787	Phillip's Garden H6	D	1.5	2.7	1.73	0.35	73	71	73
409	EeBi-1:11785	Phillip's Garden H6	D	1.4	2.85	1.64	0.37	63	66	79
410	EaBi-1:11815	Phillip's Garden H6	D	1.1	2.5	1.65	0.35	70	71	74

PH #	Art #	SiteName	D/G	Wt	Ht	Wdh	Thck	Dstl	PrxL	PrxR
411	EeBi-1:11749	Phillip's Garden H6	D	2.6	3.42	2.07	0.54	69	72	77
412	EeBi-1:11746	Phillip's Garden H6	D	2.3	3.4	1.71	0.45	60	75	78
413	EeBi-1:11775	Phillip's Garden H6	D	1.8	2.81	1.82	0.45	70	77	68
414	EeBi-1:11779	Phillip's Garden H6	D	1.6	3.13	2.8	0.4	54	74	76
415	EeBi-1:11792	Phillip's Garden H6	D	0.8	2.22	1.39	0.38	55	67	77
416	EeBi-1:11760	Phillip's Garden H6	D	2.0	3.47	1.72	0.48	60	76	78
417	EeBi-1:11767	Phillip's Garden H6	D	0.5	1.85	1.15	0.29	61	76	73
418	EeBi-1:11818	Phillip's Garden H6	D	0.7	2.04	1.22	0.32	87	82	75
419	EeBi-1:11761	Phillip's Garden H6	D	1.6	2.52	1.71	0.41	77	80	66
420	EeBi-1:16018	Phillip's Garden H12	D	1.6	3	1.55	0.36	66	80	75
421	EeBi-1:16001	Phillip's Garden H12	D	3.0	4.06	2.11	0.49	54	75	77
422	EeBi-1:16145	Phillip's Garden H12	D	1.2	2.91	1.11	0.35	55	78	84
423	EeBi-1:15978	Phillip's Garden H12	D	2.1	3.28	1.86	0.43	73	72	79
425	EeBi-1:15998	Phillip's Garden H12	D	1.2	2.89	1.2	0.37	52	81	81
426	EeBi-1:15991	Phillip's Garden H12	D	1.5	2.7	1.37	0.4	75	75	79
427	EeBi-1:16006	Phillip's Garden H12	D	0.6	2.05	0.9	0.31	76	69	74
428	EeBi-1:15980	Phillip's Garden H12	D	1.7	2.98	1.83	0.38	63	70	76
429	EeBi-1:15643	Phillip's Garden H12	D	2.3	NA	1.7	0.5	NA	84	83
430	EeBi-1:5152	Phillip's Garden 2	D	1.1	NA	1.66	0.34	NA	73	75
431	EeBi-1:5131	Phillip's Garden 2	D	1.8	3.63	1.72	0.35	58	80	75
432	EeBi-1:5158	Phillip's Garden 2	D	1.7	3.34	1.52	0.46	39	77	81
433	EeBi-1:5133	Phillip's Garden 2	D	1.4	2.88	1.39	0.4	66	80	77
434	EeBi-1:5269	Phillip's Garden 2	D	2.2	3.17	1.76	0.47	59	74	77
435	EeBi-1:5162	Phillip's Garden 2	D	1.1	2.58	1.77	0.28	67	68	77
436	EeBi-1:5201	Phillip's Garden 2	D	1.8	3.17	1.59	0.41	69	80	76
437	EeBi-1:5207	Phillip's Garden 2	D	1.5	2.93	1.9	0.31	67	74	71
438	EeBi-1:5163	Phillip's Garden 2	D	1.5	3.04	1.7	0.37	69	75	79
439	EeBi-1:5190	Phillip's Garden 2	D	2.2	3.8	1.75	0.45	55	77	77
440	EeBi-1:5139	Phillip's Garden 2	D	2.3	3	1.71	0.46	75	76	75
441	DiAs-10:792	Swan Island	D	1.3	2.86	1.54	0.36	59	72	79
442	DiAs-10:814	Swan Island	D	3.5	3.96	1.95	0.52	68	76	78
443	DiAs-10:823	Swan Island	D	3.2	NA	1.59	0.62	NA	81	87
444	DiAs-10:768	Swan Island	D	1.3	2.77	1.31	0.48	48	72	82
445	DiAs-10:733	Swan Island	D	1.7	3.91	1.54	0.36	53	80	81
446	DiAs-10:813	Swan Island	D	2.8	3.76	1.64	0.58	52	82	75
447	DiAs-10:739	Swan Island	D	1.7	3.68	1.45	0.38	55	NA	80
448	DiAs-10:741	Swan Island	D	2.6	3.74	1.67	0.57	49	77	81
449	DiAs-10:757	Swan Island	D	1.0	2.76	1.44	0.32	52	74	80
450	DgAj-1:22	Shambler's Cove	D	4.1	4.35	1.84	0.64	57	81	77

PH #	Art #	SiteName	D/G	Wt	Ht	Wdh	Thck	Dstl	PrxL	PrxR
451	DiAs-10:998	Swan Island	D	1.5	2.87	1.42	0.45	54	76	78
452	DiAs-10:828	Swan Island	D	2.3	2.95	1.63	0.55	68	75	76
453	DiAs-10:854	Swan Island	D	0.8	2.57	1.4	0.36	47	74	75
454	DiAs-10:877	Swan Island	D	1.8	3.45	1.45	0.52	53	76	80
455	DiAs-10:746	Swan Island	D	2.4	4.7	1.35	0.45	57	84	84
456	DiAs-10:879	Swan Island	D	0.4	1.61	1.05	0.24	70	76	71
457	DiAs-10:914	Swan Island	D	2.0	3.26	1.44	0.46	70	83	78
458	DiAs-10:758	Swan Island	D	1.4	2.51	1.54	0.44	80	74	78
459	DiAs-10:587	Swan Island	D	0.8	2.78	0.91	0.34	NA	83	86
460	DiAs-10:896	Swan Island	D	2.7	3.85	1.91	0.4	56	79	77
461	DiAs-10:729	Swan Island	D	1.8	3.96	1.51	0.4	40	80	80
462	DiAs-10:857	Swan Island	D	1.3	3.6	1.39	0.33	NA	77	83
464	DiAs-10:873	Swan Island	D	1.9	3.34	2	0.42	66	61	78
465	DiAs-10:822	Swan Island	D	2.4	4.05	1.8	0.44	71	82	NA
466	DeAk-1:937	Beaches	D	3.2	4.68	1.58	0.58	45	79	84
467	DeAk-1:949	Beaches	D	1.9	3.5	1.32	0.49	51	85	76
468	DeAk-1:667	Beaches	D	1.4	3.51	1.25	0.51	43	84	80
469	DeAk-1:330	Beaches	D	3.2	3.7	1.7	0.5	60	78	79
470	DeAk-1:670	Beaches	D	1.3	3.37	1.31	0.4	47	83	78
471	DeAk-1:50	Beaches	D	3.4	4.1	1.65	0.68	47	81	80
473	DeAk-1:671	Beaches	D	1.8	2.97	1.5	0.48	53	78	76
475	DeAk-1:665	Beaches	D	2.3	4.9	1.61	0.38	NA	80	83
476	DeAk-1:668	Beaches	D	2.3	3.73	1.46	0.52	71	80	84
477	DeAk-1:950	Beaches	D	1.4	2.9	1.47	0.42	58	83	70
478	DeAk-1:951	Beaches	D	1.0	2.5	1.25	0.3	47	73	79
480	DeAk-1:946	Beaches	D	2.5	3.21	1.74	0.55	58	71	81
481	DeAk-1:938	Beaches	D	2.3	3.3	1.67	0.52	55	75	76
482	DeAk-1:138	Beaches	D	3.4	4.79	1.73	0.44	47	79	80
484	DgAj-1:36	Shambler's Cove	D	2.0	3.45	1.44	0.5	55	76	83
485	DgAj-1:753	Shambler's Cove	D	4.3	4.87	1.88	0.6	48	80	81
486	DgAj-1:173	Shambler's Cove	D	1.6	3.01	1.45	0.5	46	76	79
487	DgAj-1:27	Shambler's Cove	D	2.7	3.95	1.7	0.55	45	74	82
489	DgAj-1:174	Shambler's Cove	D	1.3	3.03	1.42	0.4	53	78	80
490	DgAj-1:160	Shambler's Cove	D	0.7	NA	1.47	0.31	NA	76	73
491	DgAj-1:26	Shambler's Cove	D	0.9	2.41	1.65	0.35	62	70	73
492	DgAj-1:258	Shambler's Cove	D	2.1	4.2	1.5	0.47	43	78	81
493	DgAj-1:256	Shambler's Cove	D	0.9	3.05	1.14	0.36	46	76	85
494	DgAj-1:42	Shambler's Cove	D	1.4	3.5	1.4	0.45	40	79	79
495	DgAj-1:44	Shambler's Cove	D	3.1	4.27	1.7	0.47	62	78	83

PH #	Art #	SiteName	D/G	Wt	Ht	Wdh	Thck	Dstl	PrxL	PrxR
496	DgAj-1:28	Shambler's Cove	D	1.7	3.72	1.33	0.46	44	81	82
497	DgAj-1:45	Shambler's Cove	D	1.2	3.23	1.28	0.37	53	79	80
498	DgAj-1:245	Shambler's Cove	D	2.4	3.75	1.5	NA	56	76	84
499	DgAj-1:24	Shambler's Cove	D	1.5	3.31	1.48	0.44	43	73	82
500	DgAj-1:207	Shambler's Cove	D	1.5	4.07	1.44	0.35	43	81	81
501	DgAj-1:48	Shambler's Cove	D	1.9	4.17	1.64	0.46	44	80	79
503	DgAj-1:33	Shambler's Cove	D	0.4	2.1	1.23	0.28	55	75	71
504	DgAj-1:46	Shambler's Cove	D	3.0	4.6	1.57	0.47	50	79	83
505	DgAj-1:40	Shambler's Cove	D	2.4	4.92	1.31	0.46	36	81	84
506	EgBf-14:12	Fisherman's Cove 2	D	0.3	1.34	1.08	0.26	64	68	71
507	EgBf-12:131	Bird Cove	D	1.3	2.53	1.5	0.31	60	72	80
508	EgBf-12:136	Bird Cove	D	1.1	2.36	1.53	0.33	66	74	71
509	EgBf-12:114	Bird Cove	D	1.1	2.39	1.58	0.3	56	70	71
511	EgBf-18:25	Peat Garden North	D	1.2	2.2	1.49	0.41	74	74	72
512	EgBf-18:1157	Peat Garden North	D	1.1	2.44	1.32	0.42	65	72	80
513	ClAl-1:754	Frenchman's I	D	2.5	4.54	1.43	0.44	47	82	82
514	CkAl-3:1968	Stock Cove	D	0.6	2.3	1.19	0.27	64	76	77
515	CkAl-3:15	Stock Cove	D	1.6	3.8	1.55	0.37	51	80	78
516	CkAl-3:3044	Stock Cove	D	1.1	3.12	1.43	0.33	50	75	80
517	CkAl-3:3045	Stock Cove	D	2.5	5	1.37	0.37	50	83	83
518	ClAl-1:678	Frenchman's I	D	0.7	2.35	1.4	0.26	67	77	74
519	ClAl-1:202	Frenchman's I	D	4.5	5.95	2.02	0.41	61	81	82
520	ClAl-1:180	Frenchman's I	D	1.3	3.15	1.31	0.42	50	79	80
521	DgAt-1:1581	Rattling Brook	D	1.2	3.11	1.52	0.32	65	74	83
522	DgAt-1:1539	Rattling Brook	D	1.2	2.19	1.59	0.37	97	72	73
523	DgAt-1:1536	Rattling Brook	D	1.0	2.48	1.6	0.32	63	75	72
524	DgAt-1:1695	Rattling Brook	D	0.4	1.77	1.2	0.28	79	76	68
525	DgAt-1:1457	Rattling Brook	D	1.2	2.66	1.36	0.41	61	75	78
526	DgAt-1:1540	Rattling Brook	D	1.5	3.2	1.7	0.37	58	73	78
527	DjBl-2:398	Norris Point 1 Donovan	D	2.0	3.8	1.8	0.41	75	82	76
528	DjBl-5:6	Norris Point 2 Decker'	D	1.5	3.74	1.74	0.36	58	79	78
529	DjBl-5:1	Norris Point 2 Decker'	D	1.1	3.02	1.73	0.36	64	71	79
530	DjBl-5:7	Norris Point 2 Decker'	D	1.5	3.86	1.7	0.35	58	75	83
532	EaBi-1:2710	Phillip's Garden	D	2.2	4.1	2.82	0.46	66	81	78
533	CjBt-1:6175	Cape Ray Light	D	1.2	2.93	1.62	0.36	60	75	75
534	CjBt-1:6168	Cape Ray Light	D	1.6	3.36	1.6	0.32	61	77	80
535	CjBt-1:5773	Cape Ray Light	D	0.4	1.47	0.98	0.25	77	73	71
536	CjBt-1:10047	Cape Ray Light	D	0.6	2.07	1.15	0.3	65	74	78
537	CjBt-1:5360	Cape Ray Light	D	1.3	2.2	1.82	0.42	78	65	70

PH #	Art #	SiteName	D/G	Wt	Ht	Wdh	Thck	Dstl	PrxL	PrxR
538	CjBt-1:4989	Cape Ray Light	D	1.1	2.73	1.45	0.37	63	67	85
539	CjBt-1:5018	Cape Ray Light	D	1.4	2.72	1.63	0.4	62	74	73
540	CjBt-1:9079	Cape Ray Light	D	1.7	3.03	1.7	0.43	60	74	77
541	CjBt-1:5795	Cape Ray Light	D	0.7	2.56	1.19	0.25	56	75	80
542	CjBt-1:5335	Cape Ray Light	D	1.2	3.2	1.71	0.3	53	70	82
543	CjBt-1:5768	Cape Ray Light	D	1.5	3.3	1.88	0.35	55	71	77
544	CjBt-1:5174	Cape Ray Light	D	2.0	3.64	1.71	0.38	62	78	78
545	CjBt-1:8613	Cape Ray Light	D	2.5	4	1.75	0.48	60	77	80
546	CjBt-1:10082	Cape Ray Light	D	3.7	5.85	7.85	0.4	46	83	80
547	CjBt-1:2000	Cape Ray Light	D	0.5	2.5	0.89	0.23	51	83	81
548	CjBt-1:9696	Cape Ray Light	D	2.1	3.76	1.81	0.42	56	74	81
549	CjBt-1:5047	Cape Ray Light	D	2.8	5.26	1.48	0.38	53	84	82
550	CjBt-1:6445	Cape Ray Light	D	0.9	2.37	1.3	0.36	63	73	76
551	CjBt-1:C62251	Cape Ray Light	D	1.0	2.6	1.21	0.36	58	78	78
552	CjBt-1:5055	Cape Ray Light	D	5.0	5.11	NA	0.47	66	75	NA
555	DiAs-10:754	Swan Island	D	1.7	3.38	1.45	0.41	NA	NA	NA

PH #	Art #	BaseType	bWdt	hWdt	material	color	fcl	flu	Rtch	Grnd	Ser
10	CjBt-1:4411	basally notched	--	--	chert	Gray	U	N	y	N	N
11	CjBt-1:4412	basally notched	--	--	chert	Brown	U	N	y	N	y
14	CjBt-1:4414	basally notched	--	--	chert	Beige	bi	N	y	N	y
17	CjBt-1:4419	basally notched	--	--	chert	Beige	U	Y	y	N	N
18	CjBt-1:4420	basally notched	--	--	chert	Beige	bi	N	y	N	N
19	CjBt-1:4422	Concave slant	--	--	chert	Brn-gray	bi	N	y	N	N
20	CjBt-1:5133	basally notched	--	--	chert	Lt gray bnds	bi	Y	y	N	y
21	CjBt-1:5134	basally notched	--	--	chert	Gray	bi	N	y	N	N
22	CjBt-1:5136	basally notched	--	--	chert	Mottled grey	bi	NA	y	N	N
23	CjBt-1:5137	Concave	--	--	chert	Gray	bi	N	y	N	y
24	CjBt-1:5138	basally notched	1.55	1.3	chert	Mottled grey	bi	NA	y	N	N
29	CjBt-1:2001 F	Sidenotch convex	1.55	1.4	chert	Gray	bi	N	y	N	y
31	CjBt-1:1988 E	basally notched	NA	0.85	chert	Gray	bi	Y	y	N	y
33	CjBt-1:2005 E	Sidenotch strt	1.6	1.4	chert	White	bi	Y	y	N	y
35	CjBt-1:5268	Bas & 1 side ntch	1.45	1.15	chert	Dk brn	bi	N	y	N	N
36	CjBt-1:5221	basally notched	--	--	chert	Dk brn	bi	N	y	N	y
37	CjBt-1:1722 S	basally notched	--	--	chert	Gray/brn flks	bi	NA	y	N	y
39	CjBt-1:NN1	basally notched	--	--	chert	White banded	bi	Y	y	N	y
40	CjBt-1:NN2	basally notched	1.7	1	chert	tan/dk lines	bi	N	y	N	N
41	CjBt-1:NN3	basally notched sl	--	--	chert	Tan	bi	Y	y	N	N
42	CjBt-1:NN4	basally notched	--	--	chert	Gray	bi	N	y	N	y
44	CjBt-1:12056	basally notched	--	--	chert	Lt. gray	bi	Y	y	N	y
46	CjBt-1:2087	basally notched	--	--	chert	Gray	U	N	y	N	y
47	CjBt-1:2095 E	Concave slanted	--	--	chert	Tan	bi	Y	y	N	N
48	CjBt-1:2097 E	basally notched	--	--	chert	Lt gray	bi	Y	y	N	y
50	CjBt-1:2061	basally notched	--	--	chert	Dk brn	bi	NA	y	N	y
51	CjBt-1:2068	basally notched	--	--	chert	Gray	bi	Y	y	N	y
52	CjBt-1:2074	basally notched	--	--	chert	Gray	bi	N	y	N	y
54	CjBt-1:2240	Concave slanted	--	--	chert	Brn	bi	Y	y	N	y
55	CjBt-1:2237	basally notched	--	--	chert	Gray	bi	Y	y	N	y
56	CjBt-1:2227	Concave	--	--	chert	Brn lt bands	bi	Y	y	N	y
57	CjBt-1:5790	basally notched	--	--	chert	Brn	bi	Y	y	N	y
63	EdBh-2:22	basally notched	--	--	chert	Lt gray	bi	Y	y	N	y
64	EeBh-1:02	Straight	--	--	chert	Dk gray	bi	Y	y	N	N
65	EdBh-2:19	Straight	--	--	Ramah chert	Dk gray trns	bi	Y	y	N	N
66	EbBj-6:25	basally notched	1.7	0.85	chert	Black	bi	NA	y	N	y
67	EbBj-6:24	Sidenotched	NA	1.15	Ramah chert	Opaque clear	bi	N	y	N	N
70	DhAi-6:425	basally notched	--	--	chert	Gray banded	U	N	y	N	y
71	EeBi-1:11389	basally notched	--	--	chert	Dk gray-blk	bi	N	y	N	y

PH #	Art #	BaseType	bWdt	hWdt	material	color	fcl	flu	Rtch	Grnd	Ser
72	CjAj-2:222	Straight	--	--	chert	Beige brn sp	bi	N	N	Y	y
73	CjAj-2:131	Slightly concave	--	--	chert	Beige brn sp	bi	N	y	Y	y
75	CjAw-1:17	Slightly concave	--	--	chert	Lt gray bands	bi	N	y	Y	y
76	ClAl-1:723	Concave	--	--	chert	Tan spkles	bi	N	y	Y	N
77	EeBi-1:11396	Concave	--	--	Ramah chert	Dk brn/gray	bi	N	y	N	N
78	EeBi-1:11395	basally notched	--	--	chert	gray brn tip	bi	N	y	N	N
79	EeBi-1:11391	basally notched	--	--	chert	Black	Bi	N	y	N	N
80	EeBi-1:11390	basally notched	--	--	Ramah chert	Gray spkld	bi	N	y	N	N
83	IdCq-22:5779	Concave	--	--	Ramah chert	Gray transl	bi	N	y	N	y
84	IdCq-22:5050	Side & basal ntch	1.32	1.22	Ramah chert	Gray transl	bi	N	y	N	y
85	IdCq-22:4813	Concave	--	--	Ramah chert	Dk gray trans	bi	N	y	N	N
86	IdCq-20:24	basally notched	--	--	Ramah chert	Gray transl	bi	N	y	N	N
87	IdCq-20:12	basally notched	--	--	Ramah chert	Gray transl	bi	Y	y	N	y
88	CjAw-1:1	basally notched	--	--	chert	Gray	U	N	y	N	y
91	CkAl-3:10	Concave slant	--	--	chert	wh brn inclus	bi	N	y	N	N
93	CkAl-3:3000	basally notched	--	--	chert	White	bi	Y	y	N	y
94	ClAl-1:234	basally notched	--	--	chert	White & tan	bi	N	N	Y	y
95	ClAl-1:732	Straight	--	--	chert	White & tan	bi	N	N	Y	y
97	CjAj-2:240	basally notched	--	--	chert	Gray	bi	N	y	N	y
98	CjAj-2:132	unknown	--	--	chert	White & tan	bi	N	N	Y	Y
99	CjAj-2:564	Straight	--	--	chert	White	bi	N	N	Y	y
100	CjAj-2:547	Concave	--	--	chert	White & tan	bi	N	y	Y	N
101	CjAj-2:259	Concave	--	--	chert	Tan dk fleck	bi	N	N	Y	y
102	CjAj-2:549	Straight	--	--	chert	Brn	bi	N	N	Y	y
103	CjAj-2:545	basally notched	--	--	chert	White	U	N	y	N	y
105	CjAj-2:235	Concave	--	--	chert	Tan	bi	N	y	Y	y
106	DlBk-3:1463	Sidenotch strt	1.1	0.65	chert	Gray	bi	N	y	N	y
107	DlBk-3:1022	Sidenotch strt	1.32	0.75	chert	Gray	bi	N	y	N	y
108	DlBk-3:1226	Sidenotch strt	1.18	0.73	chert	Black inclus.	bi	N	y	N	y
109	DlBk-3:1809	Sidenotch strt	1.15	0.92	chert	Dk gray/blk	bi	N	y	N	y
112	DlBk-3:1814	Sidenotch strt	1.1	0.8	chert	Ltgray dk incl	bi	N	y	N	y
113	DlBk-3:2106	Straight	--	--	chert	Brn	bi	N	y	N	y
114	DlBk-3:906	Sidenotch strt	0.92	0.6	chert	Gray	bi	N	y	N	y
117	DlBk-3:1477	Sidenotch strt	0.72	0.5	Ramah chert	Gray	bi	N	N	N	y
118	DlBk-3:788	Concave	0.75	0.7	chert	Lt gray bands	bi	N	y	N	y
119	DlBk-3:1766	Straight	1.7	1.7	Ramah chert	Gray	bi	N	y	N	y
120	DlBk-3:998	Sidenotch strt	NA	0.7	chert	Gray	bi	N	y	N	y
122	DlBk-3:1910	Side spatulate bs	0.9	0.7	Ramah chert	Dk brn	U	N	y	N	y
123	DlBk-3:1124	Side notch conc	1.18	0.88	Ramah chert	Dk brn	U	N	y	N	y
124	DlBk-3:830	Side notched	NA	0.8	chert	Greenish gray	bi	N	y	N	y

PH #	Art #	BaseType	bWdt	hWdt	material	color	fcl	flu	Rtch	Grnd	Ser
125	DlBk-3:1179	Side notch strt	1.02	0.75	Ramah chert	Dk brn	bi	NA	N	N	y
126	DlBk-3:1070	Side notched	str	1.35	0.95	Dk & lt brn	bi	N	y	N	N
129	DlBk-3:822	Spatulate	0.85	0.65	chert	Gray	bi	N	y	N	y
130	DlBk-3:1029	Side notch strt	1.25	1.1	chert	Gray	bi	N	y	N	y
131	DlBk-3:1104	Straight	--	--	chert	Gray & white	bi	N	y	N	y
133	CjBr-1:22	Concave	--	--	chert	White	bi	N	y	N	y
134	CjBh-1:32	basally notched	--	--	chert	Green	U	N	y	N	y
135	CjBh-1:3	Concave	--	--	chert	White	bi	N	y	Y	N
136	CjBh-1:8	Concave	--	--	chert	Yellow brn	bi	N	y	N	y
140	CjBj-25:4	basally notched	--	--	chert	Gray & white	U	NA	y	N	N
141	CjBj-25:25	strt lanceolate	--	--	chert	Yellow gray	Bi	N	y	N	N
142	DiAu-1:25	basally notched	--	--	chert	Gray	bi	Y	y	N	y
143	DiAu-1:117	Straight	--	--	chert	gray tan wh	U	N	y	N	N
144	DiAu-1:125	basally notched	--	--	chert	Beige	bi	NA	y	N	y
145	DiAu-1:111	Dbl notch strt	NA	NA	chert	Gray	Bi	N	y	N	N
147	DiAu-1:121	Concave	--	--	chert	Brn	bi	N	y	Y	y
148	DiAu-1:98	Straight	--	--	chert	Greenish gray	bi	N	y	Y	y
149	DiAu-1:137	basally notched	--	--	chert	Gray	U	N	y	N	N
150	DiAu-1:129	basally notched	--	--	chert	Brn	U	NA	y	N	N
151	DiAu-1:138	basally notched	--	--	chert	Gray	bi	N	y	N	y
152	DiAu-1:116	basally notched	--	--	chert	Gray	bi	N	y	N	y
154	DlBe-1:1	Concave	--	--	Ramah chert	Dk gray	bi	Y	y	N	y
155	DlBe-1:2	basally notched	--	--	Ramah chert	Dk gray	bi	N	y	N	y
157	EaBa-12:5	Concave	--	--	Ramah chert	Beige	bi	Y	y	N	y
158	GlCe-5:1	basally notched	--	--	Ramah chert	Gray banded	bi	Y	y	N	N
159	GlCe-5:3	basally notched	--	--	Ramah chert	Gray w/ iron	bi	Y	y	N	y
160	GlCe-5:2	Concave	--	--	Ramah chert	Gray	U	N	y	N	y
161	HdCh-14:5	basally notched sl	--	--	Ramah chert	Gray transl	bi	N	y	N	y
164	HdCh-13:37	Convex	--	--	Ramah chert	White transl	bi	NA	y	N	N
165	HdCh-13:28	NA	--	--	Ramah chert	White transl	bi	Y	y	N	N
166	EaBa-16:13	basally notched	--	--	Ramah chert	Lt gray	bi	Y	y	N	y
167	EaBa-16:50	Convex	--	--	chert	Dk gray	bi	N	y	N	N
168	EaBa-16:307	basally notched	--	--	chert	Gray	bi	N	y	N	N
169	EaBa-16:432	Conca side ntch	1.6	1.3	chert	Dk gray wh	bi	Y	y	N	y
171	EaBa-16:1139	basally notched	--	--	chert	Green gray	bi	NA	y	N	N
172	EaBa-16:1207	Straight	--	--	chert	Dk gray	bi	N	y	N	N
173	EaBa-16:1812	Concave	--	--	chert	Tan	Bi	Y	y	N	y
174	EaBa-16:1824	basally notched	--	--	chert	Dk gray	bi	N	y	N	N
176	EaBa-16:2067	basally notched	--	--	chert	Beige	U	N	y	N	y

PH #	Art #	BaseType	bWdt	hWdt	material	color	fcl	flu	Rtch	Grnd	Ser
177	EaBa-16:2117	Bas & 1 side ntch	NA	1.2	chert	Beige	bi	N	y	N	y
178	EaBa-16:2651	Concave	--	--	chert	Gray bnded	bi	N	y	N	y
179	EaBa-16:4712	Bas & 1 side ntch	1.5	1.3	Ramah chert	Gray	bi	N	y	N	y
180	EaBa-16:4011	basally notched	--	--	chert	Beige	bi	N	y	N	y
181	EaBa-16:2747	basally notched	--	--	Ramah chert	Dk gray	bi	N	y	N	y
182	EaBa-16:6942	basally notched	--	--	chert	White	bi	Y	y	N	y
183	EaBa-16:7358	basally notched	--	--	chert	White	bi	N	y	N	y
186	EaBa-16:6444	basally notched	--	--	Ramah chert	Lt gray	bi	Y	y	N	N
187	EaBa-16:6672	Con & 1 side ntch	1.45	1.4	Ramah chert	Gray	bi	Y	y	N	y
188	EaBa-16:5234	basally notched	--	--	chert	Dk gray	bi	N	y	N	y
189	EaBa-16:6003	basally notched	--	--	chert	White	U	N	y	N	y
190	EaBa-16:5214	basally notched	--	--	Ramah chert	Dk gray	Bi	NA	y	N	y
191	EaBa-16:4891	Concave	--	--	Ramah chert	White	bi	N	y	N	y
192	FbAv-12:18	basally notched	--	--	chert	Dk brn	bi	N	y	N	y
194	FbAv-12:2	basally notched	--	--	chert	White & gray	bi	N	N	N	y
195	FcAv-4:1	Concave	--	--	chert	White banded	U	N	y	N	y
196	FdAw-5:9	basally notched	2.08	1.2	chert	Dk grey	U	N	y	N	N
197	FdAw-5:14	Convex	--	--	Ramah chert	Transl. White	bi	Y	y	N	y
198	FdAw-5:10	basally notched	--	--	Ramah chert	Transl. White	bi	Y	y	N	y
199	FdAw-5:11	basally notched	--	--	Ramah chert	Transl. White	U	N	y	N	N
200	FbAv-7:2	Straight	--	--	chert	White	U	N	y	N	N
201	FiAw-3:7	Concave	--	--	Ramah chert	Transl. White	U	NA	y	N	N
202	FiAw-3:11	basally notched	--	--	chert	Gray	U	N	y	N	N
203	FiAw-3:2	basally notched	--	--	chert	Gray	bi	Y	y	N	y
204	FiAw-3:9	Lanceolate	--	--	chert	Black	bi	N	y	N	N
214	CjAj-2:882	basally notched	--	--	chert	Beige-white	U	N	y	N	y
215	CjAj-2:809	basally notched	--	--	chert	Beige	U	Y	y	N	y
216	CjAj-2:1084	basally notched	--	--	chert	Beige-white	bi	Y	y	N	y
217	CjAj-2:1018	basally notched	--	--	chert	Beige	U	N	y	N	y
219	CjAj-2:808-90	Straight	--	--	chert	Beige	bi	N	y	Y	y
220	CjAj-2:998	Concave	--	--	chert	Rose	U	N	y	Y	y
224	CjAj-2:905-10	Straight	--	--	chert	Beige	bi	N	y	Y	N
226	CjAj-2:987-99	basally notched	--	--	chert	Beige	bi	Y	y	Y	y
227	CjAj-2:1065	basally notched	--	--	chert	Beige	bi	Y	y	N	N
228	CjAj-2:1012-1	Concave	--	--	chert	Beige	bi	N	y	Y	N
231	CjAj-2:1066	Concave	--	--	chert	White	bi	NA	N	Y	N
232	CjAj-2:1245	Convex	1.3	1.2	chert	Beige	bi	N	y	Y	y
236	CjAj-2:896	basally notched	--	--	chert	Beige	bi	N	y	N	y
237	CjAj-2:1015	basally notched	--	--	chert	Beige	bi	NA	y	N	N

PH #	Art #	BaseType	bWdt	hWdt	material	color	fcl	flu	Rtch	Grnd	Ser
238	EgBf-12:NN	basally notched	--	--	chert	gray/brn trans	bi	N	y	N	y
239	EgBf-12:156	basally notched	--	--	chert	Dk gray/white	bi	Y	y	N	N
240	EgBf-12:84	basally notched	--	--	chert	Black	bi	NA	y	N	y
241	EgBf-12:210	basally notched	--	--	chert	Black	bi	Y	y	N	y
242	EgBf-12:261	basally notched	--	--	chert	Black	bi	Y	y	N	N
243	EgBf-12:127	basally notched	--	--	chert	gray/dk gray	bi	N	y	N	y
245	EgBf-12:21	basally notched	1.4	1.1	chert	Dk gray	bi	N	y	N	y
246	EgBf-12:189	Concave	--	--	Ramah chert	Gray transl	bi	N	y	N	y
247	CjBt-1:6773	Side notched str	2	1.75	chert	White	bi	N	y	N	y
248	CjBt-1:5059	basally notched	--	--	chert	Dk brn	bi	N	y	N	y
249	CjBt-1:6793	basally notched	--	--	chert	Beige	U	N	y	N	y
250	CjBt-1:1890	basally notched	--	--	chert	Gray	bi	N	y	N	N
251	CjBt-1:1884	basally notched	--	--	chert	White	bi	N	y	N	y
252	CjBt-1:1874	basally notched	--	--	chert	grn/gray band	U	N	y	N	y
253	CjBt-1:1873	basally notched	--	--	chert	Gray	U	Y	y	N	y
254	DlBk-3:1130	Side notch slntd	1.4	1	Ramah chert	Brn trans incl	U	N	y	N	y
255	DlBk-3:205	Side notched	1.2	0.72	chert	Gray banded	bi	N	y	N	y
256	DlBk-3:1140	Side notched	1.3	0.8	chert	Gray	bi	N	y	N	y
257	DlBk-3:332	Side notched	1.4	0.9	chert	Dk gray	bi	N	y	N	N
258	DlBk-3:1161	Sidenotched box	1.15	0.8	chert	Gray spkld	Bi	N	y	N	y
259	DlBk-3:188	Sidenotched box	1.3	0.9	chert	Brn & gray	Bi	N	y	N	y
260	DlBk-3:179	Sidenotched box	1.25	0.82	chert	Brn & gray	Bi	N	y	N	y
261	DlBk-3:187	Sidenotched box	1.28	0.8	chert	Gray & brn sp	Bi	N	y	N	y
262	DlBk-3:3	Sidenotched box	NA	1.2	chert	Dk red-brn	Bi	N	y	N	y
263	DlBk-3:1026	Sidenotched box	1.3	0.75	chert	Blk speckled	Bi	N	y	N	y
264	DlBk-3:1368	Sidenotched box	1.3	0.9	chert	Brn	Bi	N	y	N	y
265	DlBk-3:744	Sidenotched box	1.3	1	chert	Brn	Bi	N	y	N	y
266	DlBk-3:1509	Sidenotched box	1.72	0.82	chert	Dk gray	Bi	N	y	N	y
267	GfBw-4:1702	Sidenotched box	1.55	0.95	Ramah chert	transl. Lt gray	Bi	NA	y	N	y
268	GfBw-4:447	Sidenotched box	1.35	1	Ramah chert	Gray transl	Bi	N	y	N	y
269	GfBw-4:1717	Triangular convex	--	--	Ramah chert	Transl Clear	Bi	N	y	N	y
270	GfBw-4:797	Sidenotched box	1.5	1.02	Ramah chert	Gray transl	Bi	N	y	N	y
271	GfBw-4:63	Straight	--	--	Ramah chert	Transl. Clear	Bi	N	y	N	y
273	GfBw-4:767	Sidenotched box	1.7	1.1	Ramah chert	Gray transl	Bi	N	y	N	y
276	GfBw-4:1417	Sidenotched box	1.05	1.35	chert	Brn & black	Bi	N	y	N	y
277	GfBw-4:909	Sidenotched box	0.7	0.55	chert	Gray	U	N	y	N	N
278	GfBw-4:875	Sidenotched box	1.4	1.05	chert	Gray & brn	Bi	NA	y	N	N
279	GfBw-4:1181	Sidenotched box	NA	0.7	chert	Gray	Bi	N	y	N	y
280	CjAj-2:162	Straight	--	--	chert	Beige	bi	N	y	Y	N

PH #	Art #	BaseType	bWdt	hWdt	material	color	fcl	flu	Rtch	Grnd	Ser
281	CjAj-2:181	Concave	--	--	chert	Beige	bi	Y	y	Y	N
282	CjAj-2:173	Concave	--	--	chert	Beige	bi	NA	y	Y	N
283	CjAj-2:276	Concave	--	--	chert	Gray	U	N	y	N	y
284	CjAj-2:158	Box stem	0.8	0.75	chert	Beige	bi	N	y	N	N
285	CjAj-2:52	Concave	--	--	chert	Beige	bi	N	N	Y	y
288	CjAj-2:14	Straight	--	--	chert	Beige	bi	NA	y	Y	y
291	CjAj-2:3	Straight	--	--	chert	Beige	bi	N	N	Y	y
292	CjAj-2:125	NA	--	--	chert	Beige	Bi	N	y	N	y
294	CjAj-2:229	basally notched	--	--	chert	Green	bi	NA	N	Y	y
296	CjAj-2:246	basally notched	--	--	chert	Beige	U	N	y	N	N
297	CjAj-2:163	basally notched	--	--	chert	Beige & gray	bi	NA	y	Y	N
298	CjAj-2:120	Straight	--	--	chert	Gray	bi	N	y	Y	y
299	CjAj-2:129	Concave	--	--	chert	Beige	bi	NA	y	Y	N
301	CjAw-1:7	Concave	--	--	chert	Light gray	bi	N	y	Y	N
302	CjAw-1:98	basally notched	--	--	chert	Gray splotchy	bi	NA	N	Y	y
303	CjAw-1:4	NA	--	--	chert	Gray	U	N	y	N	y
304	CjAw-1:9	basally notched	--	--	chert	White gray	U	N	y	N	N
305	CjAw-1:2	basally notched	--	--	chert	Light gray	U	N	y	N	N
306	CjAw-1:16	basally notched	--	--	chert	White	bi	NA	y	N	y
308	ClAl-1:726	basally notched	--	--	chert	Beige	U	N	y	N	y
309	ClAl-1:780	basally notched	--	--	chert	Light beige	bi	N	y	Y	y
310	ClAl-1:765	Concave	--	--	chert	Beige	U	N	N	Y	y
311	ClAl-1:129	basally notched	--	--	chert	Beige	bi	Y	y	Y	y
312	ClAl-1:716	basally notched	--	--	chert	White	bi	Y	y	Y	y
313	ClAl-1:201	Straight	--	--	chert	Beige	bi	NA	N	Y	y
314	ClAl-1:244	Side basl.notch	1.4	1.25	chert	Green	bi	Y	y	N	y
315	ClAl-1:652	basally notched	--	--	chert	Beige	bi	Y	y	N	y
316	ClAl-1:724	basally notched	--	--	chert	Beige	bi	NA	y	Y	y
317	ClAl-1:663	basally notched	--	--	chert	Beige	U	NA	y	N	y
318	ClAl-1:254	Slant	--	--	chert	Beige	bi	NA	y	N	y
319	CjBt-1:2200 E	basally notched	--	--	Ramah chert	Clear	bi	Y	y	N	N
320	EeBi-1:13728	box dbl notches	1.45	1.3	Ramah chert	cl dk graybnd	Bi	Y	y	N	N
321	EeBi-1:11362	Side & basal ntch	1.7	1.6	chert	Dk gray	Bi	N	y	N	y
322	EeBi-1:11418	Side notch strt	1.7	1.6	chert	Dk gray	Bi	N	y	N	N
323	EeBi-1:18293	Concave	--	--	Ramah chert	Gray transl	Bi	N	y	N	y
324	EeBi-1:11371	Side & basal ntch	1.75	0.5	chert	Dk brn	Bi	Y	y	N	y
326	EeBh-9:1	Straight	--	--	chert	Gray	U	N	y	N	N
327	EeBh-8:3	basally notched	--	--	chert	Gray	Bi	Y	y	N	N
328	EeBh-8:1	NA	--	--	chert	Gray	U	Y	y	N	N

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329	EeBh-15:12	Concave side not	2.15	2	chert	Gray spkld	Bi	N	y	N	y
330	EeBh-15:16	basally notched	--	--	chert	Gray	Bi	Y	y	N	N
331	EeBh-15:25	basally notched	--	--	chert	Gray	Bi	NA	y	N	y
332	EeBh-15:1	basally notched	--	--	chert	Gray	Bi	N	y	N	y
333	EeBh-15:26	Concave	--	--	chert	Gray	Bi	N	y	N	y
334	EeBh-15:85	basally notched	--	--	chert	Dk gray	Bi	N	y	N	y
335	EeBh-10:240	basally notched	--	--	Ramah chert	Gray transl	Bi	Y	y	N	N
336	EeBh-10:241	basally notched	--	--	chert	Gray	Bi	Y	y	N	y
338	EeBh-12:2	Unk	--	--	chert	Dk gray	Bi	Y	y	N	y
339	EeBh-16:7	basally notched	--	--	chert	Gray	Bi	Y	y	N	y
340	EeBh-16:36	NA	--	--	chert	Dk gray	Bi	Y	y	N	y
341	EeBh-16:6	basally notched	--	--	chert	Grn & gray	Bi	N	y	N	y
342	EeBh-16:44	basally notched	--	--	chert	Gray	Bi	N	y	N	y
343	EeBh-16:35	basally notched	--	--	chert	Dk gray	U	N	y	N	y
344	EeBh-16:45	Concave	--	--	chert	gray white	Bi	Y	y	N	y
345	EeBh-16:39	Concave	--	--	chert	gray white	U	N	y	N	y
346	EeBh-16:32	Concave	--	--	chert	gray white	Bi	Y	y	N	y
347	EeBh-16:1	basally notched	--	--	chert	Gray	Bi	Y	y	N	y
348	EeBh-16:49	basally notched	--	--	chert	Dk gray wht	Bi	N	y	N	y
349	EeBh-16:34	basally notched	--	--	chert	Brn spkld	Bi	N	y	N	y
350	EeBh-16:2	basally notched	--	--	chert	Grn gray ban	Bi	N	y	N	y
351	EeBh-16:33	bas & side ntchd	1.85	1.7	chert	Beige	U	N	y	N	y
352	EeBh-16:48	Concave	--	--	chert	Dk gray	Bi	Y	y	N	y
353	EeBh-16:3	basally notched	--	--	chert	Gray	Bi	Y	y	N	y
354	EeBh-16:46	basally notched	--	--	chert	Banded gray	Bi	Y	y	N	y
355	EeBh-16:41	basally notched	--	--	chert	Dk brn	Bi	Y	y	N	y
356	EeBh-16:42	basally notched	--	--	chert	Dk gray	Bi	N	y	N	y
357	EeBi-1:4263	basally notched	--	--	chert	Brn	Bi	N	y	N	N
358	EeBi-1:18339	basally notched	--	--	Ramah chert	Gray transl	Bi	N	y	N	N
359	EeBi-1:4256	basally notched	--	--	chert	Gray	Bi	Y	N	N	y
360	EeBi-1:4198	basally notched	--	--	chert	Brn-gray	Bi	N	y	N	N
361	EeBi-1:4199	basally notched	--	--	chert	Dk brn	Bi	N	y	N	y
362	EeBi-1:18330	basally notched	--	--	chert	Brn	Bi	N	y	N	N
363	EeBi-1:18324	basally notched	--	--	chert	Gray	Bi	N	y	N	y
364	EeBi-1:18294	basally notched	--	--	chert	Gray	Bi	N	y	N	y
365	EeBi-1:4273	basally notched	--	--	chert	Gray	Bi	N	y	N	y
366	EeBi-1:18278	basally notched	--	--	chert	Black	Bi	N	y	N	y
367	EeBi-1:7A368B	basally notched	--	--	Ramah chert	Gray transl	U	N	y	N	y
368	EeBi-1:7A368B	basally notched	--	--	Ramah chert	Gray transl	bi	N	y	N	y

PH #	Art #	BaseType	bWdt	hWdt	material	color	fcl	flu	Rtch	Grnd	Ser
369	EeBi-1:7A367D	basally notched	--	--	Ramah chert	Gray transl	Bi	Y	y	N	y
370	EeBi-1:7A368C	basally notched	--	--	chert	Gray	Bi	N	y	N	y
371	EeBi-1:7A368C	basally notched	--	--	Ramah chert	Gray transl	U	N	y	N	y
372	EeBi-1:7A368C	basally notched	--	--	chert	Yellow brn	Bi	N	y	N	y
373	EeBi-1:7A368C	basally notched	--	--	chert	Gray	U	N	y	N	y
374	EeBi-1:7A368B	Concave	--	--	chert	Gray	Bi	N	y	N	y
376	EeBi-1:551	Concave	--	--	chert	Dk gray	Bi	N	y	N	y
377	EeBi-1:1567	Concave	--	--	chert	Gray	Bi	N	y	N	y
378	EeBi-1:1558	basally notched	--	--	Ramah chert	gray red flks	Bi	N	y	N	y
379	EeBi-1:1590	Concave	--	--	chert	Black	Bi	N	y	N	N
381	EeBi-1:1553	basally notched	--	--	chert	Black	Bi	N	y	N	y
382	EeBi-1:78294A	Concave	--	--	chert	Black	Bi	N	y	N	y
383	EeBi-1:7A294A	Concave	--	--	Quartz cryst	Clear	Bi	N	y	N	y
384	EeBi-1:7A294D	basally notched	--	--	chert	Brn	Bi	Y	y	N	y
385	EeBi-1:7A295D	Concave	--	--	Ramah chert	Brn trans	Bi	N	y	N	N
386	EeBi-1:7A294C	basally notched	--	--	chert	Gray	Bi	Y	y	N	y
387	EeBi-1:7A294A	basally notched	--	--	chert	Black	Bi	Y	y	N	y
388	EeBi-1:7A294C	basally notched	--	--	chert	Gray	Bi	N	y	N	y
389	EeBi-1:7A294C	basally notched	--	--	Ramah chert	Gray transl	Bi	N	y	N	y
390	EeBi-1:7A294D	basally notched	--	--	chert	Black	Bi	N	y	N	y
391	EeBi-1:7A294C	basally notched	--	--	Ramah chert	Gray transl	Bi	Y	y	N	y
392	EeBi-1:7A295D	basally notched	--	--	chert	Gray	Bi	Y	y	N	N
393	EeBi-1:7A294A	basally notched	--	--	Ramah chert	Gray transl	Bi	N	y	N	y
394	EeBi-1:7A294D	basally notched	--	--	Ramah chert	Gray transl	Bi	Y	y	N	y
395	EeBi-1:7A293B	basally notched	--	--	chert	Yellow brn	Bi	N	y	N	y
396	EeBi-1:7A249B	basally notched	--	--	Ramah chert	Brn transl	Bi	N	y	N	y
397	EeBi-1:2043	basally notched	--	--	chert	Brn & white	Bi	N	y	N	y
398	EeBi-1:2613	Concave	--	--	chert	Gray	Bi	N	y	N	y
399	EeBi-1:2639	basally notched	--	--	chert	Black	Bi	N	y	N	y
400	EeBi-1:2640	Concave	--	--	chert	gray/green	Bi	N	y	N	y
401	EeBi-1:2621	basally notched	--	--	chert	Dkgray bands	Bi	N	y	N	y
402	EeBi-1:2473	basally notched	--	--	Ramah chert	Dk gray trans	Bi	N	N	N	y
403	EeBi-1:2518	basally notched	--	--	chert	Brn	Bi	N	y	N	y
404	EeBi-1:2643	basally notched	--	--	Ramah chert	Gray chert	Bi	N	y	N	y
405	EeBi-1:2478	basally notched	--	--	chert	Gray	Bi	N	y	N	y
406	EeBi-1:11768	Concave	--	--	chert	Gray	Bi	N	y	N	y
407	EeBi-1:11787	basally notched	--	--	chert	Gray	Bi	N	y	N	y
409	EeBi-1:11785	basally notched sl	--	--	chert	Gray	U	N	y	N	y
410	EaBi-1:11815	basally notched	--	--	chert	Gray	Bi	N	y	N	y

PH #	Art #	BaseType	bWdt	hWdt	material	color	fcl	flu	Rtch	Grnd	Ser
411	EeBi-1:11749	basally notched	--	--	chert	Dk brn	Bi	N	y	N	y
412	EeBi-1:11746	Concave	--	--	chert	Black	Bi	N	y	N	y
413	EeBi-1:11775	basally notched	--	--	Ramah chert	Gray	Bi	N	y	N	y
414	EeBi-1:11779	Concave	--	--	chert	Gray	Bi	N	y	N	y
415	EeBi-1:11792	basally notched	--	--	chert	Gray	Bi	N	y	N	y
416	EeBi-1:11760	basally notched	--	--	chert	Beige	Bi	N	y	N	y
417	EeBi-1:11767	bas & side ntchd	1.2	1	chert	Gray	Bi	N	y	N	y
418	EeBi-1:11818	basally notched	--	--	Ramah chert	Brn	Bi	N	y	N	y
419	EeBi-1:11761	Concave	--	--	chert	Gray	Bi	N	y	N	N
420	EeBi-1:16018	Concave	--	--	chert	Gray	Bi	N	y	N	y
421	EeBi-1:16001	basally notched	--	--	chert	Black	Bi	N	y	N	y
422	EeBi-1:16145	Concave	--	--	Ramah chert	Brn	Bi	N	y	N	y
423	EeBi-1:15978	basally notched	--	--	chert	Gray	Bi	N	y	N	y
425	EeBi-1:15998	basally notched	--	--	chert	Gray	Bi	N	y	N	y
426	EeBi-1:15991	basally notched	--	--	Ramah chert	Brn	Bi	N	y	N	N
427	EeBi-1:16006	Concave	--	--	chert	Black	Bi	N	y	N	N
428	EeBi-1:15980	basally notched	--	--	chert	Gray	Bi	N	y	N	y
429	EeBi-1:15643	Concave	--	--	chert	Black	Bi	N	y	N	y
430	EeBi-1:5152	basally notched	--	--	chert	Yellow brn	Bi	N	y	N	N
431	EeBi-1:5131	basally notched	--	--	chert	Gray	Bi	N	y	N	y
432	EeBi-1:5158	basally notched	1.5	1.3	chert	Lt gray spkld	Bi	N	y	N	N
433	EeBi-1:5133	Concave	--	--	Ramah chert	Lt gray transl	Bi	N	y	N	y
434	EeBi-1:5269	basally notched	--	--	chert	Gray streaks	Bi	N	y	N	y
435	EeBi-1:5162	Concave	--	--	chert	Black	Bi	N	y	N	y
436	EeBi-1:5201	Concave	--	--	Ramah chert	Transl tan	Bi	N	y	N	y
437	EeBi-1:5207	Concave	--	--	Ramah chert	Gray transl	Bi	N	y	N	y
438	EeBi-1:5163	Concave	--	--	chert	Black	Bi	N	y	N	y
439	EeBi-1:5190	basally notched	--	--	chert	Banded gray	Bi	N	y	N	y
440	EeBi-1:5139	Concave	--	--	chert	Lt brown	Bi	N	y	N	y
441	DiAs-10:792	Concave	--	--	chert	Lt gray	U	N	N	N	y
442	DiAs-10:814	basally notched	--	--	chert	Tan banded	Bi	N	y	N	N
443	DiAs-10:823	basally notched	--	--	chert	Pink	Bi	NA	y	Y	N
444	DiAs-10:768	basally notched	--	--	chert	Banded gray	Bi	N	y	N	N
445	DiAs-10:733	basally notched	--	--	chert	Lt gray	Bi	N	y	Y	y
446	DiAs-10:813	Concave	--	--	chert	Gray	Bi	N	y	Y	y
447	DiAs-10:739	Straight	--	--	Quartzite	White	Bi	N	N	Y	y
448	DiAs-10:741	basally notched	--	--	chert	Gray	Bi	Y	y	N	y
449	DiAs-10:757	basally notched	--	--	chert	Lt gray	Bi	N	y	Y	y
450	DgAj-1:22	Concave side not	1.75	1.7	chert	Gray	Bi	N	y	N	y

PH #	Art #	BaseType	bWdt	hWdt	material	color	fcl	flu	Rtch	Grnd	Ser
451	DiAs-10:998	Concave	--	--	chert	Blk	Bi	Y	y	N	y
452	DiAs-10:828	Concave	--	--	chert	Gray	Bi	N	y	N	y
453	DiAs-10:854	basally notched	--	--	chert	Beige	Bi	Y	y	Y	N
454	DiAs-10:877	basally notched	--	--	chert	Gray	Bi	N	y	N	y
455	DiAs-10:746	basally notched	--	--	chert	Wh/brn speck	Bi	N	y	Y	N
456	DiAs-10:879	Concave	--	--	chert	White	Bi	N	y	N	N
457	DiAs-10:914	basally notched	--	--	chert	Gray & white	Bi	N	y	N	N
458	DiAs-10:758	basally notched	--	--	chert	Gray	Bi	Y	y	Y	y
459	DiAs-10:587	Concave	--	--	chert	Gray	Bi	N	y	Y	y
460	DiAs-10:896	basally notched	--	--	Quartzite	Gray transl	Bi	N	y	N	y
461	DiAs-10:729	Concave	--	--	chert	Gray	Bi	N	N	Y	y
462	DiAs-10:857	basally notched	--	--	chert	Beige	Bi	N	y	Y	y
464	DiAs-10:873	Bas & side ntchs	NA	NA	chert	banded multi	Bi	N	y	Y	y
465	DiAs-10:822	Side notched	NA	1.42	chert	Wh banded	Bi	N	y	Y	y
466	DeAk-1:937	basally notched	--	--	chert	Beige	Bi	N	y	Y	y
467	DeAk-1:949	basally notched	--	--	chert	Gray	Bi	N	N	Y	y
468	DeAk-1:667	basally notched	--	--	chert	Gray	Bi	N	y	N	y
469	DeAk-1:330	Concave	--	--	chert	Dk gray	Bi	N	y	N	y
470	DeAk-1:670	basally notched	--	--	chert	Gray	Bi	N	y	N	y
471	DeAk-1:50	basally notched	--	--	chert	Gray	Bi	N	y	N	y
473	DeAk-1:671	Straight	--	--	chert	Rosy	Bi	N	y	N	y
475	DeAk-1:665	Straight	--	--	chert	Beige	Bi	N	N	Y	y
476	DeAk-1:668	Concave	--	--	chert	Beige	Bi	N	y	N	y
477	DeAk-1:950	Straight	--	--	chert	Gray	Bi	N	y	N	y
478	DeAk-1:951	Concave	--	--	chert	Gray	Bi	N	N	Y	y
480	DeAk-1:946	basally notched	--	--	chert	Dk gray spkld	Bi	N	y	N	N
481	DeAk-1:938	Concave	--	--	chert	Gray	Bi	N	N	N	y
482	DeAk-1:138	Concave	--	--	chert	Gray	Bi	N	y	Y	y
484	DgAj-1:36	Concave	--	--	chert	Black	Bi	N	y	N	y
485	DgAj-1:753	bas & side ntchd	NA	1.8	chert	Gray	Bi	N	y	N	N
486	DgAj-1:173	basally notched	--	--	chert	Gray	Bi	N	y	N	y
487	DgAj-1:27	basally notched	--	--	chert	Gray	Bi	N	y	N	y
489	DgAj-1:174	bas & side ntchd	1.4	1.15	chert	Gray	Bi	N	y	N	y
490	DgAj-1:160	basally notched	--	--	chert	Wh & gray	Bi	NA	y	Y	y
491	DgAj-1:26	basally notched	--	--	chert	Brown	U	N	y	N	y
492	DgAj-1:258	basally notched	--	--	chert	Beige	Bi	N	y	Y	y
493	DgAj-1:256	basally notched	--	--	chert	Drk brn	Bi	N	y	Y	y
494	DgAj-1:42	basally notched	--	--	chert	White	Bi	N	y	Y	N
495	DgAj-1:44	basally notched	--	--	chert	Lt gray	Bi	N	y	N	y

PH #	Art #	BaseType	bWdt	hWdt	material	color	fcl	flu	Rtch	Grnd	Ser
496	DgAj-1:28	bas & side ntchd	1.28	1.2	chert	Beige & brn	Bi	N	y	N	y
497	DgAj-1:45	basally notched	--	--	chert	Gray	Bi	N	y	N	y
498	DgAj-1:245	basally notched	--	--	chert	Brown	Bi	N	y	Y	N
499	DgAj-1:24	bas & side ntchd	1.5	1.3	chert	Tan	Bi	N	y	N	y
500	DgAj-1:207	Concave	--	--	chert	White	Bi	N	y	Y	y
501	DgAj-1:48	basally notched	--	--	chert	White	Bi	Y	y	N	y
503	DgAj-1:33	Concave	--	--	chert	Beige	Bi	N	y	N	y
504	DgAj-1:46	basally notched	--	--	chert	Gray	Bi	N	y	N	y
505	DgAj-1:40	basally notched	--	--	chert	Gray	Bi	N	y	N	y
506	EgBf-14:12	basally notched	--	--	Ramah chert	Brn trans	Bi	N	y	N	y
507	EgBf-12:131	basally notched	--	--	Ramah chert	Brn trans	U	N	y	N	y
508	EgBf-12:136	basally notched	--	--	Ramah chert	Brn trans	Bi	N	y	N	y
509	EgBf-12:114	Concave	--	--	Ramah chert	Brn trans	Bi	N	y	N	y
511	EgBf-18:25	Concave	--	--	chert	Gray	Bi	N	y	N	y
512	EgBf-18:1157	Concave	--	--	Ramah chert	White transl	Bi	N	y	Y	y
513	ClAl-1:754	basally notched	--	--	chert	White	Bi	N	y	N	y
514	CkAl-3:1968	Concave	--	--	chert	White	U	N	y	N	N
515	CkAl-3:15	Concave	--	--	chert	White	Bi	N	y	Y	y
516	CkAl-3:3044	Concave	--	--	chert	White	Bi	N	y	Y	y
517	CkAl-3:3045	Straight	--	--	chert	White	Bi	N	y	Y	y
518	ClAl-1:678	Concave	--	--	chert	White	U	N	y	N	y
519	ClAl-1:202	Concave	--	--	chert	White	Bi	Y	y	Y	y
520	ClAl-1:180	basally notched	--	--	chert	White	Bi	N	y	Y	y
521	DgAt-1:1581	basally notched	--	--	chert	wh/gray	Bi	N	y	N	y
522	DgAt-1:1539	basally notched	--	--	chert	Gray	Bi	N	y	N	N
523	DgAt-1:1536	basally notched	--	--	chert	wh/brn	Bi	N	y	N	y
524	DgAt-1:1695	basally notched	--	--	chert	White	U	N	y	N	y
525	DgAt-1:1457	Concave	--	--	chert	Gray	Bi	N	y	N	y
526	DgAt-1:1540	basally notched	--	--	chert	wh/brn	Bi	N	y	N	y
527	DjBl-2:398	basally notched	--	--	chert	Gray banded	Bi	N	y	N	y
528	DjBl-5:6	basally notched	--	--	chert	Dk gray bndd	Bi	N	y	N	y
529	DjBl-5:1	basally notched	--	--	chert	Gray	Bi	N	y	N	y
530	DjBl-5:7	basally notched	--	--	chert	Blk flckd CU	Bi	N	y	N	y
532	EaBi-1:2710	bas & side ntch	1.8	1.6	chert	Dkblue blk flk	Bi	N	y	N	y
533	CjBt-1:6175	Bas & side ntchs	1.6	0.65	chert	Pink	Bi	N	y	N	N
534	CjBt-1:6168	Straight	--	--	chert	White	Bi	N	y	Y	y
535	CjBt-1:5773	basally notched	--	--	chert	Gray	Bi	N	y	N	y
536	CjBt-1:10047	basally notched	--	--	Ramah chert	Brn trans	Bi	N	y	N	y
537	CjBt-1:5360	basally notched	--	--	Ramah chert	Gray transl	Bi	N	y	N	N

PH #	Art #	BaseType	bWdt	hWdt	material	color	fcl	flu	Rtch	Grnd	Ser
538	CjBt-1:4989	basally notched sl	--	--	chert	Green	Bi	N	y	N	y
539	CjBt-1:5018	basally notched	--	--	chert	Gray	Bi	N	y	N	y
540	CjBt-1:9079	basally notched	--	--	chert	Black	Bi	N	y	N	y
541	CjBt-1:5795	basally notched	--	--	chert	Lt gray	U	N	y	N	y
542	CjBt-1:5335	basally notched	--	--	chert	Yellow brn	Bi	N	y	N	y
543	CjBt-1:5768	basally notched	--	--	chert	Gray flecks	Bi	N	y	N	y
544	CjBt-1:5174	basally notched	--	--	chert	Brn	Bi	N	y	N	y
545	CjBt-1:8613	basally notched	--	--	chert	Brn	Bi	N	y	N	y
546	CjBt-1:10082	basally notched	--	--	chert	Lt gray	Bi	N	y	N	y
547	CjBt-1:2000	Bas & side ntchs	0.85	0.8	chert	Brn	Bi	N	y	N	y
548	CjBt-1:9696	basally notched	--	--	chert	Brn	Bi	N	y	N	y
549	CjBt-1:5047	basally notched	--	--	chert	Lt gray	Bi	Y	y	Y	y
550	CjBt-1:6445	Concave	--	--	chert	Grn & brn	Bi	N	y	N	y
551	CjBt-1:C62251	Contr side basl	0.9	0.85	chert	Brn	Bi	N	y	N	N
552	CjBt-1:5055	Stem lashings	1.9	NA	chert	Gray	U	N	N	Y	N
555	DiAs-10:754	basally notched	--	--	chert	Beige	Bi	N	y	Y	y

PH #	Art #	bslIn	#SideN	hL-1N	hR-1N	hl1N	hr1N	nType1	hL-2N	hR-2N	hl2N	hr2N	nType2
10	CjBt-1:4411	0.2	--	--	--	--	--	--	--	--	--	--	--
11	CjBt-1:4412	0.24	--	--	--	--	--	--	--	--	--	--	--
14	CjBt-1:4414	0.35	--	--	--	--	--	--	--	--	--	--	--
17	CjBt-1:4419	0.2	1 L	0.25	--	0.2	--	Incipient	--	--	--	--	--
18	CjBt-1:4420	0.2	--	--	--	--	--	--	--	--	--	--	--
19	CjBt-1:4422	0.075	--	--	--	--	--	--	--	--	--	--	--
20	CjBt-1:5133	0.5	--	--	--	--	--	--	--	--	--	--	--
21	CjBt-1:5134	0.15	1 R	--	1.1	--	.45	Incipient	--	--	--	--	--
22	CjBt-1:5136	0.3	--	--	--	--	--	--	--	--	--	--	--
23	CjBt-1:5137	0.05	--	--	--	--	--	--	--	--	--	--	--
24	CjBt-1:5138	0.5	1R	--	2	--	0.4	Incipient	--	--	--	--	--
29	CjBt-1:2001 F	-0.15	1L 1R	0.3	0.25	0.18	0.22	Incipient	--	--	--	--	--
31	CjBt-1:1988 E	0.3	1L 1R	1	1.25	0.2	0.33	Incipient	--	--	--	--	--
33	CjBt-1:2005 E	0	1R	--	0.25	--	0.3	Incipient	--	--	--	--	--
35	CjBt-1:5268	0.25	1L	1.05	--	0.3	--	Incipient	--	--	--	--	--
36	CjBt-1:5221	0.38	--	--	--	--	--	--	--	--	--	--	--
37	CjBt-1:1722 S	0.25	--	--	--	--	--	--	--	--	--	--	--
39	CjBt-1:NN1	0.25	--	--	--	--	--	--	--	--	--	--	--
40	CjBt-1:NN2	0.35	1 R	--	1.9	--	0.2	Incipient	--	--	--	--	--
41	CjBt-1:NN3	0.19	--	--	--	--	--	--	--	--	--	--	--
42	CjBt-1:NN4	0.16	--	--	--	--	--	--	--	--	--	--	--
44	CjBt-1:12056	0.4	--	--	--	--	--	--	--	--	--	--	--
46	CjBt-1:2087	0.15	--	--	--	--	--	--	--	--	--	--	--
47	CjBt-1:2095 E	0.1	--	--	--	--	--	--	--	--	--	--	--
48	CjBt-1:2097 E	0.6	--	--	--	--	--	--	--	--	--	--	--
50	CjBt-1:2061	0.45	--	--	--	--	--	--	--	--	--	--	--
51	CjBt-1:2068	0.2	--	--	--	--	--	--	--	--	--	--	--
52	CjBt-1:2074	0.35	--	--	--	--	--	--	--	--	--	--	--
54	CjBt-1:2240	0.09	--	--	--	--	--	--	--	--	--	--	--
55	CjBt-1:2237	0.3	--	--	--	--	--	--	--	--	--	--	--
56	CjBt-1:2227	0.2	--	--	--	--	--	--	--	--	--	--	--
57	CjBt-1:5790	0.3	--	--	--	--	--	--	--	--	--	--	--
63	EdBh-2:22	0.25	--	--	--	--	--	--	--	--	--	--	--
64	EeBh-1:02	0	--	--	--	--	--	--	--	--	--	--	--
65	EdBh-2:19	0	--	--	--	--	--	--	--	--	--	--	--
66	EbBj-6:25	0.33	1R	--	1.6	--	0.7	Incipient	--	--	--	--	--
67	EbBj-6:24	0.1	1L 1R	0.85	NA	0.45	NA	Side notche	--	--	--	--	--
70	DhAi-6:425	0.31	--	--	--	--	--	--	--	--	--	--	--
71	EeBi-1:11389	0.25	--	--	--	--	--	--	--	--	--	--	--

PH #	Art #	bslIn	#SideN	hL-1N	hR-1N	hl1N	hr1N	nType1	hL-2N	hR-2N	hl2N	hr2N	nType2
72	CjAj-2:222	0	--	--	--	--	--	--	--	--	--	--	--
73	CjAj-2:131	0.08	--	--	--	--	--	--	--	--	--	--	--
75	CjAw-1:17	0.08	--	--	--	--	--	--	--	--	--	--	--
76	ClAl-1:723	0.19	--	--	--	--	--	--	--	--	--	--	--
77	EeBi-1:11396	0.1	--	--	--	--	--	--	--	--	--	--	--
78	EeBi-1:11395	0.3	--	--	--	--	--	--	--	--	--	--	--
79	EeBi-1:11391	0.35	--	--	--	--	--	--	--	--	--	--	--
80	EeBi-1:11390	0.28	--	--	--	--	--	--	--	--	--	--	--
83	IdCq-22:5779	0.08	--	--	--	--	--	--	--	--	--	--	--
84	IdCq-22:5050	0.42	1L 1R	0.7	0.6	0.4	0.4	Incipient	--	--	--	--	--
85	IdCq-22:4813	0.03	--	--	--	--	--	--	--	--	--	--	--
86	IdCq-20:24	0.2	--	--	--	--	--	--	--	--	--	--	--
87	IdCq-20:12	0.23	--	--	--	--	--	--	--	--	--	--	--
88	CjAw-1:1	0.4	--	--	--	--	--	--	--	--	--	--	--
91	CkAl-3:10	0.2	--	--	--	--	--	--	--	--	--	--	--
93	CkAl-3:3000	0.2	--	--	--	--	--	--	--	--	--	--	--
94	ClAl-1:234	0.19	--	--	--	--	--	--	--	--	--	--	--
95	ClAl-1:732	0.05	--	--	--	--	--	--	--	--	--	--	--
97	CjAj-2:240	0.19	--	--	--	--	--	--	--	--	--	--	--
98	CjAj-2:132	0.08	--	--	--	--	--	--	--	--	--	--	--
99	CjAj-2:564	0	--	--	--	--	--	--	--	--	--	--	--
100	CjAj-2:547	0.19	--	--	--	--	--	--	--	--	--	--	--
101	CjAj-2:259	0.18	--	--	--	--	--	--	--	--	--	--	--
102	CjAj-2:549	0	--	--	--	--	--	--	--	--	--	--	--
103	CjAj-2:545	0.18	--	--	--	--	--	--	--	--	--	--	--
105	CjAj-2:235	0.2	--	--	--	--	--	--	--	--	--	--	--
106	DlBk-3:1463	0	1L 1R	0	0.3	0.4	0.45	Side notche	--	--	--	--	--
107	DlBk-3:1022	0	1L 1R	0.42	0.38	0.3	0.35	Side notche	--	--	--	--	--
108	DlBk-3:1226	0	1L 1R	0.3	0.35	0.26	0.36	Side notche	--	--	--	--	--
109	DlBk-3:1809	0	1L 1R	0.2	0.1	0.5	0.5	Side notche	--	--	--	--	--
112	DlBk-3:1814	0	1L 1R	0.2	0.3	0.3	0.2	Side notche	--	--	--	--	--
113	DlBk-3:2106	-0.08	--	--	--	--	--	--	--	--	--	--	--
114	DlBk-3:906	0	1L 1R	0.45	0.4	0.35	0.3	Side notche	--	--	--	--	--
117	DlBk-3:1477	0	1L 1R	0.4	0.3	0.35	0.42	Side notche	--	--	--	--	--
118	DlBk-3:788	0.07	1L	0.4	--	0.38	--	Incipient	--	--	--	--	--
119	DlBk-3:1766	0	1L	1.05	--	0.44	--	Incipient	--	--	--	--	--
120	DlBk-3:998	0	1L 1R	NA	0.28	NA	0.35	Side notche	--	--	--	--	--
122	DlBk-3:1910	-0.39	1L 1R	0.18	0.18	0.2	0.26	Side notche	--	--	--	--	--
123	DlBk-3:1124	0.07	1L 1R	0.3	0.35	0.3	0.2	Side notche	--	--	--	--	--
124	DlBk-3:830	0	1L 1R	0.5	NA	0.75	NA	Side notche	--	--	--	--	--

PH #	Art #	bslIn	#SideN	hL-1N	hR-1N	hl1N	hr1N	nType1	hL-2N	hR-2N	hl2N	hr2N	nType2
125	DlBk-3:1179	0	1L 1R	0.35	0.45	0.1	0.11	Side notche	--	--	--	--	--
126	DlBk-3:1070	0	2L 1R	0.5	0.45	0.2	0.25	Side notche	1.1	--	0.45	--	Incip
129	DlBk-3:822	-0.38	1L 1R	0	0	0.58	0.5	Side notche	--	--	--	--	--
130	DlBk-3:1029	0	1R	--	0.42	--	0.3	Side notche	--	--	--	--	--
131	DlBk-3:1104	0	--	--	--	--	--	--	--	--	--	--	--
133	CjBr-1:22	0.2	--	--	--	--	--	--	--	--	--	--	--
134	CjBh-1:32	0.18	--	--	--	--	--	--	--	--	--	--	--
135	CjBh-1:3	0.16	--	--	--	--	--	--	--	--	--	--	--
136	CjBh-1:8	0.12	--	--	--	--	--	--	--	--	--	--	--
140	CjBj-25:4	0.19	--	--	--	--	--	--	--	--	--	--	--
141	CjBj-25:25	0	--	--	--	--	--	--	--	--	--	--	--
142	DiAu-1:25	0.3	--	--	--	--	--	--	--	--	--	--	--
143	DiAu-1:117	0	--	--	--	--	--	--	--	--	--	--	--
144	DiAu-1:125	0.33	--	--	--	--	--	--	--	--	--	--	--
145	DiAu-1:111	0	2L 2R	0.5	NA	0.4	NA	Side notche	1.4	1.4	0.5	0.45	Side
147	DiAu-1:121	0.06	--	--	--	--	--	--	--	--	--	--	--
148	DiAu-1:98	0	--	--	--	--	--	--	--	--	--	--	--
149	DiAu-1:137	0.35	--	--	--	--	--	--	--	--	--	--	--
150	DiAu-1:129	0.3	--	--	--	--	--	--	--	--	--	--	--
151	DiAu-1:138	0.38	--	--	--	--	--	--	--	--	--	--	--
152	DiAu-1:116	0.12	--	--	--	--	--	--	--	--	--	--	--
154	DlBe-1:1	0.14	--	--	--	--	--	--	--	--	--	--	--
155	DlBe-1:2	0.38	--	--	--	--	--	--	--	--	--	--	--
157	EaBa-12:5	0.06	--	--	--	--	--	--	--	--	--	--	--
158	GlCe-5:1	0.21	--	--	--	--	--	--	--	--	--	--	--
159	GlCe-5:3	0.4	--	--	--	--	--	--	--	--	--	--	--
160	GlCe-5:2	0.08	--	--	--	--	--	--	--	--	--	--	--
161	HdCh-14:5	0.29	--	--	--	--	--	--	--	--	--	--	--
164	HdCh-13:37	-0.12	--	--	--	--	--	--	--	--	--	--	--
165	HdCh-13:28	NA	--	--	--	--	--	--	--	--	--	--	--
166	EaBa-16:13	0.3	--	--	--	--	--	--	--	--	--	--	--
167	EaBa-16:50	0.2	--	--	--	--	--	--	--	--	--	--	--
168	EaBa-16:307	0.21	--	--	--	--	--	--	--	--	--	--	--
169	EaBa-16:432	0.11	1L 1R	0.41	0.21	0.23	0.21	Side notche	--	--	--	--	--
171	EaBa-16:1139	NA	--	--	--	--	--	--	--	--	--	--	--
172	EaBa-16:1207	0	--	--	--	--	--	--	--	--	--	--	--
173	EaBa-16:1812	0.15	--	--	--	--	--	--	--	--	--	--	--
174	EaBa-16:1824	0.3	--	--	--	--	--	--	--	--	--	--	--
176	EaBa-16:2067	0.3	--	--	--	--	--	--	--	--	--	--	--

PH #	Art #	bslIn	#SideN	hL-1N	hR-1N	hl1N	hr1N	nType1	hL-2N	hR-2N	hl2N	hr2N	nType2
177	EaBa-16:2117	0.3	1R	--	0.9	--	0.25	Incipient	--	--	--	--	--
178	EaBa-16:2651	0.2	--	--	--	--	--	--	--	--	--	--	--
179	EaBa-16:4712	0.35	1R	--	0.5	--	0.5	Incipient	--	--	--	--	--
180	EaBa-16:4011	0.25	--	--	--	--	--	--	--	--	--	--	--
181	EaBa-16:2747	0.28	--	--	--	--	--	--	--	--	--	--	--
182	EaBa-16:6942	0.16	--	--	--	--	--	--	--	--	--	--	--
183	EaBa-16:7358	0.3	--	--	--	--	--	--	--	--	--	--	--
186	EaBa-16:6444	0.45	--	--	--	--	--	--	--	--	--	--	--
187	EaBa-16:6672	0.12	1R	--	0.28	--	0.3	Incipient	--	--	--	--	--
188	EaBa-16:5234	0.26	--	--	--	--	--	--	--	--	--	--	--
189	EaBa-16:6003	0.2	--	--	--	--	--	--	--	--	--	--	--
190	EaBa-16:5214	0.37	--	--	--	--	--	--	--	--	--	--	--
191	EaBa-16:4891	0.18	--	--	--	--	--	--	--	--	--	--	--
192	FbAv-12:18	0.4	--	--	--	--	--	--	--	--	--	--	--
194	FbAv-12:2	0.2	--	--	--	--	--	--	--	--	--	--	--
195	FcAv-4:1	0.11	--	--	--	--	--	--	--	--	--	--	--
196	FdAw-5:9	0.62	1R	--	1.6	--	0.55	Incipient	--	--	--	--	--
197	FdAw-5:14	-0.9	--	--	--	--	--	--	--	--	--	--	--
198	FdAw-5:10	0.45	--	--	--	--	--	--	--	--	--	--	--
199	FdAw-5:11	0.3	--	--	--	--	--	--	--	--	--	--	--
200	FbAv-7:2	0	--	--	--	--	--	--	--	--	--	--	--
201	FiAw-3:7	0.13	--	--	--	--	--	--	--	--	--	--	--
202	FiAw-3:11	0.35	--	--	--	--	--	--	--	--	--	--	--
203	FiAw-3:2	0.45	1R	--	1	--	0.33	Incipient	--	--	--	--	--
204	FiAw-3:9	0	--	--	--	--	--	--	--	--	--	--	--
214	CjAj-2:882	0.2	--	--	--	--	--	--	--	--	--	--	--
215	CjAj-2:809	0.25	--	--	--	--	--	--	--	--	--	--	--
216	CjAj-2:1084	0.28	--	--	--	--	--	--	--	--	--	--	--
217	CjAj-2:1018	0.26	--	--	--	--	--	--	--	--	--	--	--
219	CjAj-2:808-90	0	--	--	--	--	--	--	--	--	--	--	--
220	CjAj-2:998	0.15	--	--	--	--	--	--	--	--	--	--	--
224	CjAj-2:905-10	0	--	--	--	--	--	--	--	--	--	--	--
226	CjAj-2:987-99	0.15	--	--	--	--	--	--	--	--	--	--	--
227	CjAj-2:1065	0.22	--	--	--	--	--	--	--	--	--	--	
228	CjAj-2:1012-1	0.11	--	--	--	--	--	--	--	--	--	--	--
231	CjAj-2:1066	0.08	--	--	--	--	--	--	--	--	--	--	--
232	CjAj-2:1245	-0.06	1L	0.28	--	0.58	--	Incipient	--	--	--	--	--
236	CjAj-2:896	0.19	--	--	--	--	--	--	--	--	--	--	--
237	CjAj-2:1015	0.18	--	--	--	--	--	--	--	--	--	--	--

PH #	Art #	bslIn	#SideN	hL-1N	hR-1N	hl1N	hr1N	nType1	hL-2N	hR-2N	hl2N	hr2N	nType2
238	EgBf-12:NN	0.5	--	--	--	--	--	--	--	--	--	--	--
239	EgBf-12:156	0.2	--	--	--	--	--	--	--	--	--	--	--
240	EgBf-12:84	0.28	--	--	--	--	--	--	--	--	--	--	--
241	EgBf-12:210	0.5	--	--	--	--	--	--	--	--	--	--	--
242	EgBf-12:261	0.2	--	--	--	--	--	--	--	--	--	--	--
243	EgBf-12:127	0.3	--	--	--	--	--	--	--	--	--	--	--
245	EgBf-12:21	0.25	1L	0.7	--	0.35	--	Incipient	--	--	--	--	--
246	EgBf-12:189	0.09	--	--	--	--	--	--	--	--	--	--	--
247	CjBt-1:6773	0	1L 1R	0.4	0.22	0.34	0.3	Side notche	--	--	--	--	--
248	CjBt-1:5059	0.38	--	--	--	--	--	--	--	--	--	--	--
249	CjBt-1:6793	0.18	--	--	--	--	--	--	--	--	--	--	--
250	CjBt-1:1890	0.39	--	--	--	--	--	--	--	--	--	--	--
251	CjBt-1:1884	0.3	--	--	--	--	--	--	--	--	--	--	--
252	CjBt-1:1874	0.38	--	--	--	--	--	--	--	--	--	--	--
253	CjBt-1:1873	0.41	--	--	--	--	--	--	--	--	--	--	--
254	DlBk-3:1130	0	1L 1R	0.3	0.29	0.38	0.35	Side notche	--	--	--	--	--
255	DlBk-3:205	0	1L 1R	0.4	0.31	0.75	0.7	Side notche	--	--	--	--	--
256	DlBk-3:1140	0	1L 1R	0.4	0.5	0.35	0.35	Side notche	--	--	--	--	--
257	DlBk-3:332	0	1L 1R	NA	0.52	NA	0.3	Side notche	--	--	--	--	--
258	DlBk-3:1161	0	1L 1R	0.4	0.4	0.45	0.3	Side notche	--	--	--	--	--
259	DlBk-3:188	0	1L 1R	0.35	0.45	0.3	0.32	Side notche	--	--	--	--	--
260	DlBk-3:179	0	1L 1R	0.6	0.48	0.28	0.32	Side notche	--	--	--	--	--
261	DlBk-3:187	0	1L 1R	0.6	0.45	0.3	0.32	Side notche	--	--	--	--	--
262	DlBk-3:3	0	1L 1R	0.95	NA	0.22	NA	Side notche	--	--	--	--	--
263	DlBk-3:1026	0	1L 1R	0.38	0.45	0.3	0.3	Side notche	--	--	--	--	--
264	DlBk-3:1368	0	1L 1R	0.5	0.55	0.38	0.38	Side notche	--	--	--	--	--
265	DlBk-3:744	0	1L 1R	0.62	0.62	0.4	0.43	Side notche	--	--	--	--	--
266	DlBk-3:1509	0	1L 1R	0.7	0.6	0.4	0.5	Side notche	--	--	--	--	--
267	GfBw-4:1702	0	1L 1R	0.6	0.7	0.4	0.45	Side notche	--	--	--	--	--
268	GfBw-4:447	0	1L 1R	0.5	0.5	0.35	0.3	Side notche	--	--	--	--	--
269	GfBw-4:1717	-0.22	--	--	--	--	--	--	--	--	--	--	--
270	GfBw-4:797	0	1L 1R	0.6	0.5	0.36	0.34	Side notche	--	--	--	--	--
271	GfBw-4:63	0	--	--	--	--	--	--	--	--	--	--	--
273	GfBw-4:767	0	1L 1R	0.7	0.7	0.55	0.55	Side notche	--	--	--	--	--
276	GfBw-4:1417	0	1L 1R	0.62	0.7	0.25	0.4	Side notche	--	--	--	--	--
277	GfBw-4:909	0	1L 1R	0.3	0.25	0.28	0.25	Side notche	--	--	--	--	--
278	GfBw-4:875	0	1L 1R	0.8	0.5	0.6	0.6	Side notche	--	--	--	--	--
279	GfBw-4:1181	0	1L 1R	0.7	0.7	0.25	0.25	Side notche	--	--	--	--	--
280	CjAj-2:162	0	--	--	--	--	--	--	--	--	--	--	--

PH #	Art #	bslIn	#SideN	hL-1N	hR-1N	hl1N	hr1N	nType1	hL-2N	hR-2N	hl2N	hr2N	nType2
281	CjAj-2:181	0.2	--	--	--	--	--	--	--	--	--	--	--
282	CjAj-2:173	0.18	--	--	--	--	--	--	--	--	--	--	--
283	CjAj-2:276	0.06	--	--	--	--	--	--	--	--	--	--	--
284	CjAj-2:158	--	1R	--	0.68	--	0.45	box side	--	--	--	--	--
285	CjAj-2:52	0.15	--	--	--	--	--	--	--	--	--	--	--
288	CjAj-2:14	0.04	--	--	--	--	--	--	--	--	--	--	--
291	CjAj-2:3	NA	--	--	--	--	--	--	--	--	--	--	--
292	CjAj-2:125	0	--	--	--	--	--	--	--	--	--	--	--
294	CjAj-2:229	0.28	--	--	--	--	--	--	--	--	--	--	--
296	CjAj-2:246	0.3	--	--	--	--	--	--	--	--	--	--	--
297	CjAj-2:163	0.15	--	--	--	--	--	--	--	--	--	--	--
298	CjAj-2:120	0	--	--	--	--	--	--	--	--	--	--	--
299	CjAj-2:129	0.08	--	--	--	--	--	--	--	--	--	--	--
301	CjAw-1:7	0.08	--	--	--	--	--	--	--	--	--	--	--
302	CjAw-1:98	NA	--	--	--	--	--	--	--	--	--	--	--
303	CjAw-1:4	NA	--	--	--	--	--	--	--	--	--	--	--
304	CjAw-1:9	0.29	--	--	--	--	--	--	--	--	--	--	--
305	CjAw-1:2	0.22	--	--	--	--	--	--	--	--	--	--	--
306	CjAw-1:16	0.3	--	--	--	--	--	--	--	--	--	--	--
308	ClAl-1:726	0.18	--	--	--	--	--	--	--	--	--	--	--
309	ClAl-1:780	0.25	--	--	--	--	--	--	--	--	--	--	--
310	ClAl-1:765	0.12	--	--	--	--	--	--	--	--	--	--	--
311	ClAl-1:129	0.25	--	--	--	--	--	--	--	--	--	--	--
312	ClAl-1:716	0.18	--	--	--	--	--	--	--	--	--	--	--
313	ClAl-1:201	0	--	--	--	--	--	--	--	--	--	--	--
314	ClAl-1:244	0.2	1L 1R	0.52	0.94	0.25	0.2	Side notche	--	--	--	--	--
315	ClAl-1:652	0.2	--	--	--	--	--	--	--	--	--	--	--
316	ClAl-1:724	0.15	--	--	--	--	--	--	--	--	--	--	--
317	ClAl-1:663	0.3	--	--	--	--	--	--	--	--	--	--	--
318	ClAl-1:254	0	--	--	--	--	--	--	--	--	--	--	--
319	CjBt-1:2200 E	0.32	--	--	--	--	--	--	--	--	--	--	--
320	EeBi-1:13728	0	2L 2R	0.34	0.38	0.26	0.26	Side notche	1.4	1.45	0.3	0.25	Side
321	EeBi-1:11362	0.28	1L	0.45	--	0.2	--	Incipient	--	--	--	--	--
322	EeBi-1:11418	0	1L 1R	0.35	0.45	0.22	0.15	Side notche	--	--	--	--	--
323	EeBi-1:18293	0.15	--	--	--	--	--	--	--	--	--	--	--
324	EeBi-1:11371	0.28	1L 1R	1.8	1.8	0.65	0.65	Side notche	--	--	--	--	--
326	EeBh-9:1	0	--	--	--	--	--	--	--	--	--	--	--
327	EeBh-8:3	0.3	--	--	--	--	--	--	--	--	--	--	--
328	EeBh-8:1	NA	--	--	--	--	--	--	--	--	--	--	--

PH #	Art #	bslIn	#SideN	hL-1N	hR-1N	hl1N	hr1N	nType1	hL-2N	hR-2N	hl2N	hr2N	nType2
329	EeBh-15:12	0.15	1L 1R	0.35	0.6	0.18	0.2	Side notche	--	--	--	--	--
330	EeBh-15:16	0.26	--	--	--	--	--	--	--	--	--	--	--
331	EeBh-15:25	0.35	--	--	--	--	--	--	--	--	--	--	--
332	EeBh-15:1	0.45	--	--	--	--	--	--	--	--	--	--	--
333	EeBh-15:26	0.18	--	--	--	--	--	--	--	--	--	--	--
334	EeBh-15:85	0.42	--	--	--	--	--	--	--	--	--	--	--
335	EeBh-10:240	0.29	--	--	--	--	--	--	--	--	--	--	--
336	EeBh-10:241	0.35	--	--	--	--	--	--	--	--	--	--	--
338	EeBh-12:2	NA	--	--	--	--	--	--	--	--	--	--	--
339	EeBh-16:7	0.32	--	--	--	--	--	--	--	--	--	--	--
340	EeBh-16:36	NA	--	--	--	--	--	--	--	--	--	--	--
341	EeBh-16:6	0.25	--	--	--	--	--	--	--	--	--	--	--
342	EeBh-16:44	0.3	--	--	--	--	--	--	--	--	--	--	--
343	EeBh-16:35	0.35	--	--	--	--	--	--	--	--	--	--	--
344	EeBh-16:45	0.2	--	--	--	--	--	--	--	--	--	--	--
345	EeBh-16:39	NA	--	--	--	--	--	--	--	--	--	--	--
346	EeBh-16:32	0.2	--	--	--	--	--	--	--	--	--	--	--
347	EeBh-16:1	0.2	--	--	--	--	--	--	--	--	--	--	--
348	EeBh-16:49	0.3	--	--	--	--	--	--	--	--	--	--	--
349	EeBh-16:34	0.5	--	--	--	--	--	--	--	--	--	--	--
350	EeBh-16:2	0.5	--	--	--	--	--	--	--	--	--	--	--
351	EeBh-16:33	0.25	1L	0.9	--	0.3	--	Side notche	--	--	--	--	--
352	EeBh-16:48	0.18	--	--	--	--	--	--	--	--	--	--	--
353	EeBh-16:3	0.42	--	--	--	--	--	--	--	--	--	--	--
354	EeBh-16:46	0.4	--	--	--	--	--	--	--	--	--	--	--
355	EeBh-16:41	0.25	--	--	--	--	--	--	--	--	--	--	--
356	EeBh-16:42	0.35	--	--	--	--	--	--	--	--	--	--	--
357	EeBi-1:4263	0.4	--	--	--	--	--	--	--	--	--	--	--
358	EeBi-1:18339	0.24	--	--	--	--	--	--	--	--	--	--	--
359	EeBi-1:4256	0.28	--	--	--	--	--	--	--	--	--	--	--
360	EeBi-1:4198	0.38	--	--	--	--	--	--	--	--	--	--	--
361	EeBi-1:4199	0.19	--	--	--	--	--	--	--	--	--	--	--
362	EeBi-1:18330	0.25	--	--	--	--	--	--	--	--	--	--	--
363	EeBi-1:18324	0.28	--	--	--	--	--	--	--	--	--	--	--
364	EeBi-1:18294	0.3	--	--	--	--	--	--	--	--	--	--	--
365	EeBi-1:4273	0.18	--	--	--	--	--	--	--	--	--	--	--
366	EeBi-1:18278	0.3	--	--	--	--	--	--	--	--	--	--	--
367	EeBi-1:7A368B	0.36	--	--	--	--	--	--	--	--	--	--	--
368	EeBi-1:7A368B	0.42	--	--	--	--	--	--	--	--	--	--	--

PH #	Art #	bslIn	#SideN	hL-1N	hR-1N	hl1N	hr1N	nType1	hL-2N	hR-2N	hl2N	hr2N	nType2
369	EeBi-1:7A367D	0.25	--	--	--	--	--	--	--	--	--	--	--
370	EeBi-1:7A368C	0.38	--	--	--	--	--	--	--	--	--	--	--
371	EeBi-1:7A368C	0.18	--	--	--	--	--	--	--	--	--	--	--
372	EeBi-1:7A368C	0.15	--	--	--	--	--	--	--	--	--	--	--
373	EeBi-1:7A368C	0.22	--	--	--	--	--	--	--	--	--	--	--
374	EeBi-1:7A368B	0.11	--	--	--	--	--	--	--	--	--	--	--
376	EeBi-1:551	0.19	--	--	--	--	--	--	--	--	--	--	--
377	EeBi-1:1567	0.18	--	--	--	--	--	--	--	--	--	--	--
378	EeBi-1:1558	0.25	--	--	--	--	--	--	--	--	--	--	--
379	EeBi-1:1590	0.11	--	--	--	--	--	--	--	--	--	--	--
381	EeBi-1:1553	0.36	--	--	--	--	--	--	--	--	--	--	--
382	EeBi-1:78294A	0.04	--	--	--	--	--	--	--	--	--	--	--
383	EeBi-1:7A294A	0.15	--	--	--	--	--	--	--	--	--	--	--
384	EeBi-1:7A294D	0.48	--	--	--	--	--	--	--	--	--	--	--
385	EeBi-1:7A295D	0.18	--	--	--	--	--	--	--	--	--	--	--
386	EeBi-1:7A294C	0.2	--	--	--	--	--	--	--	--	--	--	--
387	EeBi-1:7A294A	0.4	--	--	--	--	--	--	--	--	--	--	--
388	EeBi-1:7A294C	0.4	--	--	--	--	--	--	--	--	--	--	--
389	EeBi-1:7A294C	0.28	--	--	--	--	--	--	--	--	--	--	--
390	EeBi-1:7A294D	0.45	--	--	--	--	--	--	--	--	--	--	--
391	EeBi-1:7A294C	0.38	--	--	--	--	--	--	--	--	--	--	--
392	EeBi-1:7A295D	0.5	--	--	--	--	--	--	--	--	--	--	--
393	EeBi-1:7A294A	0.19	--	--	--	--	--	--	--	--	--	--	--
394	EeBi-1:7A294D	0.45	--	--	--	--	--	--	--	--	--	--	--
395	EeBi-1:7A293B	0.2	--	--	--	--	--	--	--	--	--	--	--
396	EeBi-1:7A249B	0.3	--	--	--	--	--	--	--	--	--	--	--
397	EeBi-1:2043	0.15	--	--	--	--	--	--	--	--	--	--	--
398	EeBi-1:2613	0.19	--	--	--	--	--	--	--	--	--	--	--
399	EeBi-1:2639	0.4	--	--	--	--	--	--	--	--	--	--	--
400	EeBi-1:2640	0.28	--	--	--	--	--	--	--	--	--	--	--
401	EeBi-1:2621	0.3	--	--	--	--	--	--	--	--	--	--	--
402	EeBi-1:2473	0.3	--	--	--	--	--	--	--	--	--	--	--
403	EeBi-1:2518	0.29	--	--	--	--	--	--	--	--	--	--	--
404	EeBi-1:2643	0.24	--	--	--	--	--	--	--	--	--	--	--
405	EeBi-1:2478	0.48	--	--	--	--	--	--	--	--	--	--	--
406	EeBi-1:11768	0.28	--	--	--	--	--	--	--	--	--	--	--
407	EeBi-1:11787	0.28	--	--	--	--	--	--	--	--	--	--	--
409	EeBi-1:11785	0.25	--	--	--	--	--	--	--	--	--	--	--
410	EaBi-1:11815	0.46	--	--	--	--	--	--	--	--	--	--	--

PH #	Art #	bslIn	#SideN	hL-1N	hR-1N	hl1N	hr1N	nType1	hL-2N	hR-2N	hl2N	hr2N	nType2
411	EeBi-1:11749	0.52	--	--	--	--	--	--	--	--	--	--	--
412	EeBi-1:11746	0.15	--	--	--	--	--	--	--	--	--	--	--
413	EeBi-1:11775	0.45	--	--	--	--	--	--	--	--	--	--	--
414	EeBi-1:11779	0.25	--	--	--	--	--	--	--	--	--	--	--
415	EeBi-1:11792	0.32	--	--	--	--	--	--	--	--	--	--	--
416	EeBi-1:11760	0.5	--	--	--	--	--	--	--	--	--	--	--
417	EeBi-1:11767	0.2	1R	--	0.2	--	0.1	Incipient	--	--	--	--	--
418	EeBi-1:11818	0.25	--	--	--	--	--	--	--	--	--	--	--
419	EeBi-1:11761	0.14	--	--	--	--	--	--	--	--	--	--	--
420	EeBi-1:16018	0.2	--	--	--	--	--	--	--	--	--	--	--
421	EeBi-1:16001	0.4	--	--	--	--	--	--	--	--	--	--	--
422	EeBi-1:16145	0.06	--	--	--	--	--	--	--	--	--	--	--
423	EeBi-1:15978	0.55	--	--	--	--	--	--	--	--	--	--	--
425	EeBi-1:15998	0.22	--	--	--	--	--	--	--	--	--	--	--
426	EeBi-1:15991	0.3	--	--	--	--	--	--	--	--	--	--	--
427	EeBi-1:16006	0.15	--	--	--	--	--	--	--	--	--	--	--
428	EeBi-1:15980	0.4	--	--	--	--	--	--	--	--	--	--	--
429	EeBi-1:15643	0.19	--	--	--	--	--	--	--	--	--	--	--
430	EeBi-1:5152	0.44	--	--	--	--	--	--	--	--	--	--	--
431	EeBi-1:5131	0.28	--	--	--	--	--	--	--	--	--	--	--
432	EeBi-1:5158	0.31	1L	0.4	--	0.2	--	Side notche	--	--	--	--	--
433	EeBi-1:5133	0.18	--	--	--	--	--	--	--	--	--	--	--
434	EeBi-1:5269	0.26	--	--	--	--	--	--	--	--	--	--	--
435	EeBi-1:5162	0.1	--	--	--	--	--	--	--	--	--	--	--
436	EeBi-1:5201	0.2	--	--	--	--	--	--	--	--	--	--	--
437	EeBi-1:5207	0.33	--	--	--	--	--	--	--	--	--	--	--
438	EeBi-1:5163	0.19	--	--	--	--	--	--	--	--	--	--	--
439	EeBi-1:5190	0.4	--	--	--	--	--	--	--	--	--	--	--
440	EeBi-1:5139	0.15	--	--	--	--	--	--	--	--	--	--	--
441	DiAs-10:792	0.15	--	--	--	--	--	--	--	--	--	--	--
442	DiAs-10:814	0.5	--	--	--	--	--	--	--	--	--	--	--
443	DiAs-10:823	0.35	--	--	--	--	--	--	--	--	--	--	--
444	DiAs-10:768	0.5	--	--	--	--	--	--	--	--	--	--	--
445	DiAs-10:733	0.35	--	--	--	--	--	--	--	--	--	--	--
446	DiAs-10:813	0.1	--	--	--	--	--	--	--	--	--	--	--
447	DiAs-10:739	0	--	--	--	--	--	--	--	--	--	--	--
448	DiAs-10:741	0.35	--	--	--	--	--	--	--	--	--	--	--
449	DiAs-10:757	0.35	--	--	--	--	--	--	--	--	--	--	--
450	DgAj-1:22	0.25	1R	--	0.85	--	0.25	Incipient	--	--	--	--	--

PH #	Art #	bslIn	#SideN	hL-1N	hR-1N	hl1N	hr1N	nType1	hL-2N	hR-2N	hl2N	hr2N	nType2
451	DiAs-10:998	0.12	--	--	--	--	--	--	--	--	--	--	--
452	DiAs-10:828	0.14	--	--	--	--	--	--	--	--	--	--	--
453	DiAs-10:854	0.3	--	--	--	--	--	--	--	--	--	--	--
454	DiAs-10:877	0.5	--	--	--	--	--	--	--	--	--	--	--
455	DiAs-10:746	0.2	--	--	--	--	--	--	--	--	--	--	--
456	DiAs-10:879	0.08	--	--	--	--	--	--	--	--	--	--	--
457	DiAs-10:914	0.25	--	--	--	--	--	--	--	--	--	--	--
458	DiAs-10:758	0.3	--	--	--	--	--	--	--	--	--	--	--
459	DiAs-10:587	0.05	--	--	--	--	--	--	--	--	--	--	--
460	DiAs-10:896	0.22	--	--	--	--	--	--	--	--	--	--	--
461	DiAs-10:729	0.12	--	--	--	--	--	--	--	--	--	--	--
462	DiAs-10:857	0.3	--	--	--	--	--	--	--	--	--	--	--
464	DiAs-10:873	0.32	1L 1R	0.8	NA	0.46	NA	Side notche	--	--	--	--	--
465	DiAs-10:822	0	1L 1R	1.1	NA	0.3	0.3	Side notche	--	--	--	--	--
466	DeAk-1:937	0.21	--	--	--	--	--	--	--	--	--	--	--
467	DeAk-1:949	0.21	--	--	--	--	--	--	--	--	--	--	--
468	DeAk-1:667	0.35	--	--	--	--	--	--	--	--	--	--	--
469	DeAk-1:330	0.15	--	--	--	--	--	--	--	--	--	--	--
470	DeAk-1:670	0.25	--	--	--	--	--	--	--	--	--	--	--
471	DeAk-1:50	0.2	--	--	--	--	--	--	--	--	--	--	--
473	DeAk-1:671	0	--	--	--	--	--	--	--	--	--	--	--
475	DeAk-1:665	NA	--	--	--	--	--	--	--	--	--	--	--
476	DeAk-1:668	0.2	--	--	--	--	--	--	--	--	--	--	--
477	DeAk-1:950	0	--	--	--	--	--	--	--	--	--	--	--
478	DeAk-1:951	0.11	--	--	--	--	--	--	--	--	--	--	--
480	DeAk-1:946	0.32	--	--	--	--	--	--	--	--	--	--	--
481	DeAk-1:938	0.09	--	--	--	--	--	--	--	--	--	--	--
482	DeAk-1:138	0.07	--	--	--	--	--	--	--	--	--	--	--
484	DgAj-1:36	0.09	--	--	--	--	--	--	--	--	--	--	--
485	DgAj-1:753	0.34	1R	--	0.3	--	0.22	Incipient	--	--	--	--	--
486	DgAj-1:173	0.3	--	--	--	--	--	--	--	--	--	--	--
487	DgAj-1:27	0.32	--	--	--	--	--	--	--	--	--	--	--
489	DgAj-1:174	0.2	1R	--	0.28	--	0.6	Incipient	--	--	--	--	--
490	DgAj-1:160	0.3	--	--	--	--	--	--	--	--	--	--	--
491	DgAj-1:26	0.3	--	--	--	--	--	--	--	--	--	--	--
492	DgAj-1:258	0.22	--	--	--	--	--	--	--	--	--	--	--
493	DgAj-1:256	0.22	--	--	--	--	--	--	--	--	--	--	--
494	DgAj-1:42	0.25	--	--	--	--	--	--	--	--	--	--	--
495	DgAj-1:44	0.32	--	--	--	--	--	--	--	--	--	--	--

PH #	Art #	bslIn	#SideN	hL-1N	hR-1N	hl1N	hr1N	nType1	hL-2N	hR-2N	hl2N	hr2N	nType2
496	DgAj-1:28	0.2	1L	0.55	--	0.2	--	Incipient	--	--	--	--	--
497	DgAj-1:45	0.4	--	--	--	--	--	--	--	--	--	--	--
498	DgAj-1:245	0.25	--	--	--	--	--	--	--	--	--	--	--
499	DgAj-1:24	0.3	1L 1R	0.7	0.59	0.22	0.2	Incipient	--	--	--	--	--
500	DgAj-1:207	0.15	--	--	--	--	--	--	--	--	--	--	--
501	DgAj-1:48	0.4	--	--	--	--	--	--	--	--	--	--	--
503	DgAj-1:33	0.15	--	--	--	--	--	--	--	--	--	--	--
504	DgAj-1:46	0.29	--	--	--	--	--	--	--	--	--	--	--
505	DgAj-1:40	0.24	--	--	--	--	--	--	--	--	--	--	--
506	EgBf-14:12	0.2	--	--	--	--	--	--	--	--	--	--	--
507	EgBf-12:131	0.14	--	--	--	--	--	--	--	--	--	--	--
508	EgBf-12:136	0.29	--	--	--	--	--	--	--	--	--	--	--
509	EgBf-12:114	0.16	--	--	--	--	--	--	--	--	--	--	--
511	EgBf-18:25	0.1	--	--	--	--	--	--	--	--	--	--	--
512	EgBf-18:1157	0.1	--	--	--	--	--	--	--	--	--	--	--
513	ClAl-1:754	0.2	--	--	--	--	--	--	--	--	--	--	--
514	CkAl-3:1968	0.19	--	--	--	--	--	--	--	--	--	--	--
515	CkAl-3:15	0.12	--	--	--	--	--	--	--	--	--	--	--
516	CkAl-3:3044	0.08	--	--	--	--	--	--	--	--	--	--	--
517	CkAl-3:3045	0	--	--	--	--	--	--	--	--	--	--	--
518	ClAl-1:678	0.18	--	--	--	--	--	--	--	--	--	--	--
519	ClAl-1:202	0.18	--	--	--	--	--	--	--	--	--	--	--
520	ClAl-1:180	0.19	--	--	--	--	--	--	--	--	--	--	--
521	DgAt-1:1581	0.31	--	--	--	--	--	--	--	--	--	--	--
522	DgAt-1:1539	0.3	--	--	--	--	--	--	--	--	--	--	--
523	DgAt-1:1536	0.28	--	--	--	--	--	--	--	--	--	--	--
524	DgAt-1:1695	0.25	--	--	--	--	--	--	--	--	--	--	--
525	DgAt-1:1457	0.15	--	--	--	--	--	--	--	--	--	--	--
526	DgAt-1:1540	0.39	--	--	--	--	--	--	--	--	--	--	--
527	DjBl-2:398	0.4	--	--	--	--	--	--	--	--	--	--	--
528	DjBl-5:6	0.3	--	--	--	--	--	--	--	--	--	--	--
529	DjBl-5:1	0.35	--	--	--	--	--	--	--	--	--	--	--
530	DjBl-5:7	0.41	--	--	--	--	--	--	--	--	--	--	--
532	EaBi-1:2710	0.39	1L	0.7	--	0.38	--	Incipient	--	--	--	--	--
533	CjBt-1:6175	0.25	1L 1R	1.6	1.7	0.35	0.35	Side notche	--	--	--	--	--
534	CjBt-1:6168	0	--	--	--	--	--	--	--	--	--	--	--
535	CjBt-1:5773	0.16	--	--	--	--	--	--	--	--	--	--	--
536	CjBt-1:10047	0.12	--	--	--	--	--	--	--	--	--	--	--
537	CjBt-1:5360	0.42	--	--	--	--	--	--	--	--	--	--	--

PH #	Art #	bslIn	#SideN	hL-1N	hR-1N	hl1N	hr1N	nType1	hL-2N	hR-2N	hl2N	hr2N	nType2
538	CjBt-1:4989	0.4	--	--	--	--	--	--	--	--	--	--	--
539	CjBt-1:5018	0.4	--	--	--	--	--	--	--	--	--	--	--
540	CjBt-1:9079	0.2	--	--	--	--	--	--	--	--	--	--	--
541	CjBt-1:5795	0.3	--	--	--	--	--	--	--	--	--	--	--
542	CjBt-1:5335	0.3	--	--	--	--	--	--	--	--	--	--	--
543	CjBt-1:5768	0.3	--	--	--	--	--	--	--	--	--	--	--
544	CjBt-1:5174	0.45	--	--	--	--	--	--	--	--	--	--	--
545	CjBt-1:8613	0.4	--	--	--	--	--	--	--	--	--	--	--
546	CjBt-1:10082	0.49	--	--	--	--	--	--	--	--	--	--	--
547	CjBt-1:2000	0.13	1L 1R	0.29	0.25	0.15	0.15	Side notche	--	--	--	--	--
548	CjBt-1:9696	0.45	--	--	--	--	--	--	--	--	--	--	--
549	CjBt-1:5047	0.25	--	--	--	--	--	--	--	--	--	--	--
550	CjBt-1:6445	0.2	--	--	--	--	--	--	--	--	--	--	--
551	CjBt-1:C62251	0.2	1L	1.15	--	0.2	--	Side notche	--	--	--	--	--
552	CjBt-1:5055	0	--	--	--	--	--	--	--	--	--	--	--
555	DiAs-10:754	NA	--	--	--	--	--	--	--	--	--	--	--