THE CHARLES CULTURE OF THE GULF OF GEORGIA: A RE-EVALUATION OF THE CULTURE AND ITS THREE SUB-PHASES

by

HEATHER L. PRATT

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Department of Anthropology

The University of British Columbia
Vancouver, Canada

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ABSTRACT

This thesis investigates a particular cultural period (the Charles Culture) existing from approximately 5500 to 3300 years ago on the Northwest Coast. The Charles Culture consists of three local phases known as Esilao, St. Mungo and Mayne. Three research questions are proposed in this study. The first question deals with the St. Mungo phase and focuses on the degree of cultural variability manifest within this particular sub-phase. Two sites known to contain St. Mungo components (Glenrose Cannery and St. Mungo Cannery) are compared to a third component originally proposed to be representative of the Mayne phase. The hypothesis states that the degree of variability between the three components will be minimal if all three are representative of the St. Mungo phase. This hypothesis is tested using both artifactual and non-artifactual data from the three sites and respective components. Of the three research questions proposed, this one is answered the most successfully. There is little variation present amongst the three components in terms of both artifactual and non-artifactual data. Unexpectedly, it was also demonstrated that while the Charles components from Glenrose and St. Mungo are often discussed interchangeably, there are differences in their artifact assemblages.

The second research questions follows from the first and ponders the degree of variability present between the Charles and Locarno Beach components at the Crescent Beach site. A comparison between these two phases from the same site had not been previously possible. The hypothesis states that if the two phases demonstrate continuity with each other, this is evidence of a gradual in situ evolution of the Northwest Coast ethnographic pattern present at contact. This question is not answered as successfully as

the first due to the high degree of similarity present between the two artifact assemblages. Several explanations for this are presented. The Locarno Beach artifact assemblage from Crescent Beach is also compared to the typesite artifact assemblage from the Locarno Beach site, with differences between the two components presented and discussed. This was done in order to determine the feasibility of defining the middle component at Crescent Beach as Locarno Beach in nature. The artifactual differences present are argued to be partially reflective of site function and environmental differences present at the two sites.

The final research question concerns the Charles Culture and the feasibility of its existence over such a long time period and physical area. This hypothesis states that there is sufficient cultural similarity present to continue usage of the term Charles Culture. Several components defined as Charles or tentative Charles components are examined. The data is gathered together to present a synopsis of what is known to date concerning the Charles Culture. As with the first research question, this question focuses on the degree of variability present between the three sub-phases of the Charles Culture (rather than just one) using both artifactual and non-artifactual data. There is some difficulty encountered during this final analysis due to the lack of published data. For example, little is published concerning the Esilao phase, yet it is an integral part of the Charles Culture. Nevertheless, this third research question is answered somewhat affirmatively. This section of my thesis includes further information concerning the placing of the Charles component at Crescent Beach into the St. Mungo phase as well as the status of the Mayne phase.

The results of the study indicate that the three research questions and their resulting hypotheses can be answered in the affirmative with varying degrees of success.

Recommendations for further research include the need for better published data concerning the early time periods on the Northwest Coast. It is also recommended that future analysis of the Charles Culture incorporate non-artifactual data such as debitage and faunal remains because these types of information are important when doing accurate comparisons of artifact assemblages. Finally, it is also suggested that Northwest Coast archaeologists work together to create more comparable archaeological data. Before one can make firm conclusions about the general research questions pertinent to the prehistory of the Northwest Coast, Northwest Coast archaeologists must start at the beginning and create interchangeable data sets.

TABLE OF CONTENTS

PAGE

ABSTRACT ii

LIST OF TABLES xvi

LIST OF FIGURES xviii

ACKNOWLEDGEMENTS xx

CHAPTER

1. INTRODUCTION 1

Northwest Coast Prehistoric Research 1

Research Questions Defined 7

2. RESEARCH QUESTION ONE: The Relationship Between Three Charles Components and Their Artifact Assemblages 12

The St. Mungo and Mayne Phases 13

The St. Mungo Phase 13

Site Names and Locations 13

Ethnographic Culture Area 14

Chronology 16

Artifact Assemblage 17

Unshaped Chipped Stone 18

Unshaped Chipped Stone Flake Tools 18

Shaped Chipped Stone Tools 18

Ground Stone Implements 19

Bone and Antler Artifacts 20

Shell Objects 21

Discussion of St. Mungo Artifact Assemblage 22

Raw Materials 22

Faunal Remains 22
Features 23
St. Mungo Phase Conclusions 24
The Mayne Phase 25
Site Names and Locations 25
Ethnographic Culture Area 26
Chronology 26
Artifact Assemblage 32
Unshaped Chipped Stone Tools (including Flake Tools) 32
Shaped Chipped Stone Tools 33
Ground Stone Implements 34
Bone and Antler Implements 34
Discussion of Mayne Phase Artifact Assemblage . . 35
Raw Materials 37
Faunal Remains 37
Features 38
Mayne Phase Conclusions 40
Site Descriptions 43
The Glenrose Cannery Site 43
Site Location 43
Ethnographic Culture Area 44
Excavation Procedures 44
Chronology 46
Faunal Remains 46
Features 48
Glenrose Non-artifactual Data Conclusions 49

The St. Mungo Cannery Site 50
Site Location 50
Ethnographic Culture Area 53
Excavation Procedures 53
Chronology 56
Faunal Remains 57
Features 60
St. Mungo Non-artifactual Data Conclusions 63
The Crescent Beach Site 64
Site Location 64
Ethnographic Culture Area 65
Excavation Procedures 66
Chronology 70
Faunal Remains 71
Features 76
Crescent Beach Non-artifactual Data Conclusions 78
Non-artifactual Data Conclusions for Glenrose, St. Mungo and Crescent Beach 80

Artifact Classification 82
Variables and Artifact Coding Format 82
Artifact Classification and Analysis 85
Lithic Artifacts (chipped stone) 93
Ground Stone Implements 113
Pecked and Ground Stone Implements 118
Bone Tools 119
Antler Implements 131
Shell Artifacts 135

Artifact Analysis: Conclusions 137

Unique Artifact Types 139

Shared Artifact Types 142

Unique and Shared Artifact Types: Conclusions 144

Raw Material Comparison 145

General Conclusions 151

3. RESEARCH QUESTION TWO: The Relationship Between the Charles Culture and the Locarno Beach Period at Crescent Beach 154

Component One and Two From Crescent Beach 155

Site Location 155

Chronology 156

Faunal Remains 157

Features 159

Non-artifactual Data Conclusions 161

Artifact Classification 163

Typology Organization 163

Lithic Artifacts (chipped stone) 167

Ground Stone Implements 181

Pecked and Ground Stone Implements 185

Bone Tools 185

Antler Objects 191

Shell Artifacts 193

Artifact Analysis: Conclusions 194

Unique Artifact Types 196

Corresponding Artifact Types 198

Unique and Similar Artifact Types: Conclusions 200

Raw Material Types 204

The Crescent Beach Component Two Artifact Assemblage Compared With the Locarno Beach Typesite 211

Locarno Beach Introduced 211

Ethnographic Culture Area 212

Excavation Procedures 212

Chronology 213

Faunal Remains 213

Artifact Assemblage 215

Unshaped Chipped Stone Implements 219

Unshaped Chipped Stone Flake Tools 219

Shaped Chipped Stone Artifacts 220

Ground Stone Implements 220

Bone and Antler Tools 221

Shell Artifacts 223

Conclusions of Comparison of Crescent Beach Component Two and Locarno Beach Artifact Assemblages 223

General Conclusions 224

4. RESEARCH QUESTION THREE: A Closer Examination of The Charles Culture 226

The Eayem Phase 228

Esilao 228

Site Location 228

Ethnographic Culture Area 228

Chronology 229

Maurer 229

Site Location 229

Ethnographic Culture Area 230

Chronology 230

Esilao and Maurer Artifact Assemblage Comparison 231
Unshaped Chipped Stone 231
Unshaped Chipped Stone Flake Tools 232
Shaped Chipped Stone Tools 232
Ground Stone Implements 233
Bone and Antler Implements 236
Artifact Comparison: Conclusions 237
Raw Materials 238
Faunal Remains 238
Features 239
Conclusions Concerning the Eayem Phase 240
Controversial Charles Culture Components 241
Marpole 241
Site Location 241
Ethnographic Culture Area 242
Excavation Procedures 242
Chronology 242
Artifact Assemblage 243
Unshaped Chipped Stone Implements 244
Shaped Chipped Stone Artifacts 244
Ground Stone Objects 245
Bone and Antler Artifacts 245
Faunal Remains and Features 246
Conclusions 246
Bliss Landing 249

Site Location 249
Ethnographic Culture Area 249
Excavation Procedures 249
Chronology 250
Artifact Assemblage 250
Unshaped Chipped Stone Implements 250
Shaped Chipped Stone Tools 250
Ground Stone 250
Bone and Antler Objects 251
Faunal Remains 252
Features 252
Conclusions 253

Pitt River 254
Site Location 254
Ethnographic Culture Area 254
Excavation Procedures 255
Chronology 255
Artifact Assemblage 256
Unshaped Chipped Stone Objects 256
Unshaped Chipped Stone Flake Tools 256
Shaped Chipped Stone Tools 257
Ground Stone Implements 257
Bone/Antler/Shell Objects 258
Raw Materials 259
Faunal Remains 259
Features 259

Conclusions 260

Pender Canal 260

Site Location 260

Ethnographic Culture Area 260

Excavation Procedures 261

Chronology 261

Artifact Assemblage 262

Features 262

Conclusions 263

Birch Bay and Semiahmoo Spit 263

Site Locations 263

Ethnographic Culture Area 264

Excavation Procedures 264

Chronology 265

Artifact Assemblage 265

Features 266

Conclusions 266

Denman Island 266

Site Location 266

Ethnographic Culture Area 266

Excavation Procedures 266

Chronology 267

Artifact Assemblage 267

Unshaped Chipped Stone Artifacts 267

Shaped Chipped Stone Implements 268

Ground Stone Tools 268
Raw Materials 269
Faunal Remains 269
Features 270
Conclusions 270

Tsawwassen 271
Site Location 271
Ethnographic Culture Area 272
Excavation Procedures 272
Artifact Assemblage 273
Features 273
Conclusions 275

Duke Point 276
Site Location 276
Ethnographic Culture Area 276
Excavation Procedures 276
Chronology 277
Artifact Assemblage 277
Chipped Stone (Unshaped and Shaped) 278
Ground Stone 278
Bone and Antler Artifacts 278
Faunal Remains 279
Conclusions 279

Deep Bay 280
Site Location 280

Ethnographic Culture Area 280
Excavation Procedures 280
Chronology 281
Artifact Assemblage 281
Faunal Remains 283
Features 283
Conclusions 284

Discussion 285

The Charles Culture 286
Location 287
Ethnographic Affiliation 287
Excavation Procedures 288
Chronology 288
Artifact Assemblage 289
Cores and Bipolar Implements 290
Unshaped Chipped Stone Implements 290
Unshaped Chipped Stone Flake Tools 290
Shaped Chipped Stone Tools 290
Ground Stone Implements 291
Bone and Antler Implements 292
Shell Implements 292
Raw Materials 292
Faunal Remains 292
Features 293
Conclusions 294

5. SUMMARY AND CONCLUSIONS 303

6. REFERENCES CITED 312

APPENDICES 325

APPENDIX A
Artifact Coding Format 325

APPENDIX B
Artifact Classification for the Charles Components From Glenrose, St. Mungo and Crescent Beach 335

APPENDIX C
Artifact Classification for Components One and Two From Crescent Beach 431

LIST OF TABLES

PAGE

CHAPTER TWO

2.1 Glenrose and St. Mungo Charles Component Radio Carbon Dates Summarized 16

2.2 Raw Material Types Terminology 84

2.3 Artifacts From Glenrose, St. Mungo and Crescent Beach Charles Culture Components 90

2.4 Raw Material Types for Cores From Glenrose, St. Mungo and Crescent Beach 94

2.5 Raw Material Types for Utilized Flakes From Glenrose, St. Mungo and Crescent Beach 100

2.6 Raw Material Types for Steep-Angled Retouched Flakes From Glenrose, St. Mungo and Crescent Beach 102

2.7 Unique Artifact Types at Glenrose, St. Mungo and Crescent Beach . 140

2.8 Artifact Types present at all Three Sites 143

2.9 Raw Material Types 146

CHAPTER THREE

3.1 Radio Carbon Dates Summarized From the Locarno Beach and Charles Components at Crescent Beach 156

3.2 Artifact Tabulation for Components One and Two at Crescent Beach 164

3.3 Raw Material Types of Cores in Component One and Two From Crescent Beach 168

3.4 Raw Material Types for Utilized Flakes in Component One and Two From Crescent Beach 174

3.5 Unique Artifact Types From Crescent Beach Components One and Two 197

3.6 Artifact Types Present in Both Components One and Two at Crescent Beach 199

3.7 Raw Material Types at Crescent Beach 205

3.8 Locarno Beach Artifacts From Component Two at Crescent Beach and Locarno Beach 216

PAGE

CHAPTER FOUR

4.1 Charles Components Radio Carbon Dates Summarized 288

4.2 Charles and Locarno Beach Artifact Frequencies 295

LIST OF FIGURES

PAGE

CHAPTER TWO

2.1 Map of St. Mungo Components 15

2.2 Map of Mayne Components 27

2.3 Glenrose and Location of Excavation Units 45

2.4 Ecological Communities Available to Glenrose, St. Mungo and Crescent Beach 52

2.5 St. Mungo and Location of Excavation Units 55

2.6 Crescent Beach and Location of Excavation Units 68

2.7 Bar Graph of Raw Material Proportions for Glenrose, St. Mungo and Crescent Beach 148

CHAPTER THREE

3.1 Bar Graph of Raw Material Types Found at Crescent Beach in Components One and Two 207

CHAPTER FOUR

4.1 Cluster Diagram 298

4.2 Multi Dimensional Scaling 301

APPENDIX B

B.1 Chipped Stone Artifacts - Glenrose 363

B.2 Chipped Stone Bifaces - St. Mungo 364

B.3 Ground Stone Objects - Glenrose 375

B.4 Ground Stone Objects - St. Mungo 376

B.5 Abrasive Stones - Crescent Beach 377

B.6 Splinter Awls - Glenrose 412

B.7 Split Rib Awls - Crescent Beach 413

B.8 Formed Bone Awls - Glenrose 414

PAGE

B.9 Bone Chisels With Unilaterally Tapered Ends - St. Mungo 415

B.10 Bone Artifacts - St. Mungo 416

B.11 Bone Artifacts - Glenrose 417

B.12 Bone Artifacts - St. Mungo 418

APPENDIX C

C.1 Shaped Chipped and Ground Stone Implements - Component One and Two, Crescent Beach 442

C.2 Bone Chisels With Unilaterally Tapered Ends - Component One and Two, Crescent Beach 457

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CHAPTER ONE

INTRODUCTION

The major focus of this thesis is an examination of three artifact assemblages dated to the prehistoric period of approximately 4500 to 3300 years ago, and excavated from the following sites: Glenrose Cannery (DgRr 6), St. Mungo Cannery (DgRr 2), and Crescent Beach (DgRr 1). The main purpose of this thesis is to study these three artifact assemblages in order to compare and contrast the types of artifacts, their proportions, raw material types and technology so as to provide information concerning the Charles culture. This goal is attained by testing three different hypotheses.

This introductory chapter outlines the framework for my thesis. It presents the three major research problems used in this study along with providing the general context of Northwest Coast archaeological research from which these three problems were developed.

NORTHWEST COAST PREHISTORIC RESEARCH

On the most general level of archaeological research questions the one of greatest interest to Northwest Coast archaeologists concerns the explanation of the shift from egalitarian to non-egalitarian society. In many parts of the world when a culture whose method of procuring subsistence changed because of the adoption of domestication, the culture also exhibited a dramatic change from egalitarian to non-egalitarian social organization. Once a stable, reliable and plentiful subsistence base was created, the culture quickly moved towards a sedentary lifestyle focusing around the newly obtained foodstuff and a more

rather than achieved. Usually the procurement change came about because of the domestication of plants and animals. Unlike many areas of the world where non-egalitarian societies evolved, Northwest Coast societies did not rely on domestication for their stable, reliable and plentiful subsistence base. Instead of becoming agriculturists, prehistoric Northwest Coast societies developed into complex hunter-gatherers. The archaeological record suggests that among the prehistoric Central Coast Salish who resided in the Central Northwest Coast Cultural Area (as defined by Suttles 1990), there is a shift away from egalitarian hunter-gatherers to non-egalitarian complex hunter-gatherers some three thousand years ago during the period immediately following the one that is the subject of this thesis.

To understand how such a change from egalitarian to non-egalitarian society could take place, it is important to first examine the prehistoric culture present immediately prior to such a shift in order to ascertain what processes in the society and/or the environment could be responsible. Before Northwest Coast archaeologists can develop and test complex models of processual change, they must be familiar with the archaeological record from the appropriate time periods. On the Northwest Coast, information concerning early prehistory is often scant and unpublished, therefore making research of pertinent questions difficult. I hope that this thesis can contribute information on early Northwest Coast society to fill in some of the gaps now present in our knowledge.

The evolution of the Northwest Coast ethnographic pattern has long interested archaeologists and anthropologists. It is from the ethnographic pattern that we have discovered the uniqueness of the Northwest Coast aboriginal people. At the time of European contact, the Coast Salish

ethnographic pattern in the Gulf of Georgia Area was well established and consisted of a well-stratified society based on a hunter-gatherer subsistence base (Suttles 1987, 1990).

Documents present from the early contact period and twentieth century ethnographies give us most of our information about Northwest Coast society. Although documents describe the cultures present, the written word does not explain how or why the Northwest Coast ethnographic pattern evolved. Some archaeologists (see for example Borden 1975) contend that migrations of new people and cultural ideas in the early prehistoric period have been important in the formation of the ethnographic pattern of the Gulf of Georgia region.

Migration theories have also been recently developed to explain differences found through time at sites located to the north of the area discussed in this thesis. Mitchell (1988:279-285) suggests a prehistoric migration from the north sometime near the end of the Obsidian culture type (the entire period encompasses 5000 to 2500 BP). The time period of the Obsidian culture type is roughly contemporaneous to the Charles and Locarno Beach culture types (4500 to 2200 BP). The Queen Charlotte Strait culture type follows the Obsidian culture type until the time of contact. He suggests that the Obsidian culture type represents a "Salishan" pattern of resource use while the Queen Charlotte Strait culture type represents a "Wakashan" pattern of resource use. This implies a prehistoric migration of "Wakashan" speakers down the coast at a time contemporaneous to the Charles and Locarno Beach phase. Would this migration be reflected in the artifact assemblages?

Migration theories, such as those proposed by Borden, lost popularity on the Northwest Coast because archaeologists now faced with significant

differences in artifact assemblages between two or more sites often attribute the differences to site function rather than to cultural migration. This is a lesson learned from Cultural Ecology which, with its focus on the environment, lead archaeologists away from the artifact assemblage towards the setting in which the artifacts and the prehistoric people who made them operated. There are exceptions to this general pattern of movement away from migration theories (see previous paragraph). Another exception to this trend is Burley and Beattie (Burley 1980:73-74) who suggest there is some evidence of a cultural migration through the Fraser Canyon towards the Fraser Delta during the Locarno-Marpole phase transition. This hypothesis is based on information which, at the time, pointed to the earliest ground stone knives evolving in the Canyon along with the development of wind drying and storing of surplus salmon (Burley 1980:74). This thesis argues that the earliest ground stone knives (which come from the Eayem phase in the Fraser Canyon) are intrusive and belong to the younger Baldwin phase component. Secondly, storage technology was present during the Charles culture and therefore, storage was exploited much earlier in Northwest Coast prehistory than previously thought.

Along with those archaeologists who hypothesize that migration was an important aspect of prehistoric Central Coast Salish prehistory, some contend that the evolution of the Northwest Coast ethnographic pattern slowly took place in the Gulf of Georgia region over several thousand years (see for example Matson 1976). Recently, Suttles (1987) and Kinkade (1989) have argued that linguistic evidence reflects a scenario where Salishan languages originated on the Northwest Coast and both they and their speakers migrated to the interior rather than the reverse scenario originally proposed by anthropologists such as Franz Boas (1905) and Charles Borden (1975).

To properly address the question of in situ evolution of the ethnographic pattern of Northwest Coast cultures in the Gulf of Georgia region, one must examine the early cultural periods to ascertain whether there is evidence of dramatic cultural change attributable to a migration of new cultural ideas or people (for example the "Wakashan" from the northern areas of the Northwest Coast). If there were such evidence, the ethnographic pattern of the Central Coast Salish could not be considered to have developed as an in situ Gulf of Georgia phenomena. Instead, the ethnographic pattern could be seen as being influenced by cultural traits moving into the area and proceeding to change that which was originally present. Furthermore, to verify in situ evolution, one must prove that any major differences in the artifact assemblages result from changing site function or environmental differences.

To explore this question of in situ evolution of the Central Coast Salish ethnographic pattern, one must first examine artifact assemblages from sites known to have similar site functions during the desired time period. Holding site function and time period constant allows one to examine the artifacts and discover what, if any, significant differences remain that are explainable by other sources of culture change.

The earliest prehistoric period on the Northwest Coast is defined by Carlson (1990:62) as the Pebble Tool Tradition. Matson (1976) calls this period the Old Cordilleran Pattern, while Fladmark (1986:27) terms this earliest period the Lithic Stage. Mitchell (1971:59) also uses the term "lithic" in his term for the earliest period on the Northwest Coast (Lithic Culture Type). In the Gulf of Georgia region the earliest period of prehistory is most commonly known as the Old Cordilleran period (Borden 1975), although as one can see there are

many different terms used to define this cultural stage. Few sites in the Gulf of Georgia region contain early components. The best published evidence for the early period comes from the Glenrose Cannery site (Matson 1976) and from the Bear Cove site in Northern British Columbia (Carlson 1979). This period ends sometime between 5000 and 4400 years ago.

After the Old Cordilleran period there is a proliferation of sites, but a paucity of published data until one reaches the Marpole culture type, which has been examined by David Burley (1979, 1980). Borden (1975:96) defined a regional phase that he called the Charles phase for the part of this post-Old Cordilleran time period ranging from 5500 to 3000 years ago. Borden (1975:97) named the phase in honour of Andrew Charles from Musqueam who discovered and conducted test excavations at the St. Mungo Cannery site (a site included in later discussion). Charles donated his preliminary work (field notes and artifacts) to the Laboratory of Archaeology, University of British Columbia, prompting further investigations at St. Mungo and the Glenrose Cannery site (another site to be discussed in this thesis). The Charles phase, as originally defined by Borden, encompasses the region from Esilao village (near Yale) to the Gulf Islands. Three specific phases have been defined within this "phase". In the Fraser Canyon, there is the Eayem phase (Borden 1975:72). In the Fraser Delta, lies the best known phase called St. Mungo (Matson 1976:283), while on the Gulf Islands, the Mayne phase has been defined (Carlson 1970). In these subregions there are differences in the time frame represented by the Charles phase as well as in the artifact assemblages.

The term 'Charles phase' was originally used by Borden in describing a regional culture comprised of the St. Mungo, Mayne and Eayem local phases. There has been debate over the appropriateness of the term 'phase' in

Northwest Coast prehistoric literature since Borden's first use of the expression 'Charles phase'. Abbott (1972) discusses the shortcomings of the term phase as does Burley (1980:11-18). Borden defined all of the phases comprising the Fraser Delta sequence according to the classic archaeological text, Method and Theory in American Archaeology (Willey and Phillips 1958). According to Willey and Phillips (1958) a 'phase' cannot contain 'phases'. Therefore, the term 'culture' will be used to differentiate between the regional Charles culture and local Eayem, St. Mungo and Mayne phases, an idea originally proposed by Burley (1980:15). Another appropriate term for the regional Charles culture would be the 'Charles Culture Type', a term first used by Mitchell (1971:56-57) and still used by archaeologists (Ham 1984:38).

RESEARCH QUESTIONS DEFINED

One specific research question in this thesis is the degree of variability in the St. Mungo phase near the mouth of the Fraser river. The Glenrose Cannery, St. Mungo Cannery, and Crescent Beach sites may all contain St. Mungo components and have the best available published information to address questions concerning the degree of culture variability manifest in the mainland Charles culture. The St. Mungo phase at the St. Mungo and Glenrose sites shows continuity in technology and faunal remains with the preceding Old Cordilleran component (Boehm 1973, Matson 1976). However, a detailed inter-assemblage analysis of the St. Mungo phase itself has not been done. The artifact analyses from Glenrose and St. Mungo show similar site functions, and the closeness of the sites to each other (less than 1000 metres) also suggests minimal environmental differences. There is agreement that the St. Mungo components from Glenrose and St. Mungo are very similar, but how do

they compare to the Charles culture component present at Crescent Beach? If these three mainland sites are examples of continuing in situ evolution of the ethnographic Northwest Coast pattern, they will have a high degree of inter-assemblage similarity.

Richard Percy (1974) believed that the earliest component at the Crescent Beach site in Delta was a manifestation of the Mayne phase. Roy Carlson first defined this phase from his excavation at the Helen Point site on Mayne Island which lies in the Gulf Islands (Carlson 1970). The Mayne phase has recently been defined as dating from 5000 to 4000 BP (Carlson 1985, 1986). The phase shares many characteristics with the St. Mungo phase, but its earlier dates suggest that maybe St. Mungo and the following Locarno Beach and Marpole phases, evolved from the Mayne phase and the Gulf Islands. Crescent Beach does not lie in the Gulf Islands and if affiliated with the Mayne phase, it is one of few Mainland Charles culture sites given such an affiliation. During Percy's work at Crescent Beach, the St. Mungo phase had not been formally defined, but information pertaining to it was available (Calvert 1970, Boehm 1973). Percy, however, did not use this information for comparison purposes. Given the debate between the Mayne and St. Mungo phases, it is important to discover whether Crescent Beach's Mayne component is similar to or different from the St. Mungo components at Glenrose and St. Mungo.

Research Question Number One is: What is the degree of culture variability manifest in the three Charles culture artifact assemblages from the Glenrose Cannery, St. Mungo Cannery, and Crescent Beach sites? For this research question, the biggest assumption is that time and site function are constant. If there are problems in doing this inter-assemblage comparison, it

will be due to differentiating what process is responsible for any variability present.

Few sites on the mainland contain both a Charles and Locarno Beach component and the relationship between the two phases is not well known. At Crescent Beach there is evidence for continuous occupation from the Charles culture to the Marpole phase, making this site the perfect place to look for answers concerning in situ evolution of the ethnographic Central Coast Salish pattern. A comparison of the Charles and Locarno Beach components at Crescent Beach could indicate whether in situ cultural evolution has taken place in the Fraser Delta from the Old Cordilleran phase onward. If it is demonstrated that Crescent Beach's Charles component is most similar to Mayne phase assemblages from the Gulf Islands, how does this Gulf Island influenced phase compare to Mainland Locarno Beach? Do the differences between the two components suggest evidence for a cultural influx just prior to 3300 years ago? From this cultural influx did the Central Coast Salish ethnographic pattern evolve?

Research Question Two asks, What is the exact relationship between the Charles and Locarno Beach phases at Crescent Beach? This research question must be handled carefully, as it will easily grow out of my control with the many possible permutations and comparisons. I hope to collect further information to either confirm or negate the general research question: Was the Ethnographic Central Coast Salish Pattern an in situ evolution slowly taking place with little evidence of migrating cultural groups descending into the Fraser Delta, interrupting or dispersing the cultures already present during the Charles culture?

Since Borden first proposed the Charles culture as a regional phase, there have been questions about the appropriateness of such an unit. I will examine the Charles culture on the regional level and discuss whether a truly regional culture is manifest at this time period.

Research Question Three asks, What is the plausibility of the Charles culture existing on the regional level? My interest in this topic stems from an earlier general study of the Charles culture (Pratt 1988). This question could lead to its own thesis, so I will concentrate on presenting a concise summation of the regional Charles culture and assessing whether a phase encompassing such a large time period and so many different environments really is a feasible cultural marker.

The rest of this thesis is organized in the following manner. Chapter Two presents the analysis used to examine research question one and its resulting hypothesis. There is a discussion of the definition of the St. Mungo and Mayne phases, pointing out differences and similarities between the two. Secondly, there is an introduction to the three sites used for this analysis to determine the functional similarity of these sites so that apparent changes in the artifact assemblages are attributable to a cultural rather than a functional or environmental difference. Thirdly, the artifact classification is described. The artifact classification in this thesis addresses questions about inter-assemblage variability, the essence of the first research question.

Chapter Three focuses on research question two and its resulting hypothesis. The chapter first examines the two earliest components from the Crescent Beach site to illuminate the similarity or dissimilarity of site function during the two cultural phases. Once this exercise is completed, the relationship of the Charles culture and Locarno Beach phase is clarified using

the artifact classification and the analytical techniques developed in Chapter Two. A brief comparison of the artifacts from Crescent Beach component two with those from the Locarno Beach site is also undertaken to examine similarities between Crescent Beach's Locarno Beach artifact assemblage and the original typesite. This determines whether Crescent Beach's Locarno Beach artifact assemblage is representative of the Locarno Beach Culture Type.

Chapter Four presents research question three and it's resulting hypothesis. This chapter introduces the Eayem phase which along with the St. Mungo and Mayne phases comprise the Charles culture. The second section of Chapter Four introduces several sites thought to have Charles components. These artifact assemblages are discussed and compared to known Charles components. The final section of Chapter Four uses the data gathered in this thesis and some simple statistical techniques to discuss the feasibility of the regional Charles culture.

Chapter Five evaluates the research hypotheses and provides possible alternative explanations. Recommendations for further research conclude the chapter.

CHAPTER TWO

RESEARCH QUESTION ONE: The Relationship Between Three Charles Components and Their Artifact Assemblages

Research Question Number One examines the degree of cultural variability manifest in the three artifact assemblages belonging to the Charles culture from the Crescent Beach, Glenrose Cannery and St. Mungo sites. From this research question I developed the following hypotheses that deal with interassemblage variability:

Null Hypothesis Number One: The degree of variability between the two previously defined St. Mungo phase artifact assemblages from Glenrose and St. Mungo and the Mayne phase assemblage from Crescent Beach will be minimal, implying that the three artifact assemblages are from a similar cultural tradition.

Alternate Hypothesis Number One: The Crescent Beach Mayne component is different from the other two components and belongs to another cultural tradition originating from the Gulf Islands.

To answer this hypothesis, the first section of this chapter describes the St. Mungo and Mayne phases, discussing pertinent similarities and differences clarifying the relationship between the two cultural phases. This description focuses on differences in artifact assemblages.

To standardize the quantity of data required for this thesis, I have organized my discussion of each site into the following sections: Site Name, Site Location (sometimes these two sub-sections are merged into one section), Ethnographic Culture Area, Chronology, Artifact Assemblage, Raw Material,

Faunal Remains and Features. Each category was chosen for its importance in providing information pertinent to my research questions.

Secondly, the following three sites used in the thesis will be introduced: Glenrose (DgRr 6), St. Mungo (DgRr 2) and Crescent Beach (DgRr 1). This discussion focuses on determining the similarity of these sites in terms of site function, based on all non-artifactual data compiled.

The final section of this chapter introduces the artifact classification and uses this classification to compare and contrast the three Charles culture artifact assemblages from Glenrose, St. Mungo and Crescent Beach.

THE ST. MUNGO AND MAYNE PHASES

In this discussion of the St. Mungo and Mayne phases, only sites with reliably dated components are included in the analysis. Chapter Four presents more controversial Charles culture components. Chapter Four also discusses components thought to belong in the Charles culture but have not yet been formally placed into the St. Mungo, Mayne or Eayem phases.

The St. Mungo Phase

Site Names and Locations

The St. Mungo phase is named after the St. Mungo Cannery Site (DgRr 2) where the phase was first discovered in 1968 in excavations directed by Gay Calvert (1970), who described the excavated material in her M.A. thesis (Boehm 1973). At the time, no nearby components were dated to the same age as the Early component from St. Mungo (Boehm named the oldest component at the site, the Early component). Therefore, Boehm did not place the Early component into a cultural period. In the spring of 1969 a small salvage

project, under the direction of Rick Percy (1972), was undertaken at the Glenrose Cannery Site (DgRr 6). There were 199 artifacts recovered from this excavation and some were similar to the artifacts from the St. Mungo Early component (Percy 1972:164-174). Major excavations at Glenrose occurred in 1972 and 1973, with the main excavation reported by R.G. Matson (1976). Based on the carbon dates, artifact assemblage and faunal remains, Matson proposed that both Component Two at Glenrose and the Early component from St. Mungo belonged in the same cultural phase (Matson 1976:283). He called this new phase St. Mungo after the site where it was first discovered. The two sites are approximately 1000 meters apart on the south bank of the main arm of the Fraser River (See Figure 2.1). St. Mungo and Glenrose are the two best known sites for the St. Mungo phase.

Ethnographic Culture Area

Ethnographically, the two sites fall in the territory of the Mainland Halkomelem speaking groups who lived along the Fraser River and were as a group called the Stalo (Duff 1952). Suttles (1987:47) has placed several of the Coast Salish groups together into one group called the Central Coast Salish. The Glenrose Cannery and St. Mungo site are located in the traditional territory of the Kwantlen sub-group of the Halkomelem speaking Stalo.

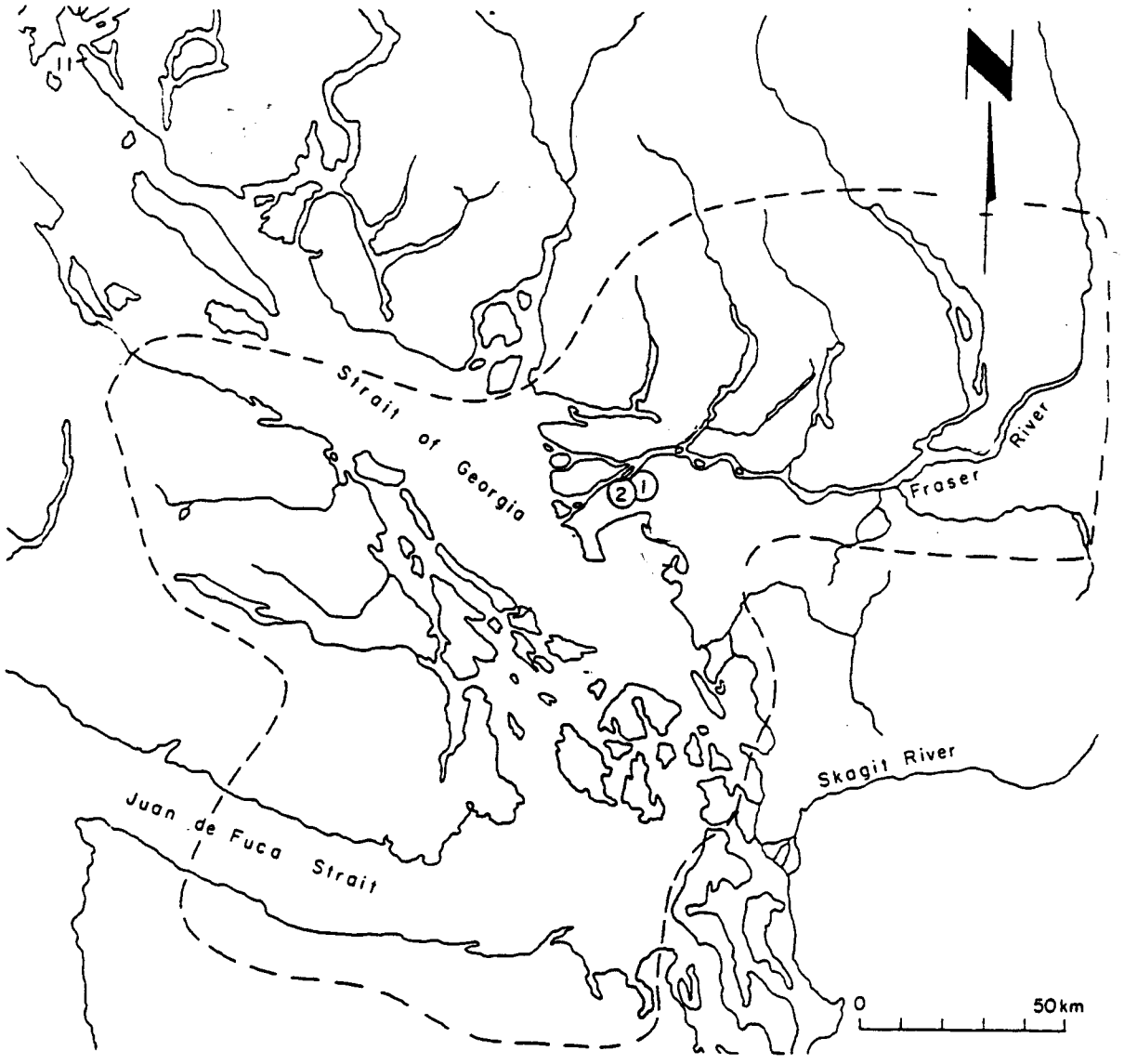


Figure 2.1 Map of St. Mungo Components
(Based on Ham 1982: Figure 2-24)

Chronology

Not all radiocarbon dates have been calibrated. To minimize confusion, all dates quoted in this thesis are uncalibrated.

Table 2.1 St. Mungo and Glenrose Charles Component RadioCarbon Dates Summarized Uncorrected Dates (Before Present)

Glenrose		3280±105 (GaK 4863)
		3570±95 (Gak 4867) Rejected Date
		4185±105 (S 788)
		4240±110 (GaK 4648)
St. Mungo	**Unit A:**	3000±60 (WSU 2736) Rejected Date
		4050±50 (WSU 2779)
		4120±50 (WSU 2780)
		4190±60 (WSU 2781)
		4330±85 (WSU 2782) Rejected Date
		4170±70 (WSU 6147B)
	Unit B:	4185±90 (WSU 2816)
		4260±75 (WSU 2814)
		4290±85 (WSU 2813)
		4375±105 (WSU 2815) Rejected Date
	Unit C:	3340±65 (WSU 2842)
		3370±90 (WSU 2812)
		3380±70 (WSU 2840)
		3410±75 (WSU 2841)
		3420±70 (WSU 2843)
		3455±60 (WSU 2811)
	Unit D:	4480±90 (WSU 2857)
	Unit E:	4440±80 (WSU 2858) Rejected Date

As Table 2.1 indicates, the maximum time frame covered by the St. Mungo phase is 4570 to 3175 BP, based on C14 dates from Glenrose (Matson 1976:16-19) and St. Mungo (Ham 1984:114). The beginning date of St. Mungo is clearer than its termination date. If more St. Mungo phase components are

discovered, there may be movement towards a beginning date of 4600 or 4500 BP, but the current dates suggest a starting date of 4400 BP. The termination date lies somewhere between 3300 and 3100 BP. At St. Mungo, the St. Mungo phase and the following Locarno Beach phase may both be present in excavation unit C and it is difficult to tell from the dates where St. Mungo ends and Locarno Beach begins. The dates from Unit C are not as old as the other dates from the site (they range from 3340 to 3455 BP). There are dates from both Montague Harbour (Mitchell 1971) and Crescent Beach (Matson et al. 1991) of about 3300 BP for the beginning of the succeeding Locarno Beach phase. Based on the lateness of these dates and the artifactual data (which show similarities with both the St. Mungo and Locarno Beach phases) I decided not to include Unit C with my analysis of the St. Mungo phase. I think Unit C is more representative of the Locarno Beach phase then it is of the St. Mungo phase. Therefore, I omitted data from Unit C. At Glenrose, 3280±105 BP (Gak 4863) is the latest date for the St. Mungo component. There is a hiatus in site occupation at Glenrose after the St. Mungo component and before the following Marpole component.

Artifact Assemblage

The artifact assemblages present from Glenrose and St. Mungo are similar on both a general and specific level. Chipped stone tools dominate the artifact assemblages of both sites. Core and flake tools are common throughout the phase. For the following discussion of artifact assemblages, the data is divided into general categories devised from my artifact typology, with each category treated as a subsection of the artifact assemblage.

Unshaped Chipped Stone

Unshaped chipped stone implements such as hammerstones and pebble tools are not as common as in earlier time periods but they are present.

Unshaped Chipped Stone Flake Tools

Unshaped chipped stone flake tools are probably the largest and most common general category of chipped stone tools. Artifacts comprising this category include: utilized flakes, steep and narrow-angled retouched flakes, as well as bifacially retouched flakes.

There is no evidence of a bipolar quartz microlithic industry at either Glenrose or St. Mungo, nor is there evidence of a prepared blade core technology. The dominance of unshaped chipped stone tools (both core and flake types) suggests a technology of expediently produced tools.

Shaped Chipped Stone Tools

Shaped Chipped Stone Tools contains the categories I have called formed unifaces and bifaces. Formed steep (edge angle greater than 45 degrees) and narrow-angled (edge angle less than 45 degrees) unifaces are not as common as their unshaped counterparts. Narrow-angled formed unifaces are present at both sites. They are made from a good quality vitreous basalt with all flake margins exhibiting careful and continuous retouch. This artifact type may be a stylistic marker for the St. Mungo phase.

Shaped bifaces, unlike shaped unifaces, are much more common than bifacially retouched flakes. There are two general categories of shaped bifaces present in the St. Mungo phase, leaf-shaped and contracting stem. Leaf-shaped bifaces are a style first used in older components, and continuing to be well represented in the St. Mungo phase. Contracting stem bifaces

(both with and without developed shoulders) are a style introduced during the St. Mungo phase and almost as common as leaf-shaped bifaces.

Ground Stone Implements

Chipped and ground stone implements are not common during the St. Mungo phase and neither are ground stone implements. This is also a reflection of the dominance of an expedient chipped stone tool technology as it is assumed that ground stone objects take more time and care to create. Ground stone technology is first discovered in the St. Mungo phase, but ground stone tools do not become common until the Locarno Beach phase.

Abrasive stones, required for the manufacture of ground stone implements, are present throughout the St. Mungo phase in low numbers, with both shaped and unshaped styles are present. Their presence does not necessarily indicate a ground stone technology. Patenaude (1985) notes that abraders could be used for the making of bone and antler tools. There are no ground stone points present at St. Mungo, while Glenrose has two nearly complete leaf-shaped ground stone points.

Ground stone knives are not common. There is the possibility of their presence at both sites, but the evidence is not conclusive. At Glenrose (Matson 1976) three ground stone knives tentatively placed in the St. Mungo component are probably intrusive from the Marpole component (Matson 1976:286). At St. Mungo there are no complete ground stone knives (Ham et al. 1986). Ground stone disc beads are present, but are not common.

One stylistic marker for the St. Mungo phase is a group of objects made from a metamorphosed sedimentary rock. These objects are thin, show no evidence of grinding, but are shaped. There is always an element of

decoration present usually on the outer margin. Both sites have these objects. Pecked and ground stone implements are rare.

Bone and Antler Artifacts

Organic preservation was good at St. Mungo and Glenrose. In general, the bone and antler industries show a number of different artifact types present, but in comparison to the bone and antler artifact types present in Locarno Beach components, St. Mungo phase bone and antler artifacts do not display as much variety nor as much finishing. Expediently made bone and antler tools, such as splinter awls and antler wedges, dominate the St. Mungo phase.

A subcategory of splinter awls exists in the two components. At both Glenrose and St. Mungo many splinter awls are made from bird bone. Locarno Beach phase bird bone awls are different, for they are made from complete bird bone, while bird bone splinter awls at Glenrose and St. Mungo utilize small splinters of bird bone.

Neither non-utilitarian goods nor personal decoration are common. A distinctive bone pendant style found at both sites is flat, thin and rectangular in shape. Other non-utilitarian goods present include bird bone tubes, a comb and other styles of pendants. An interesting object called a Grub is found at both Glenrose and St. Mungo. The entire surface of these small bipointed bone objects is incised with parallel grooves. They resemble insect cocoons and were originally defined by Borden (1975). Grubs are another stylistic marker of the St. Mungo phase for they disappear before the beginning of the Locarno Beach phase.

Indications of woodworking include an abundance of bone chisels, wedges and antler wedges. Bone chisels are common and come in a variety of sizes.

Barbed fixed points of bone or antler are not common. A complete example of a barbed harpoon is not present at Glenrose or St. Mungo. Both unilaterally and bilaterally barbed fixed points are found, but in all categories only one artifact is present except for two unilaterally barbed fixed points from St. Mungo. Perhaps the absence of evidence for specialized fishing procurement reflects the perishable nature of the fishing techniques used during St. Mungo times. In comparison to the paucity of shaped bone/antler tools used for fishing, there is a relative abundance of shaped chipped stone bifaces that could be used for hunting. If one looked at the artifact assemblages without examining the faunal remains, the artifacts would over-emphasize the importance of land mammals. The organic nature of specialized fishing implements biases the artifact assemblage against the preservation of specialized fishing tools.

Shell Objects

Shell artifacts are the least common artifacts found during the St. Mungo phase. The most common artifact type is miscellaneous ground shell fragments. Matson (1976) reported one shell adze blade from the St. Mungo component at Glenrose, however, when I re-analyzed the component I did not interpret the artifact as a shell adze blade. Shell adze blades are not common; there are two from St. Mungo and (if one accepts Matson's original analysis) one from Glenrose. Shell beads are present at Glenrose only in association with a burial.

Discussion of St. Mungo Artifact Assemblage

There is a diversity of artifact types and postulated cultural activities present during the St. Mungo phase. Expedient chipped stone tools dominate all other artifact types present. Stylistic markers present for the St. Mungo phase include: narrow-angled formed unifaces, decorated ground stone, flat and rectangular shaped bone pendants and grubs. As more and more St. Mungo and Locarno Beach components are excavated and published, some traits originally thought to be indicative of one specific phase may be indicative of either or both. There is always an associated danger of relying too heavily on artifact types to help define distinctive cultural groups. Cultural processes such as procurement strategies, trade and seasonal round, along with natural processes such as environment and resource availability, all influence the archaeological record. It is the job of the archaeologist to ascertain the significance of one particular artifact type and its presence or absence from an artifact assemblage.

Raw Materials

Basalt of varying quality is the dominant chipped stone raw material. Mammal bone is the most common organic raw material type, although St. Mungo has a large proportion of bird bone as well.

Faunal Remains

Faunal remains from the two components suggest that a variety of species were exploited. Even at this early time period in Northwest Coast prehistory, resources from the sea form an important part of the subsistence remains. A comparison of faunal remains from the sites must proceed with

caution and awareness of the different site activities that may have occurred. Many fish resources were exploited including: flatfish (starry flounder), herring, eulachon, sturgeon, peamouth, sucker, chub and salmon. Sea mammals were taken when available as the remains of seal are present at both Glenrose and St. Mungo. The abundance of Mytilus at Glenrose and St. Mungo indicates a focus on obtaining and exploiting shellfish due to its reliability as a food resource. Deer was the most important land mammal exploited at this time, while wapiti and beaver are also fairly common.

Features

Ham's original St. Mungo report indicated the presence of house floors in the St. Mungo component. For reasons that will be discussed in the St. Mungo site description, there is no conclusive evidence of permanent house remains from the St. Mungo phase. There are indications from both Glenrose and St. Mungo that living floors are present and many different activities took place. Postmolds recovered are too small to be associated with large scale plankhouses, suggesting the utilization of less permanent dwellings. Hearth features are not always well defined, nor is there any particular dominant style, but they are the most common feature.

There is an unusual feature present at St. Mungo called a clay-lined pit. There is no evidence in the pit of burning nor are any other materials associated with it. Its function is not known, but it may be similar to other features found at Pitt River (Patenaude 1985).

Complete burials are present from Glenrose, and interment varies (see the Glenrose site description for further elaboration). Few grave goods are present with no evidence of cranial deformation or labret wear on any of the

skeletons suggesting that status differentiation is not yet apparent, at least through traditional ethnographic methods of status differentiation.

St. Mungo Phase Conclusions

This somewhat general description of the St. Mungo phase is based on information from two sites with components dating to the same time period. The data gathered so far indicate the existence of the St. Mungo phase from approximately 4500 or 4400 BP until its demise sometime after 3300 BP (give or take a hundred years). This phase lasts for just over one thousand years, yet only these two sites contain trouble free components. Clearly, work must be focus on obtaining information about the earlier prehistoric periods on the Northwest Coast.

Expedient chipped stone tools dominate the artifact assemblage. Ground stone technology is first introduced during this time period, but ground stone artifacts are few. Bone and antler artifacts are common when preservation allows, but once again, expedient tools dominate. Stylistic markers for St. Mungo include: narrow-angled formed unifaces, contracting stem bifaces (with or without shoulders), decorated ground stone, rectangular bone pendants and grubs. Other artifact types that could be stylistic markers include; shell beads and shell adze blades.

Faunal remains show an exploitation of a variety of resources including large land mammals (deer and elk), fish (flounder and salmon the most important) and shellfish (Mytilus by far the most important). As of yet, resource specialization is absent, but already during this early Northwest Coast time period, resources from the sea form an important part of the diet with this importance increasing through time. Chisholm (1986) shows that

maritime resources are a major part of prehistoric Northwest Coast diet from the Charles culture onwards.

Features are dominated by hearths with no trend in style. Postmolds are found but their size indicates no evidence of people occupying large plankhouses at this time. Clay-lined features from St. Mungo may be indirect evidence of plant processing (Patenaude 1985). Burials from this time period do not indicate status differentiation. Interment style does not go beyond a preference for in-ground burial and flexing of most burials.

The Mayne Phase

Site Names and Locations

The Mayne phase is named for the basal component of the Helen Point Site (DfRu 8) located on Active Pass at the north end of Mayne Island in the southern part of the Strait of Georgia. Roy Carlson (1970, 1975) directed excavations at Helen Point in 1968, where he first discovered and defined the Mayne phase. At the time, no other nearby components on the Gulf Islands were dated to the same age as the early component at Helen Point (also known as Helen Point I).

Salvage excavations undertaken by Rick Percy in the Spring of 1972 (Percy 1974) at the Crescent Beach Site (DgRr 1) uncovered three different components. Although Percy considered his earliest component a member of the Mayne phase, he did this before the St. Mungo phase was formally proposed (Matson 1976). For this discussion of the Mayne phase, information from Percy's original excavation is included, but the affiliation of the earliest Crescent Beach component is the focus of the first research question in this thesis, and is open for discussion.

Figure 2.2 demonstrates the position of the only site with a radiocarbon dated Mayne phase component.

Ethnographic Culture Area

Ethnographically, Helen Point falls in the traditional territory of the Saanich people, a sub-group in the Straits Salish language group. The Crescent Beach site is on the current boundary between the Halkomelem speaking Nickomekl and the Straits speaking Semiahmoo. Both sites are grouped into the Central Coast Salish culture area defined by Suttles (1990).

Chronology

The best published information concerning this phase comes from Helen Point and Crescent Beach. Both sites have dated evidence for the Mayne phase as well as substantial artifact assemblages. The small size of the possible Mayne component from Pender Canal does not allow for its inclusion in this discussion of the Mayne phase, but it will be analyzed in Chapter Four.

The maximum time frame for the Mayne phase is 5650 to 3850 BP, based on C14 dates from Helen Point (Carlson 1975:2) and Crescent Beach (Percy 1974:267). This is a larger time span than that for the St. Mungo components. It is based on four dates (three from Helen Point and one from Crescent Beach).

Carlson (1970:115) originally defined the Mayne phase as existing from 5000 to 3000 BP. The most recent description of Mayne phase chronology comes from the Pender Canal preliminary reports (Carlson 1985, 1986). In these reports, the time period of 5000 BP to 4000 BP is defined as the Mayne

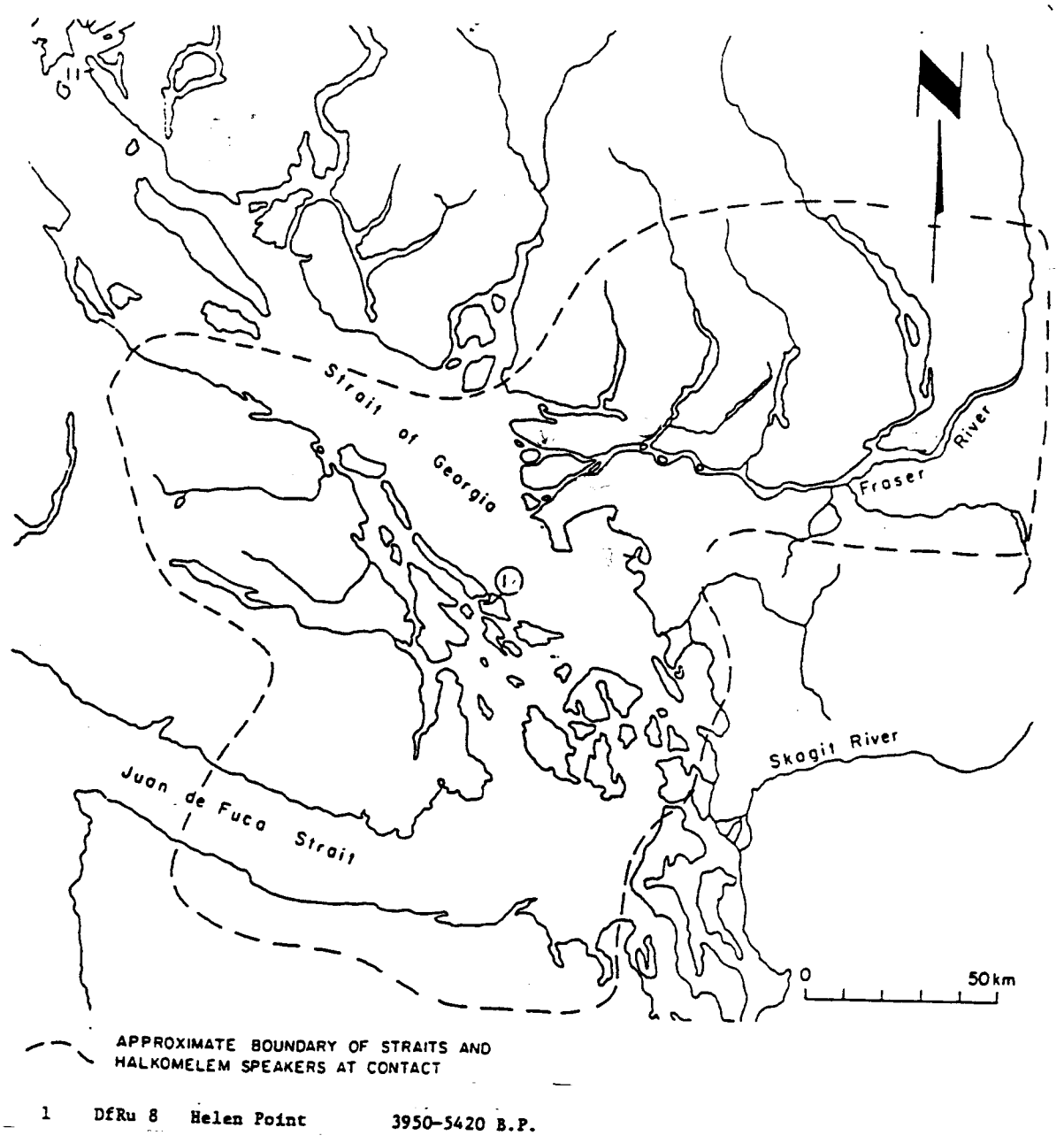


Figure 2.2 Map of Mayne Components
(Based on Ham 1982: Figure 2-24)

phase (Carlson 1985:60) while the time period of 4000 BP to 2500 BP is defined as the Locarno Beach phase (Carlson 1985:60). There is no explanation of why the time span originally defined for the Mayne phase is now divided into two separate phases with part of the original time period now merged with the Locarno Beach phase.

I suggest the following possible explanation for the change in time span covered by the Mayne phase. During the period after the Helen Point excavation, there was minimal published evidence of pre-Locarno Beach phase components. Mitchell's (1968, 1971), Archaeology of the Gulf of Georgia Area, A Natural Region and its Cultural Types amalgamated the current information (at that time) concerning the culture types present on the Northwest Coast throughout prehistory, with a focus on the Locarno Beach Culture Type. His description of the Locarno Beach Culture Type states, "Carlson's Mayne phase can also be included in the culture type (Locarno Beach) as described here" (Mitchell 1971:57). He states that the earliest component from Helen Point is representative of the Locarno Beach Culture Type (Mitchell 1971:65). Mitchell can be interpreted as agreeing with Carlson that the time period from 5000 to 2500 BP was associated with one cultural phase, but Mitchell called this phase Locarno Beach rather than Mayne.

Based on the information available from Helen Point at that time, there was little differentiation between the earliest Helen Point component artifact assemblage and artifact assemblages from Gulf Island Locarno Beach components such as the component from the Montague Harbour site (where Mitchell had excavated). One explanation for the similarity of artifact assemblages is the possibility of a Locarno Beach component being present in the early Helen Point component. This possible mixing of two separate

components would create an artifact assemblage almost identical to Locarno Beach phase artifact assemblages, explaining why at the time of Mitchell's publication, he lumped the Mayne and Locarno Beach phases together. If the Helen Point pre-Locarno Beach component were separated and compared on its own to the Locarno Beach Culture Type, would it still be similar or it would be able to stand on its own as a representative of the Mayne Culture Type?

The most recent definition of Carlson's Mayne and Locarno Beach phase recognizes the original decision by Mitchell that Mayne and Locarno Beach artifact assemblages are similar, but Carlson, by defining the Mayne phase as 5000 to 4000 BP, is also arguing that it exists as its own cultural phase distinctive from Locarno Beach.

Mitchell's hypothesis that the Mayne and Locarno Beach phases are part of a continuum is neither proved nor disproved as a complete and detailed comparison of the two phases has not been done.

When R. Murray (1982) analyzed the Duke Point site she also lumped into one component pre-Locarno and Locarno Beach aged deposits. I think that while it was appropriate at the time of Mitchell's publication, Archaeology of the Gulf of Georgia area, a Natural Region and its Culture Types (1971) to lump the Mayne phase (he does not state that it is okay to lump the St. Mungo or Eayem phases) with Locarno Beach due to the lack of published information about the pre-Locarno Beach time period, it is no longer valid to do so without first proving the validity of such a grouping.

Based on the above mentioned information, I think Carlson has now divided the original Mayne phase into two phases because of the suggestion made by Mitchell after the original Helen Point excavations. The Mayne phase (as of 1986) spans 5000 to 4000 BP. The Locarno Beach phase spans 4000 to

3000 BP (which would overlap with the St. Mungo phase on the Mainland). Traditionally, the Locarno Beach phase is thought to span 3400 to 2200 BP (see for example Ham 1986:84).

The data from the second major excavation at Helen Point was published by John McMurdo (1974) for his MA thesis. McMurdo's excavation units were located in the central and western portions of the site. Carlson's excavations took place along the eastern edge of the site. McMurdo (1974:19) states that his earliest component (Helen Point Ib), "... indicates relationships to both the Mayne phase and to later assemblages described as components of the Locarno Beach phase". In other words, Helen Point Ia (the component defined by Carlson as belonging to the Mayne phase) shows affinity to the Mayne phase, while Helen Point Ib is an evolutionary stage between the Mayne and Locarno phases. Helen Point II is representative of the Marpole phase. It is possible that both Helen Point Ia and Ib are mixed pre-Locarno and Locarno Beach components, which is why both share similarities to each other and to the Mayne and Locarno Beach phases. While both Helen Point Ia and Ib share similarities with the Locarno Beach phase, there is no Locarno Beach phase component defined for the Helen Point site. One could argue that there is a hiatus in site occupation between Helen Point Ib and Helen Point II, but according to the physical stratigraphy, this is not the case (McMurdo 1974:13-18). It would be useful to either prove or disprove the presence of a Locarno Beach component at Helen Point. At this point, I would tentatively suggest that Helen Point Ib is a Locarno Beach component.

Carlson [1975:2 (Figure 1)], presents a table of the compiled dates from Helen Point. The beginning date of the Mayne phase is based on a date of 5420±230 BP (Gak 4938), recovered from the basal deposit at Helen Point (depth

of approximately 130 cm). Situated 5 cm directly above this sample is a hearth feature dated at 3950±260 BP (WSU 1191). The final date recovered from Helen Point is one of 3980±130 BP (Gak 3201), recovered from another hearth feature at a depth of 89 cm. It may be that the oldest date is too old, or the second oldest date too young. A time span of 1500 years compressed in 5 cm of deposit is not likely. If true, the sample retrieved from 89 cm is too old. The beginning date for the Mayne phase cannot be clarified at Crescent Beach because Percy obtained one date of 4270±80 BP (Gak 4925) from the lower section of his early component. The termination date of the Mayne phase is not based on a carbon date so the exact time span is yet to be ascertained.

If the oldest date from Helen Point is for the time being ignored, the two other dates fall within the range of the St. Mungo phase, as does Percy's date from Crescent Beach. The termination date of 3000 BP is younger than St. Mungo's of 3200 BP, but the termination date of the Mayne phase is dependent on the discovery of dated C14 deposits. This later termination of the Mayne phase also assumes that the Locarno Beach phase does not emerge on the Gulf Islands until after it first appears on the Mainland. The oldest date from the Montague Harbour site on Galiano Island in the Gulf Islands (Mitchell 1971:63) is 3160±130 BP (GSC-347) and it falls at the start of the Locarno Beach phase. As previously mentioned, the most recent termination date for the Mayne phase, suggested by Carlson, is 4000 BP which is much earlier than the termination date for St. Mungo. The lumping of potential Mayne and Locarno Beach phase components makes termination dates vague.

At this point, the dates from the St. Mungo and Mayne phases overlap each other, but the uncertainty about the actual time frame represented by the Mayne phase makes comparison difficult.

Artifact Assemblage

The artifact assemblages from Helen Point and Crescent Beach share similarities, but there are also important differences. Unless otherwise stated, the information concerning the artifact assemblage from the Mayne phase is based on Carlson (1975, 1985 and 1986) and Percy (1974). Chipped stone tools dominate both assemblages with both core and flake tools present.

Unshaped Chipped Stone Tools (including Flake Tools)

Unshaped tools such as pebble tools and hammerstones are present although not common. At Helen Point, Carlson states that flake tools are probably under represented because at the time of publication Layer/Level bags had not been searched for utilized flakes and other minimally modified artifacts (Carlson 1975:7). On the other hand, after re-analyzing the artifacts from Percy's excavation, a number of minimally modified artifacts defined by Percy were deemed debitage and eliminated from the final artifact tally. Nevertheless, in both cases, expediently made chipped stone flake tools dominate the assemblages.

Quartz microliths are present at both sites (one at Crescent Beach, four at Helen Point), but their numbers are negligible and could result from component mixing due to excavation by arbitrary levels and/or the presence of a later component with quartz crystal present such as the Locarno Beach component at Crescent Beach. Carlson also lists the presence of one quartz crystal microblade and three obsidian microblades. No cores were discovered.

With no evidence of a prepared microblade core and only a small number of microblades, the presence of a microblade technology is debatable. My own personal observations of bipolar percussion and experiments done by others (for example Magne 1981, Ham 1982:82) indicates that blade-like flakes and microblades are produced during the course of flintknapping. There is evidence of bipolar percussion in the Mayne component and blade-like flakes as well as blades may be by-products of the bipolar reduction sequence. Quartz microliths are usually seen as indicators of a Locarno Beach component, as is the presence of microblades (made from both quartz crystal and obsidian). Their appearance at Helen Point may be a result of the presence of an originally undetected Locarno Beach component. Another explanation may be that quartz microliths and obsidian microliths are present in the archaeological record because they were good artifacts for cutting fish and the procurement of fish was the main function of the site. This second explanation does not fit the data from Helen Point as well as other sites (for example see the Pitt River site in Chapter Four) because far fewer quartz microliths are present at Helen Point. The presence of possible obsidian microliths may help fill in the gap.

Without better evidence for the presence of a blade technology, this apparent difference between the St. Mungo and Mayne phase's blade technology cannot be satisfactorily confirmed.

Shaped Chipped Stone Tools

In the category of shaped chipped stone tools, shaped bifaces are the most common artifact type at both sites. Several styles are present, but leaf-shaped and contracting stem (with or without shoulders) forms dominate.

Although I have not personally examined the bifaces from Helen Point, those from Crescent Beach are similar to Glenrose and St. Mungo bifaces. The bifaces in Figure 34 from Carlson (1970:116) also look similar to St. Mungo phase bifaces. Chipped slate implements are found at Helen Point, but not at Crescent Beach.

Ground Stone Implements

For the Mayne phase in general, Carlson (1970, 1975) defines ground slate as present and he has more artifact types of ground slate than found in the St. Mungo phase. One explanation for the higher number of slate artifacts present at Helen Point may be related to the availability of slate. Abraders are both unshaped and shaped.

One complete ground slate point (resembling a chipped stone contracting stem point) was recovered from Helen Point. This similarity in ground stone and chipped stone point forms parallels Glenrose's chipped and ground stone leaf-shaped points.

Labrets are another possible ground stone stylistic marker of the Mayne phase. Two were found at Helen Point, none at Crescent Beach. Labrets are traditionally associated with Locarno Beach deposits. Their presence in the Mayne phase may be another indication of a possible mixing of components at the site, but it is also possible that the use of labrets first originated during the Mayne phase on the Gulf Islands as there is non-artifactual data from Pender Canal supporting this second explanation. The exact provenience of the labrets from Helen Point is not known.

Bone and Antler Implements

Unshaped and fragments of worked bone and antler artifacts are the most common artifact types made from organic raw materials. Bone chisels and

wedges are present in the Mayne phase. Cultural traits such as long bone points and bone pendants must be examined in person in order to compare/contrast with the St. Mungo phase bone points and rectangular shaped bone pendants.

An important stylistic marker for the Mayne phase is bilaterally barbed harpoons made of antler. This artifact type was not found at Crescent Beach and it was not common at Helen Point (only nine of 693 artifacts were defined as bilaterally barbed points and harpoons [Carlson 1975:12]). Two bilaterally barbed antler points are present from St. Mungo along with one bilaterally barbed bone point from Glenrose. As with the St. Mungo phase, stylistic shaped artifacts, characteristic of the Mayne phase, are not common and placing emphasis on such a small proportion of the artifact assemblage over-estimates a particular artifact type's overall importance. Stylistic markers must be incorporated into a more general analysis of the site in order to ascertain site function and provide knowledge concerning whether an artifact is a stylistic marker of a cultural group, or a marker of a specific site activity. The paucity of barbed points and harpoons in comparison to shaped bifaces, as previously suggested, may indicate less emphasis on sea resources (unless implements used to procure sea resources were made from perishable material).

Discussion of Mayne Phase Artifact Assemblage

There are two problems apparent in discussing the artifact assemblage present from the Mayne phase. Of the two sites with dated components attribute to the Mayne phase, only Crescent Beach is fully reported. This lack of fully reported, dated artifact assemblages makes my comparisons

between the St. Mungo and Mayne phases somewhat tenuous. One research goal of this thesis is a detailed comparison of the Mayne phase artifact assemblage from Crescent Beach with two St. Mungo phase artifact assemblages in order to determine if the Crescent Beach artifact assemblage belongs to the Mayne or St. Mungo phase. If the artifact assemblage from Crescent Beach shows a greater similarity to the artifact assemblages from other St. Mungo components, Carlson's Helen Point Mayne phase component will contain the only substantial Mayne phase artifact assemblage.

There are problems with the artifact assemblage from the Mayne phase component at Helen Point. Many of the artifacts used to define this phase (for example: quartz microliths, microblades, chipped stone points, ground stone points and labrets) are more often used to define the Locarno Beach phase. This implies that either the Mayne phase is incorporated into the Locarno Beach phase, or it must be re-examined for the possibility of the presence of a Locarno Beach component. A third possible explanation is that the Mayne phase is the source of the Locarno Beach phase. Based on the dates Carlson (1985:60) gives for the Locarno Beach phase in his Pender Canal report (4000 - 2500 BP), there is movement towards incorporating the two phases on the Gulf Islands.

In Chapter Four the debate about the St. Mungo and Mayne phases continues along with the introduction of the third phase (Eayem). St. Mungo, Mayne and Eayem are the three subphases comprising the Charles culture.

The diversity in artifact types represented in the Mayne phase suggests a great deal of site activities took place at Helen Point and Crescent Beach. Expedient made tools (both chipped and bone) dominate the assemblage. The degree of overlap between the St. Mungo and Mayne phase cultural markers

cannot be ascertained without a close examination of the artifact assemblages. Questions concerning artifact types thought to be cultural markers for the Mayne phase leads to discussion of which artifact types are unique to the Mayne phase and which are present in both the Mayne and Locarno Beach phase. Bilaterally barbed harpoons and points of antler are one stylistic marker but they are not unique to the Mayne phase (unlike the narrow-angled formed unifaces from the St. Mungo phase) as they are also present in the Locarno Beach phase. Two bilaterally barbed points of antler are present from St. Mungo and one is present at Glenrose.

Raw Materials

At Helen Point, obsidian was utilized as a raw material, but no obsidian was found at Crescent Beach. One major difference perceived between St. Mungo and Mayne phase components is the presence of quartz and obsidian as raw materials. At both sites basalt was the dominant raw material for chipped stone tools. Mammal bone dominated the organic raw material types.

Faunal Remains

A faunal analysis has not yet been completed for the Mayne phase at Helen Point, but McMurdo (1974:131-139) presents faunal data from his excavation units. How representative these remains are of the older Mayne phase (Helen Point Ia) is uncertain, but the available information allows for some tentative conclusions. There was no faunal analysis at Crescent Beach during Percy's excavations.

In the mammal category, both land and sea mammals are represented with Coast deer, dog and beaver the most common (McMurdo 1974:133-134).

Sea mammals (either seals or sea lions) are present but rare. Two fragments of whale bone with adze marks were found in Component Ib.

Salmon, rockfish and lingcod are all presumed to be present during the Mayne phase as they are present in Component Ib (McMurdo 1974:135-136). None of McMurdo's fish remains recovered from his early component were abundant in comparison to the later components, but a variety of fish were found. Unless Helen Point Ia was a specialized activity site (a doubtful inference given the artifact assemblage), one can assume that several species of fish were exploited.

Shellfish are common and several varieties of clams are well represented. Mytilus is absent (McMurdo 1974:131-132). Carlson (1970:114) states that the only shell present in his Mayne phase component is highly fragmented. Seasonality indicators cannot be determined at this time but the variety of food resources utilized suggests more than one season of occupation.

Features

The dominant feature for the Mayne phase is hearths, with Carlson (1970:115) stating that circular hearths are present. At Crescent Beach, Percy (1974:25-29) states that two barely discernible hearths were present in Component 1 (as named by Percy).

Carlson states that rock slab features are also present during the Mayne phase. He does not describe one, but McMurdo (1974:123) does for the Helen Point Ib component. McMurdo excavated a clay-lined bowl-like depression, on the bottom of which was a large flat sandstone slab covered with a lens of dark charcoal and clay. The function of such a feature is not

known, but McMurdo postulates it is a cooking feature. Four similar features were unearthed in Component 1 at Crescent Beach.

Postmolds were observed with the feature from Helen Point Ib and with one of the features from Crescent Beach. There is no discussion of postmolds from Carlson's Component Ia.

At Helen Point Component Ib, McMurdo uncovered the remains of a possible living floor with two hearth scatters and two associated postmolds. It is quite likely that similar features were found in Component Ia.

There is no indication of how representative McMurdo's features in Component Ib are of Carlson's in Component Ia. The clay-lined bowl feature with the sandstone slab in Component Ib shares some similarities with features from Crescent Beach, so Carlson's features in Component Ia could be similar.

The features present from McMurdo's excavation in Component Ib are of the same type as those found in St. Mungo with the possible exception of the sandstone slab. Extrapolating from the Component Ib data, there is little indication of feature differences between the Mayne and St. Mungo phase features except for the high number of clay-lined features associated with Mayne components. This difference is not substantial because there is a similar feature present at St. Mungo (there was a clay-lined feature also excavated from the Pitt River site, it will be discussed in Chapter Four) so this is not a unique Mayne phase feature.

Carlson's list of cultural traits for the Mayne phase (1970:115) includes extended burials, but does not indicate the number of burials involved and whether this pattern is exclusive. The burials from Component Ib (McMurdo 1974:128-130) are semi-flexed. Two of the burials in Component Ib have a single slab of rock associated with them and the burials are in-ground

interments (McMurdo 1974:128-129). There was no evidence of grave goods. Three of Percy's burials dated to the Charles culture, but none were recovered from stratigraphically controlled excavations (Percy 1974:33). Only the position of one burial was determined and it was semi-flexed (Beattie 1980:209-212). There is some evidence of grave goods but my detailed discussion of the Crescent Beach site in the following section explains why the grave goods and their association to the burials is questionable. There is no evidence gathered so far suggesting extended burials are a cultural feature of the early periods on the Northwest Coast.

Mayne Phase Conclusions

Once components attributed to the Mayne phase are more fully published one can attempt a more thorough comparison of the Mayne phase and the St. Mungo phase. At this point Helen Point is the only site with a large Mayne component artifact assemblage. From the evidence presented so far, it is possible that the Mayne component from Helen Point is intermixed with a Locarno Beach component. Without the final description from Helen Point, definite conclusions and statements cannot be made at this point in time. The area encompassed by the Mayne phase may include both the Mainland and the Gulf Islands or perhaps the Gulf Islands alone. Other undated artifact assemblages may date to the Mayne phase (for example Bliss Landing), but only those with C14 dates and significant artifact assemblages were discussed.

The Mayne phase may begin as early as 5450 BP, depending on the validity of the oldest date at Helen Point. The termination of the phase is not known for sure. It is not unlikely that as time goes on, the dates for both the St. Mungo and Mayne phase will overlap more and more.

Perhaps the greatest controversy of the Mayne phase concerns the artifact assemblage. On a general level the artifacts resemble St. Mungo artifacts in that both assemblages are dominated by unshaped chipped stone and bone tools. Well-made tools form a definite minority in the assemblages with chipped stone bifaces the most common well-made shaped tool. In both phases leaf-shaped and contracting stem bifaces are the dominant shaped chipped stone biface styles. Ground stone technology is present in both phases, but may be more common during the Mayne phase. Stylistic ground stone tools for the Mayne phase may or may not include ground stone points, ground stone knives and labrets (As will be discussed later, none of these three artifact types were discovered in the Charles component at Crescent Beach).

There are differences in the artifact types present. Microblades and quartz microliths are both present in the Mayne phase and almost entirely absent in St. Mungo components (As will be discussed later, one macro blade-like flake and one quartz microlith were discovered in the Charles component at Crescent Beach). Obsidian microblades are found at Helen Point, while obsidian objects are nearly absent from St. Mungo components. The ground stone technology of the Mayne phase is more apparent and includes both ground stone knives and labrets, neither of which are present in St. Mungo artifact assemblages (or the Charles component at Crescent Beach).

With more information, the delineation of the components present at Helen Point can be undertaken, answering questions concerning how much of the artifact assemblage from Helen Point Component Ia results from the Mayne component and how much from a possible Locarno Beach component. This site is pivotal in our search for information concerning the evolution of the

Central Coast Salish Ethnographic Pattern and we must glean as much information from it as is possible.

The faunal remains from Helen Point have not been fully published, but information gathered from the component following the Mayne component suggests a subsistence base including land and sea resources comprising mammals (both land and sea), fish and shellfish. McMurdo (1974:136) suggests land mammals (Coast deer) were three times more important than sea mammals.

The features present in the Mayne phase may contain one new feature type not previously encountered. From Helen Point Ib horizontal sandstone slabs were incorporated into a clay-lined feature and two burials. Although Carlson (1970:115) states that rock slab features are present in the Mayne component, he does not specify their association with other features. On the Gulf Islands, sandstone comprises much of the natural geology and to see it used is not surprising. Whether the use of sandstone slabs implies a cultural difference between the Mayne phase and the St. Mungo is unclear.

The burial information published to date suggests in-ground interment with burials partially flexed. Carlson originally suggested extended burials were the preferred form. Until such evidence is published, the burial patterns of the Mayne and St. Mungo phases cannot be distinguished.

An important similarity between the two phases is the lack of definitive evidence for high status versus low status individuals. The labrets associated with the Helen Point Mayne component are the only possible indication of status differentiation. Other evidence of possible status differences comes from labret wear on one skeleton at Pender Canal and two at Tsawwassen (to be discussed in Chapter Four). The lack of grave goods, low numbers of personal ornaments and lack of physically modified skeletons leads to the

conclusion that the cultural groups present during the St. Mungo and Mayne phase are not yet ranked in terms of social organization.

Now that the St. Mungo and Mayne phases have been introduced, the three sites to be used in this chapter can be presented for further discussion.

Site Descriptions

The Glenrose Cannery Site

Site Location

The Glenrose Cannery Site (DgRr 6) is located on the edge of the Fraser River Delta within the city boundaries of Vancouver, British Columbia. The site has been excavated several times (see Matson 1976:1 for a review of its excavation history). The following site description, unless otherwise stated is based on Matson (1976). The site is located on the south bank of the main arm of the Fraser River. There are natural boundaries on the three sides of the site: to the north is the Fraser River, to the south is Panorama Ridge which is a high ridge of glacial till (Armstrong 1956 and 1957), and to the west is a small stream running off Panorama Ridge. There is no distinctive natural boundary on the eastern side of the site. Although the original site boundaries have been disturbed by the building of the adjacent Great Northern Railway tracks, the approximate site area is 260 meters long (east of the small stream) and about 60 meters on the north-south axis (Matson 1976, Eldridge 1991). The maximum depth of prehistoric deposits at the site is almost 6 meters.

Present vegetation is much modified but Matson (1976:3-7) gives a brief description of the flora found on site and thought to be representative of the

natural vegetation. The site's flora and location suggest that the site exists now and in prehistoric times on the periphery of a coastal Douglas fir forest.

Ethnographic Culture Area

The Glenrose site falls within the ethnographic boundaries of the Kwantlen territory of the Halkomelem-speaking Coast Salish Indians (Duff 1952:23).

Excavation Procedures

The following description of excavation procedures and site stratigraphy is a condensed version of Matson's (1976:8-15) original report. The site was directed and excavated by different people, thus excavation methods were not the same during the two field seasons spent at Glenrose. In both years the excavation units were randomly chosen. The midden was excavated in 2X2 meter units except for Units 1 and 5 which originally had a one meter baulk separating them. In the second season, this baulk was excavated and called Unit 55 (1X2). The total area of this section of the excavation was a 5X2 meter trench. Figure 2.3 reproduces the location of the excavation units. All excavation was by 10 cm arbitrary levels. Artifacts found in situ were given three dimensional provenience for both seasons, but in the first season, they were not keyed into features. Some excavated material in the first field season was dry sifted either through 1/4 or 1/8 inch screen mesh. In the second year, only 1/8 inch screen mesh was used and some material was water screened as opposed to dry screened.

Like all large shell midden sites, the stratigraphy at Glenrose is complex and changes dramatically throughout the units. The depth of the cultural

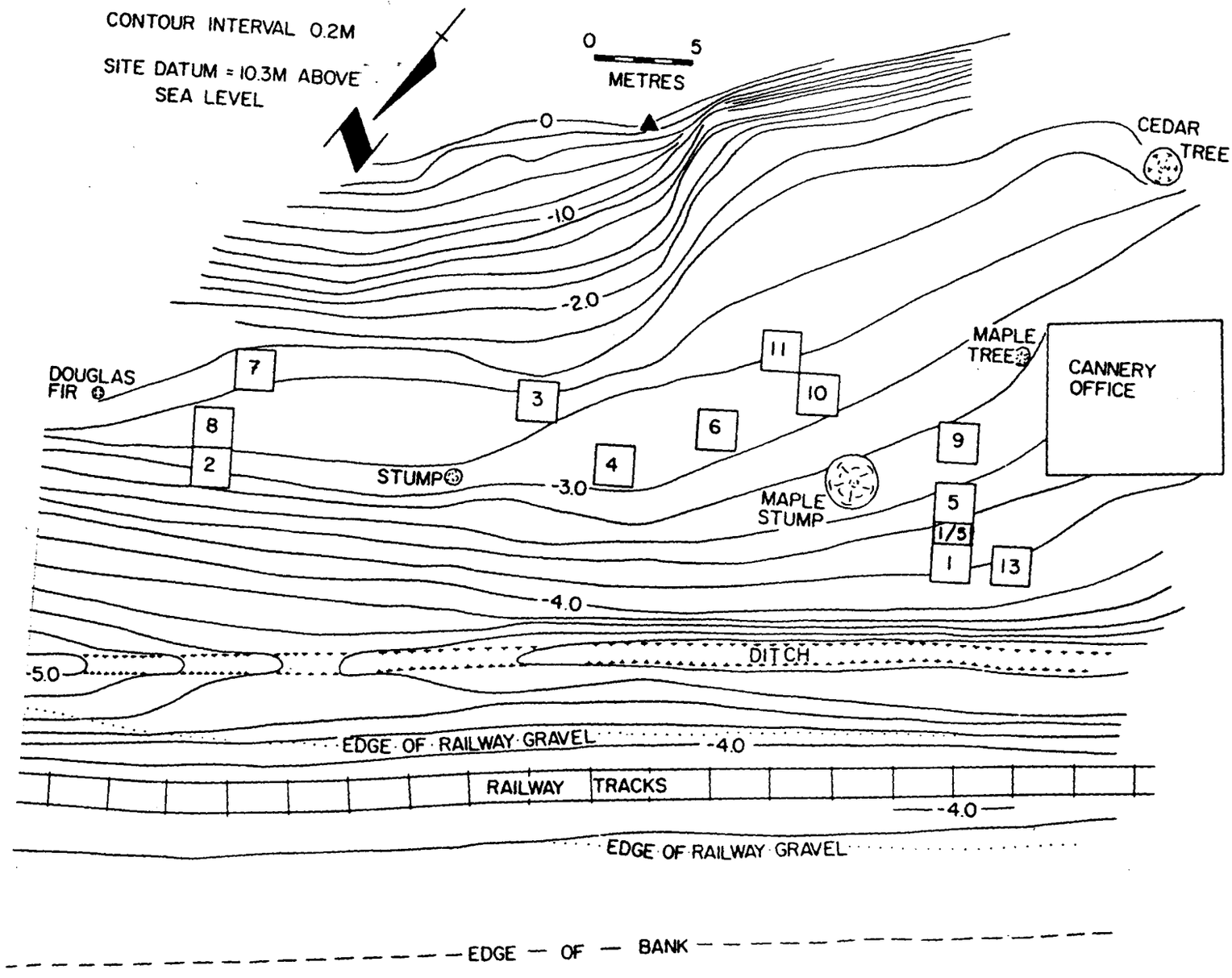


Figure 2.3 Glenrose and Location of Excavation Units (Based on Matson 1976: Figure 1-3)

deposits ranged from 2 to 5.5 meters. The best picture of overall site stratigraphy comes from the 2 X 5 meter trench which consisted of units 1, 1/5, and 5 (Matson 1976:10). The St. Mungo component was composed of a mixture of many materials, but the shell of Mytilus edulis dominated all other material found in the stratigraphy. The large quantity of Mytilus edulis suggests a rocky foreshore was close by (Matson 1976:15).

Chronology

Of the four dates obtained from the St. Mungo component there is one questionable date, while the other three concur (See Table 2.1). The two oldest dates (4185±105 [S 788], and 4240±110 BP [Gak 4648]) were obtained from basal deposits in the component suggesting an initial beginning date no earlier than 4400 B.P (see Matson 1976:16,19). A date of 3280±105 BP (Gak 4863) was obtained from the uppermost portion of this component putting the termination date of the St. Mungo phase at no later than 3100 BP. The one questionable date (3570±95 [Gak 4867]) comes from a sample 1.8 meters directly below the 3280 BP date. The depth of the deposit from which the sample was taken, and the other two basal deposit dates imply this date is too young (Matson 1976:19).

Faunal Remains

The excavation of arbitrary levels at Glenrose and the complexity of its stratigraphy, ". . . did not allow for determination of a season or seasons of occupation represented by each layer or lens encountered" (Imamoto 1976:32). Instead, seasonality was, "determinable only for the major components in general" (Imamoto 1976:32). From the faunal remains present, summer and fall

occupation of the site were definite, along with a probable winter occupation. (Imamoto 1976:40).

Faunal remains present in the St. Mungo component include salmon, elk and deer (including juveniles), seal, beaver, and various species of birds. Elk, seal, and deer remains were found in all three components and it is argued that all mammals found at Glenrose occur in the same proportions in all three components (Matson 1976:91). Elk is the most important mammal, with seal and deer being of equal importance vis-a-vis each other, but only a third as important compared to elk (Matson 1976:96). Bird remains change significantly in proportion between the Old Cordilleran and St. Mungo deposits. This may reflect a change in environment, an increased pursuit of avian species, or it may reflect a change in both natural and cultural processes.

Fish remains for the St. Mungo component exhibit a very large increase compared to the Old Cordilleran component. Matson (1976:96) suggests that salmon may represent the most important faunal resource for the St. Mungo component. Several other species of fish are present in the component including the following: flounder, peamouth, sturgeon, eulachon and stickleback. In terms of caloric importance, salmon is most important followed by sturgeon with minnow/suckers and flounders, as a group, the third most important (Matson 1976:94). Eulachon was of the least importance, but was still present throughout the component (Matson 1976:94). The presence of eulachon and stickleback suggests a late spring, summer occupation with salmon suggesting the presence of a fall occupation as well (Matson 1976:96).

The shellfish analysis presented the most important information of all the faunal remains recovered from the St. Mungo component. Ham (1976:52) states that Mytilus edulis is at least as important as elk as a food source,

based on conservative meat estimates for the shellfish. Ham's analysis proved that during the early period of Northwest Coast prehistory, mussels were a much more important food source than previously thought. The growth rings of both intact mussels and clams indicates that the site was occupied during various seasons throughout the year (Ham 1976:78).

Features

While a functional analysis of the features excavated at Glenrose would be desirable, it was not possible because of the excavation by artificial levels which meant that artifact and faunal remains relationships to features were not always apparent. Excavation by artificial level would also tend to lump together layers which were in direct association with layers which were not.

Eight hearth features were excavated from the St. Mungo component, ". . and in all cases, they were composed of charcoal and fire-cracked rock in a well defined area of quite regular size " (Gose 1976:190). Gose assumes that these features represent repeated in situ burning on an area of a living floor. As Gose points out, these features may actually be the remnants of hearths used elsewhere and redeposited into the midden.

There were two occurrences of postmolds excavated from St. Mungo, one group of six, and another group of four small (10 cm diameter) associated with one large (20 cm diameter) (Gose 1976:193).

One group of features from Glenrose were defined as 'Living Floors'. All of these features are composed of thin compacted layers of silt and finely crushed shell. Often, other features including seven burials from Living Floor #5, artifacts and faunal remains were associated with these Living Floors. Gose notes that some Living Floors were probably not detected during

excavation because no other obvious features were associated with them, making them look like a thin compact layer. Further difficulties in detecting Living Floors while excavating would result from the type of excavation being undertaken which was in deep, dark and small units, where detecting subtle layer changes would not be easy.

Nineteen burials of various completeness were recovered from Glenrose and of those, eleven are associated with the St. Mungo component. The burials include seven adults, one sub-adult, two children and one infant. All were individual interments with seven recovered from Units 1, 1/5 and 5 (Styles 1976:203). Some of the skeletons were placed in cyst-like depressions, with some degree of flexure and many individuals were placed on their left side (Styles, p.203-204). Grave inclusions were not common with five burials from the St. Mungo component containing grave goods but only in two cases (an adult female and a child) were more than one artifact present. The adult female (burial 5) had a necklace of small drilled shell beads and a perforated bone pendant while the child had fragments of a bone tool and an ulna tool. There is no evidence of cranial deformation or labret wear on any of the burials. Thus, there is no evidence of status differentiation at this time.

Glenrose Non-artifactual Data Conclusions

Glenrose was located to take advantage of both land and water resources, for it was on the bank of the Fraser River at the edge of a coastal Douglas fir forest. The site is large, suggesting that in its realm, a great many activities took place. The stratigraphic sequence shows continuous site deposition through the St. Mungo component without indication of dramatic change.

The St. Mungo component dates are in agreement with each other concerning the beginning of the St. Mungo occupation. The termination date also fits the St. Mungo phase time range.

The evidence from faunal, fish and shellfish remains suggest the site was occupied on a regular basis throughout the St. Mungo component, and was used to some extent during all four seasons. The wide variety of faunal remains points to a site function of a possible base camp used in the summer and fall along with a probable winter occupation as well.

The wide variety of features, the presence of burials and the relative abundance of both also suggests that the site was used as more than a limited activity site. From the evidence accumulated from the site report, it is appropriate to suggest that the site function of the Glenrose Cannery site during the St. Mungo phase included a number of procurement activities that involved extracting resources from both land and water, throughout the year.

Although problems with excavation strategy hinder the analysis of site function on a more detailed level, ample data is available to allow for a general comparison and discussion of site function for the Glenrose Cannery, St. Mungo Cannery and Crescent Beach sites.

The St. Mungo Cannery Site

Site Location

The St. Mungo Cannery Site is approximately 1000 meters downstream from the Glenrose Cannery Site (Matson 1976:2). Like Glenrose, St. Mungo has been excavated several times. Ham et al. (1986:43-45) overview these excavations and their results in terms of time periods discovered or defined. Unless otherwise stated, the site description is based on Ham et al. (1986).

The site is located on the south bank of the main arm of the Fraser River. The only obvious natural boundaries are Panorama Ridge to the south, and the Fraser River to the north. To the west and east, natural boundaries were low-lying marshy ground (Boehm 1973:14-15) and a prehistoric stream cutting through and separating a section of the eastern portion of the midden (Ham et al. 1986:45). Boehm (1973:15) suggests that during initial site occupation, it was almost on salt water and flat ground. Original site boundaries have been greatly disturbed through residential and cannery building. A significant portion was bulldozed into the river and both River Road and the Great Northern Railway cut through the deposits (Boehm 1973:8). Boehm estimated that the original site boundary extended on the east-west axis about 275 meters and on the north-south axis about 91 meters. Neither Ham nor Boehm indicate how much of the midden is located east of the prehistoric stream channel, although Ham indicates that it is on a higher terrace than the western deposits and is more disturbed than the rest of the site (Ham et al. 1986:45). The maximum depth of prehistoric deposits at the site is 2 meters (Ham et al. 1986:73).

Site disturbance has greatly modified the natural vegetation, but Ham et al. (1986:12-22) describes past plant communities present in the area. The general conclusion is that St. Mungo, like Glenrose, is on the periphery of a coastal Douglas fir forest. Figure 2.4 shows the many historic (and assumed prehistoric) ecological communities present in the St. Mungo area. This visual representation indicates how advantageously located St. Mungo and Glenrose were for procuring a variety of resources from various nearby ecological habitats. Ham et al. (1986:12-22) partially list desired raw materials and food present in seven ecological communities. The diversity in the list is

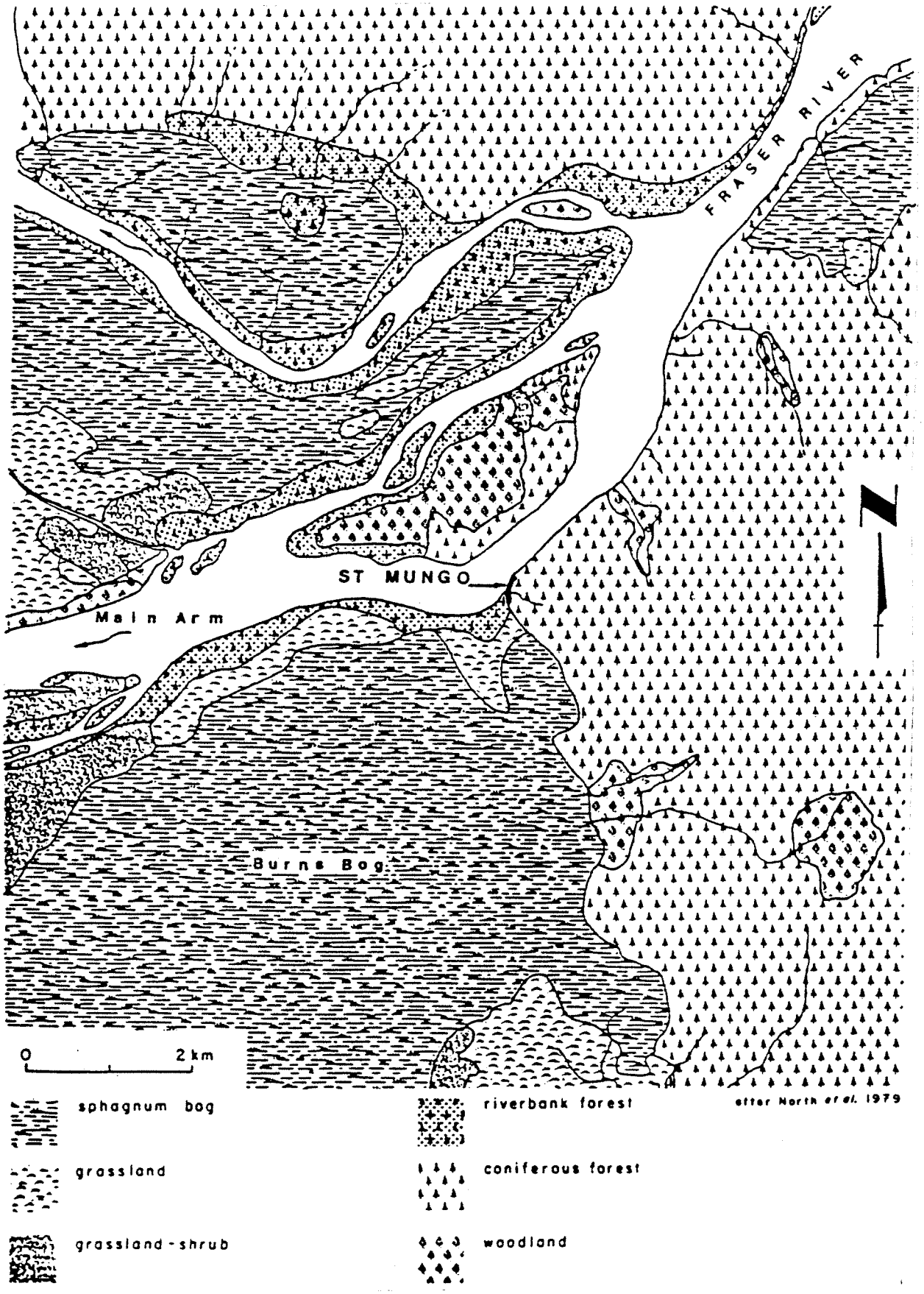


Figure 2.4 Ecological Communities Available to Glenrose, St. Mungo and Crescent Beach (Based on Ham et al. 1986: Figure 2.5)

impressive. This proximity to so much ecological diversity, in my opinion, further supports my inference concerning the multi-functional nature of these two sites.

Ethnographic Culture Area

The St. Mungo site is located on land falling within the ethnographic territory of the Kwantlan people who are Halkomelem-speaking Coast Salish Indians (Duff 1952:23).

Excavation Procedures

The following description of excavation procedures and site stratigraphy is a condensed version of Ham et al. (1986:71-113). A portion of the site was threatened with destruction due to the construction of the Annacis Island bridge across the Fraser River. It was excavated during August 1982 and April 1983 by a crew under the direction of Leonard Ham. The first objective of the excavation was to obtain an overall view of the cultural and natural deposits present on site. A 190 meter backhoe slit trench was excavated around the entire perimeter of the deposits under investigation (Ham et al. 1986:Figure 4.1). Based upon the analysis of stratigraphy exposed by the backhoe and profile maps from past excavations, a map detailing the integrity and extent of cultural deposits present at St. Mungo was compiled (Ham et al. 1986:Figure 4.2). Once an overview of site stratigraphy was obtained, excavation units were subjectively selected in locations where stratigraphy suggested the presence of possible house floors. Blocks A to E were set up and ranged in size from 2X5 meters (block A) to 2X3 meters (blocks B and C) and 2X1 meters (blocks D and E). Figure 2.5 reproduces the location of

excavation units at St. Mungo. Sides of units not exposed by the original 190 meter slit trench were exposed by shovel to enable a complete four sided view of each unit's stratigraphy (Ham et al. 1986:90). All intact material was excavated by natural layers, with thicker layers cross cut by 10 cm levels. All excavated material was water screened through 1/8 inch mesh. Three dimensional provenience was given to all artifacts found in situ. The exact amount of provenience given to in situ faunal remains is unclear.

To give some idea about the complexity of excavating a shell midden site by natural layers, 644 unique layers were uncovered, defined, and mapped at St. Mungo. Although the number of layers may seem indicative of a great amount of diversity in the midden material, Ham et al. (1986:117) note a high degree of homogeneity in the stratigraphy with sand, ash and Mytilus edulis shell the three most visible constituents. The high proportion of Mytilus edulis supports the hypothesis that a rocky foreshore was close by (Matson 1976:15). The depth of the cultural deposits range from 0.50 to just over 2.0 meters. Ham et al. provide profile maps for excavation units A, B, and C (Ham et al. 1986:97,101 and 104). Units D, E, and F were intended as exploratory trenches, and while the stratigraphy is described (Ham et al.1984:110-113), there is no visual representations of the three units.

Ham went beyond delineating natural layers and grouped several layers into a House Component which, ". . . identifies a component as containing house floor layers, but it may also contain layers from outside the house " (Ham et al.1984:94). Ham thought there was evidence of several house components in each of the units excavated. I was unable to discover the thickness and depth of the house components per layer or unit. Although

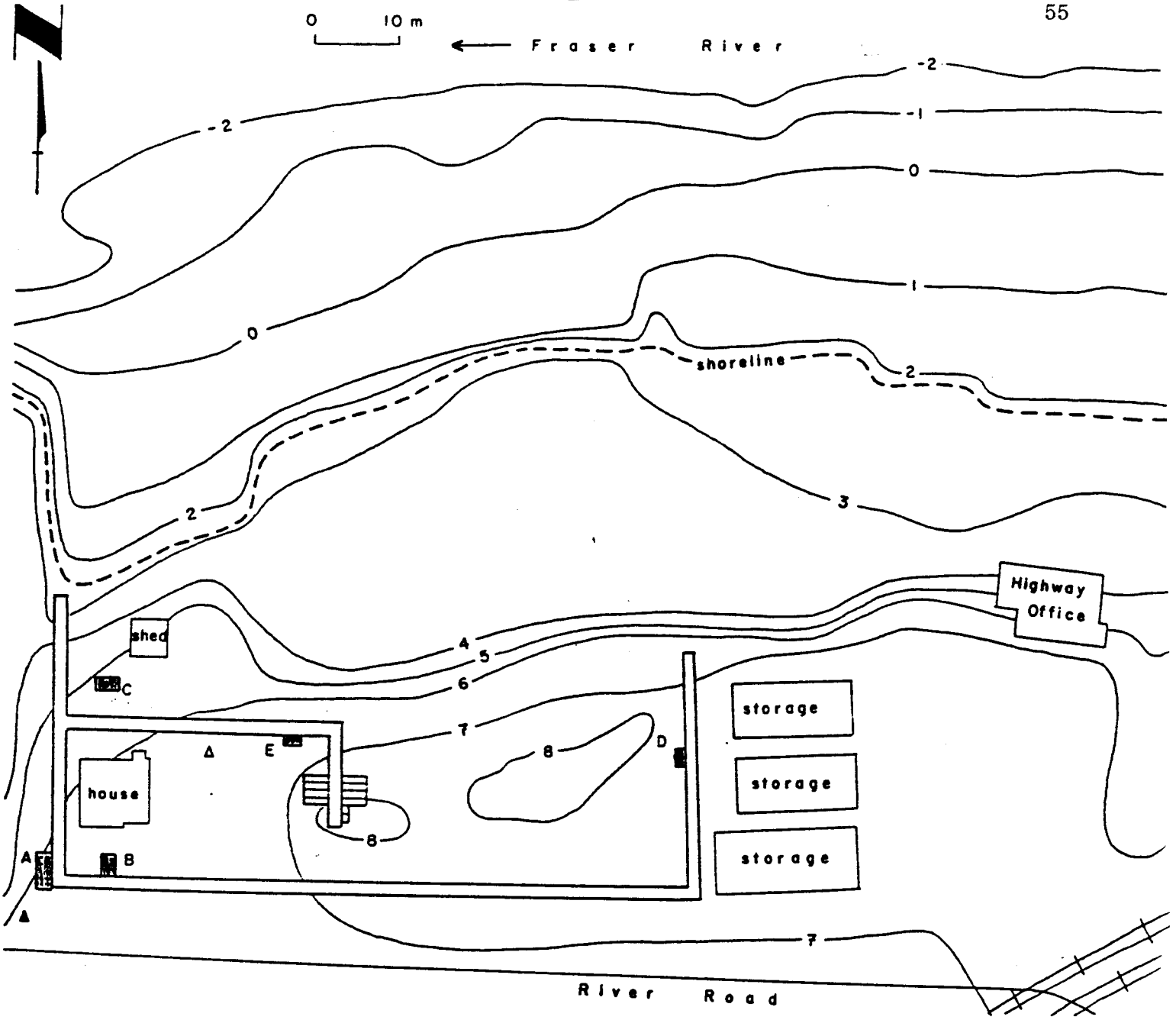


Figure 2.5 St. Mungo and Location of Excavation Units
(Based on Ham et al. 1986: Figure ??

there are stratigraphic profiles, it would be easier to compare the size and depth of house components if metric information was available.

Chronology

Ham obtained 18 radiocarbon dates from the St. Mungo site. Of these, four were rejected because they were either too old or too young in comparison to dates obtained from other units. Acceptable dates range from 4050 to 4480 BP (see Table 2.1).

Unit C has the youngest dates, with Units A, B, D and E following in that order. The dates from unit C range from 3340 to 3455 BP suggesting the possible presence of a Locarno Beach component. The dates for Unit C are several hundred years later than dates from the rest of the site. This was one reason I did not include the information from Unit C with my analysis of St. Mungo (refer to the earlier St. Mungo phase introduction for further discussion about Unit C).

The dates from Unit A range from 4050 to 4170 BP, dates falling well within those from Glenrose. The dates from Unit B are a bit older than Unit A, ranging from 4185 to 4290 BP. The oldest date from the site came from Unit D and is 4480±90 BP (WSU 2857). The only date retrieved from Unit E was dismissed because it was thought to be too old.

While Ham does not say, I assume that all carbon samples were collected in situ. Boehm's dates (1973:11) are in agreement with Ham's and Matson's. Her excavation unit was located almost directly between Ham's Units B and D. Two dates from Boehm's basal deposit were 4240±105 (I 4688) and 4310±110 (I 4053) BP with a date from the upper middle of the deposit of 3970±105 BP (I 4685). Ham's oldest date of 4480 BP comes from a basal deposit but is slightly

older than both Boehm's and Matson's. It is reasonable to suggest a starting date for St. Mungo closer to 4500 BP, based on Ham's earliest date. The only probable termination date for the St. Mungo component comes from Unit C where any of the six dates obtained could be termination dates.

Faunal Remains

Due to the different excavation techniques pursued at St. Mungo, seasonality of the site is on a finer level than that at Glenrose. It was and is theoretically possible to determine the season of occupation for each layer encountered at St. Mungo. But, because this site is being compared to two other sites with different excavation techniques, I examined the faunal remains to answer general questions concerning site function.

Ham believes that the seasonality evidence suggests that St. Mungo was a fishing camp occupied during the summer and fall seasons. I cannot properly test his hypothesis due to my inexperience with faunal analysis and seasonality studies, but the faunal remains present show multi-seasonal indicators of summer, spring and a possible fall occupation.

The only major difference in faunal remains from St. Mungo and Glenrose is a higher proportion of bird remains present at St. Mungo. This might be due to St. Mungo's better location vis-a-vis Glenrose. St. Mungo is closer to open water where larger flocks of migrating water and shore birds would be present, and it is also closer to more marshland which is optimal bird habitat.

The faunal remains include salmon, elk and deer, seal, beaver and various species of birds with larger birds such as swans and geese most frequently present. Ham does not think the presence of these larger birds

indicative of a spring occupation for the site. Instead, he argues that because his interpretation of the evidence for site occupation indicates a May to September occupation, perhaps the prehistoric habits of these birds were different, and these birds were obtained in August because there was a breeding population present in the delta grasslands. Ham's interpretation could reflect his preconceived conviction of St. Mungo as a fall fishing camp forcing him to interpret all data as being representative of a fall fishing camp. Both Boehm and Imamoto are less assertive in their analysis of seasonality, suggesting that among some groups of animals, including birds, the presence of faunal remains could result from either a spring or fall occupation of the site.

As with Glenrose, elk is the most important mammal, with dog, beaver, deer and seal as a group the next most common mammals present. Once again, this secondary group of mammals are equally important vis-a-vis each other, but only a third as important compared to elk (Ham et al. 1986:136).

The fish remains from St. Mungo suggest that salmon constitutes the most important faunal resource for the site, while fourteen classes of fish were identified (Ham et al. 1986:122). Salmon remains were 50% of the identifiable fish remains. The other common fish species present ranked from most to least frequent are: flounder, sturgeon, eulachon (a spring indicator), herring (a late winter indicator), sucker and dogfish. Although fish head bones and body elements are present, Ham suggests their distribution is heavily skewed towards body elements (salmon 97% and flounder 76%).

Ham interprets the fish species in a different fashion than Matson (1976). Ham states that stickleback, minnows, sculpin and peamouth, which represent between 5% and 1% of the identified fish remains, are not fish that

were eaten. Ham et al. (1986:124) states that these fish entered the site through the stomachs of predatory or scavenger fish found in larger numbers. He argues that all of the fish species present except for herring would be present in the prefreshet runs of late May and June on the Fraser River.

I researched information about eulachon for an undergraduate paper. From that paper I have taken the following quote suggesting an alternative interpretation of site occupation at St. Mungo:

> . . . many animals fed on the eulachon when the eulachon began to congregate and enter fresh water (see for example Barraclough 1964). Many kinds of fish, sea mammals and birds would have been available along with the spawning eulachon. Included in the list of animals that preyed on the spawning eulachon is the largest fish available to the Stalo people. This fish is called the white sturgeon (Acipenser transmontanus) and it has been known to reach weights of over 1300 lbs in the Fraser River (Scott and Crossman 1973) [Pratt 1989a:9-10].

Eulachon spawn from mid-March to mid-May (Northcote 1974) and perhaps some of the fish found as St. Mungo reflect an earlier spring occupation exploiting the eulachon run. The presence of seals would also support this alternative explanation, as they too took advantage of the spawning eulachon. Ham also argues that the herring remains present throughout the site indicate that the people who came to fish the prefreshet runs came directly from areas situated near the spawning grounds of the herring and brought their herring with them. Ham et al. (1986:126-127) believe that the salmon remains suggest an August and September occupation of the site, although all five species of salmon are present and salmon do migrate from early spring to late fall.

While Ham has chosen to argue for two very particular time period occupations in the summer and fall seasons, there is little argument in merely stating that the St. Mungo site was occupied for long periods of continuous multi-season occupation.

The shellfish analysis cannot contribute to the debate over site occupation because the mussel shell present was too fragmentary and Ham felt that the clam shells were a small biased sample (Ham et al. 1986:122). The analysis of meat estimates for Mytilus edulis puts it in terms of dietary importance behind salmon, elk, deer and seal (Ham et al. 1986:Table 4.4). From the shellfish analysis, Mytilus at St. Mungo is not as important a food resource as it was at Glenrose, although different measurements are used.

At Glenrose, Ham (1976:52) used useable meat calculated from minimum number of individuals for the mammals compared with shell meat for the Mytilus. At St. Mungo, he used shell meat for the Mytilus as well as a second total weight calculation based on live weight (Ham et al. 1986:122). For the mammals at St. Mungo use useable meat calculated from minimum number of individuals was not used. Instead, he calculated live weight of all the faunal remains as well as shellfish. Therefore, a proper comparison of importance of particular resources cannot be attempted. My question is, how reliable live weight values are compared to useable meat values?

Features

The analysis of features present at St. Mungo differs from Glenrose. For example, almost every layer from each unit is grouped together and defined as being part of some feature, be it house component or drying rack. Individual features such as hearths or postmolds are not presented in a layer by layer distribution. All single features are grouped into house components. Unfortunately, Ham does not state the depth or area covered by his many house components, so some control of provenience is lost. There will be

debate concerning Ham's assertions that he has "house components" (27 in total). There are alternative interpretations to what he calls house floors.

A better term for his features may be living floors, for even Ham et al. (1986:94) state that there was insufficient time for a horizontal analysis of the distribution of cultural remains present inside and outside the house components. It is hard to see how one could properly define a house floor without a horizontal distribution analysis. Boehm (1973:11) states that living floors are present throughout her excavation and defines them as ". . . marked by hearth clusters and extensive ash deposits". She makes no mention of postmolds.

To return to Ham's concept of house component, while most house components contain evidence of postmolds, the numbers range from 55 to 0. Without information concerning the distribution of the postmolds it is premature to state that the presence of a group of postmolds indicates an average house size of 4.5X4 meters (Ham et al. 1986:85). This assertion of house size is even more questionable when one reexamines Ham's statement concerning the lack of time available to enable separation of layers found inside or outside of house components. This estimation of house size is also surprising considering Ham's largest unit was Unit A at 2X5 meters. This implies that a complete house was not completely excavated.

Besides postmolds, three clay-lined features, and one hearth were also excavated.

Ham et al. indicate that several hearth complexes and hearth layers were encountered although there is no differentiation between the two. Some of what Ham views as <u>in situ</u> house components could be remnants of redeposited

hearths used elsewhere, pointed out by Gose (1976:190) when he did the feature analysis at Glenrose.

Debate about the number of features and what they represent will continue, but suffice it to say that the features present indicate semi-permanent site occupation.

One complete skeleton was recovered from St. Mungo. This came from Unit C, therefore, it's relationship to the older St. Mungo components is uncertain. The difference in the number of burials recovered at St. Mungo versus Glenrose (one versus 11) may be noteworthy, or it may be due to chance. Seven of the 11 St. Mungo component burials at Glenrose were uncovered from the same unit. Scattered human remains were found throughout Units A and B, with none recovered from D, E or F at St. Mungo.

Ham et al. (1984:181) suggest the absence of human remains is due to above ground inhumations either in tree burials or bentwood boxes. Boehm (1970:59) states that at least four burials were present at St. Mungo in the Marpole component which was located directly above the Charles component. These burials were found in a large sandy pit that had been excavated into the main deposit. In light of the in-ground burials present at Glenrose and the later component at St. Mungo, Ham et al.'s explanation is unlikely. Perhaps a better explanation is that people who died at the St. Mungo site were buried elsewhere on site. Comparison of cubic meters of excavated material from the two digs show them to be roughly the same size (36 for St. Mungo and 38 for Glenrose) so perhaps sample error is not a problem. Perhaps the scattered human remains found throughout St. Mungo are a further suggestion that some of Ham's House Components are areas where refuse from living floors were discarded. The absence of burials at St. Mungo

may imply the site was less heavily utilized relative to Glenrose. It is the only suggestion of a difference in site functions between the two sites.

St. Mungo Non-artifactual Data Conclusions

Like Glenrose, St. Mungo was situated in an area that allowed for the exploitation of both land and sea resources. Seven biological communities (including the Fraser River but not the ocean) are close to the site. Site boundaries are large, although not quite as large as Glenrose but neither sites' boundaries suggest a short term limited activity site. The stratigraphy demonstrates continuous occupation of the site throughout the St. Mungo phase. Most likely, site occupation extends into the beginning of the Locarno Beach phase in at least one portion of the site (Unit C).

Dates from St. Mungo are in agreement with Glenrose with the possible exception of the oldest date from Unit D which pushes back the beginning date of the St. Mungo phase to about 4500 BP. The termination date for the St. Mungo phase at St. Mungo is less clear, but Matson's suggestion of 3300 BP is not disputed.

While the evidence from the faunal, fish and shellfish remains at St. Mungo suggest multi-season occupation on a regular basis, there are problems with the data assumptions, presentation and interpretations leaving questions concerning seasonality and subsistence. The major difference between Glenrose and St. Mungo in terms of subsistence is in proportion rather than in kind. The major food resources were elk, deer, seal, beaver, large birds, salmon and Mytilus. Differences in bird (more common at St. Mungo) and Mytilus (more common at Glenrose) proportions are the most dramatic, but all major faunal remains are present at both sites.

The wide variety of food resources available and the large number of desirable raw materials in walking range suggest both sites were base camps, as does the presence of a large number of features and their relative abundance.

The features at St. Mungo and Glenrose compliment each other with only one unique feature present - three clay-lined pits excavated from St. Mungo.

From the evidence accumulated from the site reports, it is appropriate to suggest that the site functions of the Glenrose Cannery and St. Mungo Cannery sites during the St. Mungo phase included a large number of procurement activities involving hunting and gathering resources from many different habitats. These activities went on through more than one season, possibly all year. In conclusion, there is no real indication that the site functions of Glenrose and St. Mungo are different.

The Crescent Beach Site

Site Location

The Crescent Beach Site (DgRr 1) is situated in Mud Bay at the mouth of the Nickomekl river in the boundaries of Crescent Beach which is part of the Municipality of Surrey, British Columbia. The site originally extended some 18 ha, but the majority of these deposits are now destroyed or greatly disturbed. Crescent Beach has been excavated several times (see Matson et al. 1991 for a review of its excavation history). There are natural boundaries on all sides of the site: to the north is Mud Bay and its accompanying tidal flats along with the Nickomekl River, to the south. West is Boundary Bay and its accompanying tidal flats, and to the east is a geological formation known as the White Rock Uplands (upon which there is indication of shell midden

[personal observation]). The White Rock Uplands, like Panorama Ridge, is composed of unconsolidated Pleistocene material (Ham 1982:14). Specific measurements of site boundaries are not available, but like Glenrose and St. Mungo, the site runs along the beach face with the narrow axis running from the water towards dry land. Maximum depth of deposits is about 270 cm.

Present vegetation is much modified, but Ham (1982:19-50) gives a detailed outline of the fourteen major plant/ecological communities present in the adjacent area. This number is exactly double those communities found near Glenrose and St. Mungo, suggesting even more diversity in the raw material and resources available for procurement. Most of this added diversity comes from Crescent Beach's physical proximity to a vast extent of open water and tidal flats, regions absent from Glenrose and St. Mungo. Some of this information concerning ecological communities should be regarded with some suspicion because Boundary Bay was not formed until the end of the St. Mungo phase (Ham 1982:13), so the exact ecological communities available from the water may be different. Like Glenrose and St. Mungo, Crescent Beach is on the periphery of a coastal Douglas fir forest (Ham 1982:22). Figure 2.4 shows the ecological communities available in the proximity of the three sites. The closeness of all three sites to so much ecological diversity is the first indication of possible site function similarity between the three sites.

Ethnographic Culture Area

Crescent Beach is located in the ethnographic territory of two Coast Salish groups closely related, the Halkomelem speaking Nickomekl people and the Straits Salish speaking Semiahmoo people. Ham (1982:70) states that ethnographically, Crescent Beach was a village site for the Nickomekl.

Currently, Crescent Beach lies in Semiahmoo territory and as Percy (1974:13) points out, this is probably a more recent movement on the part of the Semiahmoo who moved into the Mud Bay area after the Nickomekl became extinct in the mid 1800s.

The historic ethnographic record may have little relationship with the prehistoric archaeological record, but speaking in general terms, all three sites (Glenrose, St. Mungo and Crescent Beach) are located in the ethnographic boundaries of land used by Central Coast Salish groups and it is possible that proto-Halkomelem speaking people originally inhabited all three sites. A worst case scenario would have the Crescent Beach site possibly occupied by proto-Straits speaking people while Glenrose and St. Mungo were occupied by proto-Halkomelem speaking people. Nevertheless, all have common ancestry. How much time it would take for the language and cultural differences to evolve between two closely related groups such as Halkomelem and Straits Salish speakers can only be answered by a linguist. Based on statements by Suttles (1990) it is likely that there was easy exchange between the two groups.

Excavation Procedures

The following discussion is a condensed version of Percy (1974) and Matson et al. (1990,1991) and Pratt et al. (1991). Percy's work is first introduced and then supplemented.

Percy directed a salvage excavation on Bayview street in the spring and summer of 1972. Six trenches (A to F) ranging from 1.5 (B, C and F) to 1.7 (A) and 2.0 (E and F) meters wide and from 4 (A,B,C and E) to 6 (D and F) meters long were excavated across Bayview street in an area to be disturbed by the building of sewer line connector. Excavations were by 10 cm arbitrary

levels. No three dimensional provenience of artifacts was kept. All excavated material was dry screened using a 1/4 inch screen mesh.

In the summer of 1989 and 1990 R.G. Matson directed two field season's of work at Crescent Beach. Matson was interested in Crescent Beach in part because in the spring of 1988 I had written a paper concerning the Charles culture (Pratt 1988) and in this paper I pointed out that Crescent Beach was the only known site on the Mainland to contain both Locarno Beach and Charles culture components. Matson's research focused on retrieving more information concerning the Locarno Beach phase, while my research interest lay in obtaining more information about the Charles culture. Matson applied to SSHRC for a two year grant and received funding in the spring of 1989. Research commenced in May 1989. We excavated in the vicinity of Percy's original trenches to allow for better comparison of our data with his. Excavating near his trenches also gave us the advantage of having some advanced knowledge of stratigraphy, based on what he had written in the final report (See Figure 2.6 for a map of our excavations vis-a-vis Percy's and some of the other excavations that have taken place at Crescent Beach). Two 2X8 meter trenches designated North and South were laid out. Excavations were by natural layers, with thicker layers crosscut by 10 cm arbitrary levels. Artifacts, large faunal remains and features found <u>in situ</u> were given three dimensional provenience. Excavated material was water screened through 1/8 inch screen mesh.

The nature of Percy's excavation (an emergency salvage dig on a very strict time budget), lead to the construction of minimal stratigraphic profiles (Percy 1974:24b). Nevertheless, his work gave us some idea concerning what to expect at Crescent Beach. We did not have to dig slit trenches around our

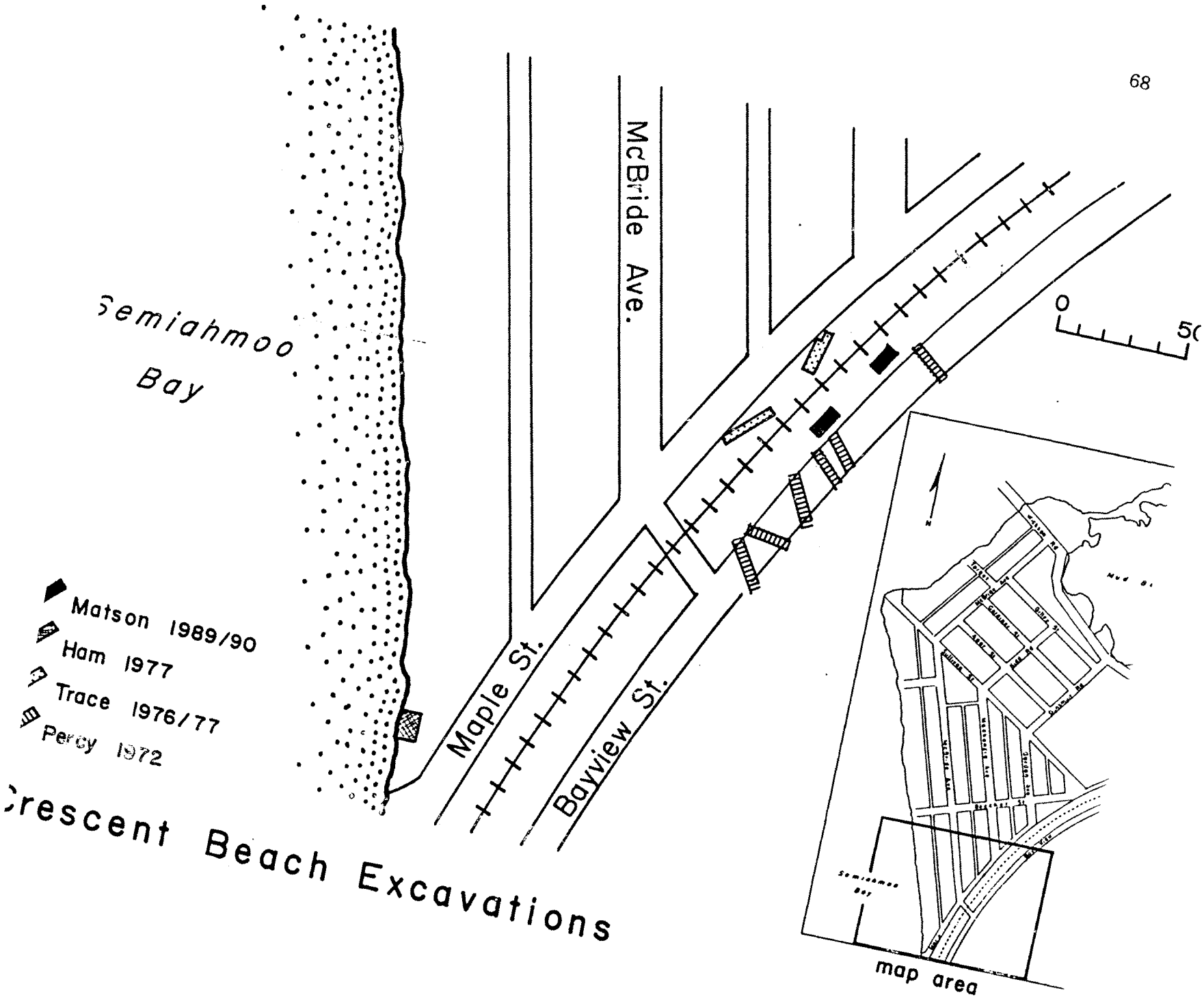


Figure 2.6

Crescent Beach and Location of Excavations
(Based on Matson et al. 1991: Figure 2)

excavation pits in order to see wall profiles; we placed the South trench so that a section of the excavation hit the old sewer trench hole. We worked our way toward the deposit until the interface between disturbed and intact midden was encountered, cleaned and profiled.

The stratigraphy showed more diversity than present at either Glenrose or St. Mungo. There were many kinds of clams, fish and shellfish remains and the soil matrix ranged from ash, to sand, to gravel, to clay. Our use of natural layers paid off in that we easily isolated and controlled South Trench provenience. In the North trench, disturbance was great and we did not encounter intact deposits until 195 cm below datum. We excavated a 1X1 meter test unit called Fnw and from 195 cm to 270 cm we uncovered a somewhat homogenous dark, sandy, matrix with little shell present, but that which was present was Mytilus. We were forced to dig in 10 cm arbitrary levels in Fnw because we were in the classic 'phone booth' situation much like that at Glenrose with little light to help guide our search for stratigraphic breaks. To make things even more difficult in Fnw we also had to work around an intact juvenile burial and two small clay-lined features. The depth of the cultural material in the area of the site in which Percy and we worked ranged from 200 to 270 cm. The depth of deposits at Crescent Beach fall in between those from Glenrose and St. Mungo.

In the summer of 1990 we continued working in both the North and South trenches. In the North trench a backhoe operator removed 190 cm of overburden within the boundaries of the 1989 North trench. We knew that the intact deposits were capped off by a thick sterile layer of clay, of which the backhoe operator removed approximately half.

Unit Fnw was reopened and the juvenile burial was removed. The walls were profiled and the stratigraphic information was used to excavate the other units. Excavation efforts concentrated on sections of Units D, E and F. The deposits were excavated by natural layers and the same procedures were followed as in the South trench.

Chronology

Percy has one date for trench E of 4270±80 BP (Gak 4925), recovered between 180 to 190 cm depth below surface in Component One (the name Percy used for his earliest component). I think this date is too old for the depth from which it was recovered. It should be closer to 3300 BP, but it dates Component One to the Charles culture.

We recovered several dates from our two seasons of excavation. The carbon samples unless otherwise stated were recovered in situ. In the South trench the Charles component termination date lies somewhere between 3210±110 BP (WSU 4247) and 3590±85 BP (WSU 4245). The 3210 BP date comes from a layer almost at the base of the Locarno Beach component, while the 3590 BP date comes from near the top of the Charles component. The end of the Charles component in the South trench falls in the same time period as the termination dates from Glenrose and St. Mungo Charle's component. The termination of the Charles component in the North trench falls in a larger time period, prior to 3060±80 BP (SFU 727) and after 3710±80 BP (WSU 4244). The oldest date from our excavation was 4440±80 (SFU 795) BP from a water screened sample recovered from Fnw level 240 to 250 cm.

Faunal Remains

Percy did not do a faunal analysis of the remains recovered from Crescent Beach. He states, "Various types of subsistence activities such as land mammal hunting, bird snaring, fishing and shell gathering are also implied" (Percy 1974:267).

Our faunal analysis for the 1989 field season was carried out by Pacific ID in Victoria. At the time of writing we do not as of yet have complete results of the faunal analysis of birds and mammals for the 1990 season. The following is taken from the faunal analysis done by Pacific I.D. (Susan Crockford and Rebecca Wigen 1990b) for the 1989 Crescent Beach field season.

None of the 1989 deposits in the South trench were St. Mungo in age. In the North trench the deposit below approximately 220 cm was St. Mungo in age. We did not realize that two different phases were present in the North trench. The faunal analysis for the North trench was treated as one component and the two components were mixed in the analysis. Furthermore, 1989 excavations in the North trench were by arbitrary levels and mixing of deposits was unavoidable. The sample of mammal and bird remains from the North trench is very small (57 NISP with 33.3 % identifiable). The identified remains are the following: raccoon (12.3%), beaver (8.8%), harbour seal (5.3%), elk (1.8%) and dog (1.8%). Of the 66.7 % unidentifiable pieces, 12.3% were classified as large land mammal and 1.8 % large sea mammal. With such small numbers it is inappropriate to make any grandiose conclusions. There are several species present, with both land and sea mammals represented although their relative importance cannot be determined at this time. Six pieces of bird bone were identified and the following species represented: Common loon (one),

large grebe (one), small gull (one), robin (one), medium duck (one), and raven (one).

There were some seasonal indicators present. Bones from very young raccoon and harbour seal indicate summer deposition. As well, subadult remains of beaver and elk also indicate summer collection. This small sample suggests that at least a portion of the site was used during the late spring/early summer season consistently over a long period of time.

From the rather wide range of species present for such small samples of mammals and birds, the use of these animals was opportunistic.

The following discussion of fish remains is a summation of the work done by Susan Crockford and Rebecca Wigen at Pacific ID (1990a and 1991a and 1991b) on both seasons of excavations. The fish remains from the Charles component at Crescent Beach exhibit a great variety of species present including all those previously found at Glenrose and St. Mungo. Flatfish (with Starry flounder being the assumed species) are the most common fish remains found in Component One, with salmon second. Sucker/chub are also present as well as herring.

There is a change in flounder and salmon butchering techniques present through time at the site. However, this difference in butchering techniques does not take place until the end of Component One in the South trench (in approximately layer CV). Crockford and Wigen (1990a, 1991a, 1991b) conclude that flounder head parts are under represented at the site due to their fragility, but nevertheless, 27.2% of flounder remains were head parts, suggesting that flounder were processed and/or consumed whole on site. On the other hand, salmon head parts are almost entirely absent after layer CX (layer CV upwards) in the South trench. This processing and/or consumption

difference between salmon and flounder does not exist until the transition from Component One to Component Two at Crescent Beach. Throughout most of Component One, flounder and salmon have proportions of head-bones to backbones indicating the species entered the deposits as whole fish.

Salmon and flounder cranial parts are present throughout the earliest component at St. Mungo (Ham et al. 1986:126). At St. Mungo, the proportion of flounder head to body elements is almost the same as at Crescent Beach (24% head versus 76% body). Ham infers that flounder head and body parts were processed and/or consumed separately. Salmon head parts are lower at St. Mungo (3% of total salmon elements) than flounder.

The similarity in the fish remains and the indication of different processing methods for different fish at both sites during part of the same time period is striking. For now, I am inclined to follow Crockford's logic and state that flounder head parts are missing from St. Mungo not because the heads were processed separately, but because the head parts are fragile and do not survive as well as the body parts. At Crescent Beach, besides the shift in layer CV away from processing and or consumption of salmon on site as whole fish towards the processing and or consumption of salmon on site with absent headparts, something else takes place. Layers CX to CY contain similar proportions of flounder to salmon (with both comprising on average 40% to 45% of the total NISP per layer). From layer CW upward there is a move away from flatfish toward salmon with the ratio being anywhere from 60% salmon to over 80% salmon in layer CO, while the proportion of flounder decreases to a fairly steady 20% with minor variations. Besides a change in procurement and or consumption pattern for salmon, we also see a marked increase in dependence on salmon vis-a-vis flatfish.

It is tempting to conclude that the changes at the end of the Charles component result from the invention and use of storage techniques for salmon. Boehm (1973:95) states that if salmon were prepared for preserving in earlier times as they were prepared by the Upper Stalo ethnographically, the heads were removed before preservation (Duff 1952:63-64). If the majority of salmon were eaten dried or smoked, archaeologists would find an increased percentage of post cranial skeletal elements relative to cranial elements. In other words, the lack of head elements vis-a-vis body elements at a site may indicate a winter or early spring occupation. This same conclusion is also reached by Crockford and Wigens (1990a, 1991a, 1991b) as well as Crockford et al. (1990) and Matson (1992).

On the other hand, it may be unwise to overemphasize the lack of head salmon head parts, because they too are fragile and their proportions can be low, even at sites ethnographically known to be places where they were processed (Matson 1992). This does not help in determining the beginning of storing salmon.

From the information gathered so far, one could conclude that during the later part of the Charles component at Crescent Beach and St. Mungo, salmon were processed differently from other fish because salmon were already being dried and stored for winter food. This is an important finding with major repercussions for theories concerning the evolution of the Northwest Coast Ethnographic pattern.

Crockford concludes that the lack of selectivity in flounder size at Crescent Beach indicates the fish were taken on a regular basis. This suggests that the flounder were exploited throughout the year rather than during one specific season. It should be noted that starry flounder (which

were found in the faunal remains) are easier to catch during in the spring (Matson et al. 1991). Other seasonal markers would have to be found in order to support this suggestion. The flounder were taken by either beach seines or tidal traps which would also trap other species such as sucker/chub. Crockford and Wigen (1990a, 1991a and 1991b) state that the fish remains from Crescent Beach are suggestive of a late spring/summer occupation at Crescent Beach, with a probable winter occupation as well.

The shellfish analysis has recently been completed by Lisa Rankin (1991a, 1991b). Shellfish seasonality is ongoing but no conclusions have been reached. Rankin analyzed 28 shellfish samples from the two seasons of field work at Crescent Beach. Shellfish in the North trench are dominated by Mytilus throughout the time period represented. In the South trench, the Charles culture component is also dominated by Mytilus.

Rankin discovered from the shellfish analysis of Component One that there was some variation between the shellfish represented in the sample screens from which she drew her shellfish data. All of the shellfish samples were screened through nested 1/2, 1/4, 1/8 and 1/16 th inch screens. With the shellfish samples from the oldest component, most of the shellfish was recovered from the 1/8 th inch screen. This is due to the fragile nature of Mytilus which crumbles much more easily than other shellfish species.

In the North trench Rankin (1991a:47) states that the absolute weight values of shellfish for the lower component shellfish samples are very small in comparison to the South trench. These values range from 1.0 to 17.0 grams. She states that this is partially due to the fragile nature of Mytilus which would be easily crushed and washed through the water screens. To prove or disprove this theory she took a soil sample from Component One in the North

Trench and screened it in the lab. From this sample 65% of the shellfish sample was Mytilus and the absolute weight fell just above those of the other shellfish samples taken from the North trench (23 grams). The shellfish samples taken from Component One in the South trench do not rely quite as heavily on Mytilus, there is a little bit more diversity, but Mytilus is still the dominant shellfish. It should be reiterated that one possible explanation for the homogeneity of the shellfish samples from the North trench is due to the excavation by arbitrary levels during the first season, which would distort natural boundaries between layers. To me, the most interesting fact concerning the shellfish from Component One at Crescent Beach is the lack of it, especially in the North Trench. The absolute weights of the shellfish in the North trench are very low especially when compared to the later components. It is difficult to compare Rankin's analysis with those from Glenrose and St. Mungo because different analytical techniques were pursued.

There is little evidence at Crescent Beach that Mytilus edulis was the most important food resource. While mussel was utilized, it was not the dominant resource and it seems an unlikely reason why prehistoric people were at Crescent Beach. In terms of seasonality, mussel is usually seen as a probable winter food source, but in the case of the North trench, it seems to have been utilized during the spring as well.

Features

Percy discovered many features from his Charles component. Three clay-lined features were uncovered. Two were constructed on flat ground and had built up walls, while the third was a clay-lined depression. Associated with all three features were fire cracked rock, although the clay did not show

signs of firing. One feature also had a heaped up concentration of highly pulverized white shell. A second feature had two small postmolds on the rim directly opposite each other. A fourth probable clay-lined feature was encountered but it had been previously disturbed and its exact nature is unknown (Percy 1974:27-29). Percy postulates that a possible function of these features was related to the possible cultivation of native tobacco. Lime was mixed with the tobacco when chewed, and Percy hypothesises that the clay-lined features were used to steam clam shells which were then pulverized into a powdery consistency and added to tobacco (Percy 1974:26).

Two hearth features were encountered, both surrounded by fire cracked rock with quantities of burnt shell and flecks of charcoal. One also contained a mixture of a greasy soil containing sizeable quantities of fish remains.

There is no question that living floors were present at Crescent Beach, but the nature of the excavation did not allow for the excavation procedures required to encounter and define such intangible features.

Percy uncovered several burials, three of which he placed into the Charles component, although none of these were actually recovered from his excavation trenches. They were recovered when the Surrey Municipality work crew was digging the sewer trench, so provenience is sketchy. Some of his Locarno component burials may be Charles culture in age. One burial was complete enough to conclude that it was a semi-flexed adult female. The preservation factors of the other two burials was very poor; both were adults with one being female (Beattie 1980:209-212). Grave goods were included with all three burials, one had a splinter awl, cobble-core tool and a utilized flake. The second had a bone awl and a shell adze blade, while the third had a cobble-core tool. The lack of stratigraphic control makes one suspicious

concerning the presence of grave goods, they could have come from somewhere else. Due to the salvage nature of these burial's recovery, no burial pits were evident.

Our excavations uncovered two small clay-lined depression similar to Percy's second type which had been scooped out and lined with clay. There was nothing associated with these two features which were horizontally located within 20 cm of each other.

One hearth feature was uncovered. It was defined by an encirclement of fire cracked rock and a profusion of ash and charcoal scattered throughout the rocks.

The juvenile burial was recovered from a depth of approximately 210 cm located in a small burial pit in close association with the two clay-lined depressions. This small child was in a semi-flexed position and there was no associated grave goods. The presence of these four in-ground burials coordinate with those from Glenrose and add further evidence to negate Ham's hypothesis of above ground burials occurring at St. Mungo.

Crescent Beach Non-Artifactual Data Conclusions

Like both Glenrose and St. Mungo, Crescent Beach is situated in an area from which many procurement activities could take place. Fourteen ecological communities exist close to Crescent Beach, making it more diverse than either Glenrose or St. Mungo. The three sites are large, although data about the Charles component at Crescent Beach is not as accurate as that for Glenrose and St. Mungo.

Ethnographically, there is some evidence that all three sites were occupied by closely related groups. The relationship between historic and

prehistoric groups is something that may become clearer after I have finished pursuing my research questions. Suffice it to say that somewhere in the area of these three sites proto-Halkomelem speakers existed.

The stratigraphic sequence indicates continuous site occupation with no hiatus between the Charles and Locarno Beach components, at least in the South Trench. There is some indication of a brief hiatus in the North Trench between Component One and Two. Therefore, all three sites show continuous occupation throughout the Charles culture. Abandonment of Glenrose and St. Mungo was probably due to the physical changes exhibited as the Fraser Delta built up and made access to open water more difficult, while also changing the ecological community associated with the nearby Rocky Foreshore.

Dates from Crescent Beach do not indicate a definite terminal date, but the Charles component is present by 4440 BP and terminates sometime between 3590 and 3210 BP. The only conflict of dates comes from the date Percy obtained and the dates we obtained. Percy's date of 4270 BP is too old in relationship to ours, but it still falls in the time frame for the Charles culture.

The faunal analysis from Crescent Beach shows a similarity between the processing of flatfish and salmon for both Crescent Beach and St. Mungo. Crescent Beach also shares with Glenrose and St. Mungo a similarity in the variety of species recovered and presumably processed and/or consumed in the site boundaries. To date, the evidence from the faunal, fish and shellfish remains at Crescent Beach suggest a multi-season occupation on a regular basis. The major difference in subsistence between the three sites is in proportion rather than in kind.

The number of raw materials and food resources available close to Crescent Beach suggests a base camp site function as does the presence of

the variety of features and their relative abundance. This is also true for Glenrose and St. Mungo. There are no unique features present at Crescent Beach, each type is found at the other two sites. One feature type missing from Crescent Beach is the presence of living floors. Percy did not have time to look for living floors, and his excavation by arbitrary levels crosscut any layers resulting from human activity. We did not find living floors because our excavation in the Charles component only began in the South trench midway through the second season, while the Charles component in the North trench was excavated during the first season, it was a 1x2 meter pit and during the second season the component was excavated at a slower rate by the Field School. There is still a great deal of intact Charles component left at Crescent Beach. The number of features present during the Charles component at Crescent Beach is therefore under-represented.

Non-Artifactual Conclusions for Glenrose, St. Mungo and Crescent Beach

From the accumulation of evidence gathered from site reports, it is plausible that the Glenrose Cannery, St. Mungo Cannery and Crescent Beach sites during the Charles culture shared similar site functions in the general sense. Each was used as a base camp for two or more seasons and possibly throughout the year. A large number of activities took place at each site. While specific activities present at each site may not correlate perfectly with each other, on the general level, the sites were privy to similar groups of activities. There is no evidence that the sites were sparsely occupied during the same period over and over again for the procurement of one specific food resource. The subsistence points to many resources being exploited. There is

also no indication that specialized non-resource related activities were the prime motive for the occupation of these sites.

This concludes the introduction to the three sites used for this analysis. Now that it has been deemed plausible that the three sites shared similar site functions, the artifact assemblages for the three sites can be introduced. Being able to hold site function relatively constant for all three sites, I can examine the three artifact assemblages for evidence of change and assume that any evidence discovered is not a result of major differences in site function.

Artifact Classification

There are two subsections in this final portion of Chapter Two. In section one, the variables used to record information about the artifact assemblages are introduced and reasons for the choices discussed. The first section presents the coding format used for this analysis. Section two describes the artifact types for each site's artifact assemblage and also continues a discussion of the artifact assemblage on a general level in order to provide more information about the three artifact assemblages.

Variables and Artifact Coding Format

The task of organizing the variables was greatly influenced by the work of archaeologists surrounding me, especially Professors David Pokotylo and R.G. Matson. From their work I learned the importance of carefully choosing and defining the variables needed for analysis. The information used in this analysis was developed assuming the analysis would use a computer for most of the work. A dbase clone programme called PCFILE (Button 1990) was used to store all the entries from each site. The data were also transferred to SYSTAT (Wilkinson 1990) for most of the statistical analysis. Appendix A includes the coding format key used in this analysis.

General artifact provenience was recorded using four variables: Site Name (Borden Designation), Excavation Unit, Layer and Level. The remaining variables focused on different aspects of the artifacts. Artifact Number recorded the original catalogue number.

Defining the variable Artifact Type required the most time and effort in terms of the entire analysis. Artifact Type is key because all analysis was

based on this variable and if it was not explicit, further work would only confuse the matter. The artifact classes were arranged into a two tiered system with general classes such as: chipped stone, ground stone, bone, antler and shell representing the first tier. Specific artifact classes were given detailed names. The general and specific organization of the data allowed for analysis on several levels.

Another important variable is Raw Material because it, along with Artifact Type, is key for looking at inter-assemblage variability. The names used for all lithic raw materials were based on geological terms. Raw materials were organized in such a way that raw materials created through similar processes or from similar animals were grouped into the appropriate following classes: Mineral, Igneous, Sedimentary, Metamorphic, Bone, Tooth, Antler and Shell. In this way, raw materials were organized in two tiers, allowing analysis of both general raw material classes vis-a-vis each other and specific raw material classes vis-a-vis each other (similar to the organization of the artifact types). Table 2.2 lists all of the raw material types found at Glenrose, St. Mungo and Crescent Beach.

For information about the degree of working on some of the chipped stone a variable called Cortex Cover was created. This variable allows for comparison of stages of chipped stone artifact manufacture.

All artifacts were weighed and measured for Length, Width and Thickness. Weight was in grams and recorded to the 10th of a gram. Length was defined as the maximum dimension. Width was defined as the greatest dimension perpendicular to Length. Thickness was defined as being at a right angle to Length and Width. All measurements were in centimetres and recorded to a 10th of a centimetre.

Table 2.2 **Raw Material Types Terminology**

MINERAL: 10. Unknown Mineral
11. Quartz Crystal
12. Chalcedony
13. Nephrite
14. Vein quartz

IGNEOUS: 20. Unknown Igneous
21. Granite
22. Rhyolite
23. Andesite
24. Basalt
25. Obsidian

SEDIMENTARY: 30. Unknown Sedimentary
31. Sandstone
32. Siltstone
33. Mudstone
34. Breccia
35. Chert

METAMORPHIC: 40. Unknown Metamorphic
41. Greenstone
42. Quartzite
43. Slate
44. Schist
45. Gneiss
46. Steatite

BONE: 50. Unknown Bone
51. Mammal
52. Bird
53. Burned Bone
54. Burned Mammal
55. Turtle Bone

TOOTH: 60. Unknown Tooth
61. Rodent Incisor
62. Mammal Tooth
63. Sea Mammal Tooth
64. Dog Canine

ANTLER: 70. Unknown Antler

SHELL: 80. Unknown Shell
81. Clam
82. California Mussel

To differentiate between measurements taken on complete versus broken artifacts a Quality of Measurement variable was given for Length, Width and Thickness. In this way, I could single out all artifacts with intact margins versus those without. With some artifact types it is difficult to determine completeness of the tool, and in these cases all measurements were recorded as obtainable but not complete.

Artifact Classification and Analysis

To answer my research question concerning inter-assemblage variability between the Glenrose, St. Mungo and Crescent Beach artifact assemblages, it was important to create and use an artifact classification able to provide information allowing for comparison between the three artifact assemblages.

One important measure of variability is the presence and or absence of certain classes of artifacts or raw material types. The Mayne phase was originally defined on the basis of the presence or absence of certain artifact types thought to be unique to that phase. Any comparison of artifact assemblages must involve looking for differences in the artifact types present or absent. The Artifact Types are presented with this purpose in mind.

The artifact classification employed to organize and present the artifacts used in this thesis evolved from the site reports where the artifacts were first published (Ham 1984, Matson 1976, Matson et al. 1990, Percy 1974 and Pratt et al. 1991). The classification was also influenced by the past traditions of archaeologists who have worked in the Northwest Coast. These traditions have focused on creating technological artifact categories for stone tools, and functional artifact categories for bone, antler and shell tools. The site reports cover two different decades and changes in archaeological

perspectives, making comparisons between artifacts difficult unless the physical artifacts were available for comparison and analysis.

Dealing with data from three sites requires searching for similarities in artifact classification in order to help organize and present the data. There is agreement between the artifact typologies. All use the following general artifact categories; chipped stone, ground stone, bone, antler and shell. My first step was creating these same categories. The presentation of the data from the reports is very different, with Matson and Percy presenting data in the 'classic' tradition of artifact types found in the general aforementioned categories of stone, bone, antler or shell. Ham uses many traditional terms and categories, but he presents his data in 'functional groups' which are as follows; Tool manufacture, Woodworking, Fibre and Skin Working, Decorative and Ceremonial, Hunting, Fishing, Butchering and Tool Fragments. These differing approaches to data presentation required me to make a decision concerning how I should present my data.

In spite of these differences, the classification at the artifact level is the same for all three reports. Similar attributes are utilized as is the motto "Like goes with like". In the Northwest Coast this type of organization has its roots in monographs concerning early prehistory on the Northwest Coast such as Borden (1970), Carlson (1960, 1970), Matson (1976) and Mitchell (1971).

This typology is organized on the same general level as Matson (1976) and Percy (1974). In each of the major groupings of objects (chipped stone, chipped and ground stone, ground stone, pecked and ground stone, bone, antler and shell) the artifact types have been ordered in a specific manner. In each of the aforementioned general categories, the classification starts with minimally modified objects (such as pebble core tools, abrasive stones and

worked bone fragments) and gradually works through more and more complex artifact types, ending with a miscellaneous category containing those fragments not classifiable beyond the general level. This organization can be looked upon as hierarchical in nature. In some of the chipped stone categories, a paragraph introduces a group of objects (for example Formed Chipped Stone Bifaces) which are then subgrouped and specific subgroups are discussed separately. The subgroups for the lithic tools are based on shared technological attributes such as general shape, degree of angle retouch and amount of working. This type of arrangement was also attempted for organic implements, but the organization is first and foremost based on functional similarity, because technological similarity is not as well understood.

This organization was established with the intention of creating a classification explicit in its definition of the different artifact categories traditionally used for Northwest Coast artifacts.

Appendix B presents the complete artifact type descriptions for all three sites. The tables of summary statistics from Appendix B are occasionally referred to throughout this chapter. The first line of information for each Artifact Type contains the Artifact Type name. Secondly, a paragraph compares and discusses similarities and differences in each artifact class. These discussions are the first step of the analysis. This discussion is based on Table 2.3 which presents the numbers and proportions of all of the Artifact Types found at each site. Sometimes there is a second paragraph discussing differences in raw material types amongst the three artifact assemblages. Tables or bar graphs demonstrate some of the raw material type differences.

The artifact categories are defined using specific parameters ensuring that future archaeologists can compare my artifact category definitions with

their own. Quite often, this is not possible with the artifact data from certain archaeological reports. Based on the definition of artifact classes alone, it can be difficult to tell why an archaeologist placed a certain artifact into a certain artifact category. Often, a visual examination or at least a clear illustration of the artifact is needed in order to understand what kinds of artifacts the author is classifying. In making my artifact classification definitions explicit, my assumptions about the data are evident and therefore available for discussion and comparison.

The separation of Northwest Coast artifacts into chipped stone, ground stone, pecked and ground stone, bone, antler and shell categories reflects a commonly used traditional division based on technological differences. This type of classification focuses on the manufacturing process responsible for the final artifact. Raw material is an important part of the manufacturing process, in fact, raw material defines what technological processes can and cannot be utilized. This emphasis on raw material is reflected in the names of some artifact classes; ground stone knife and antler wedge are two such examples. The attributes used to define the technological artifact classes are also traditional ones such as shape, edge-angle and size.

Once it is determined an object is an artifact and the product of a manufacturing process (rather than a by product which is called debitage), the next stage is to define the object as shaped or unshaped.

Unshaped tools have been modified by processes such as chipping or grinding, but the original shape of the object is still discernible. The majority of unshaped implements are chipped stone, but some bone, antler and shell objects can also be considered unshaped artifacts. Ground stone or pecked and ground stone artifacts cannot be considered unshaped, unless the

technological processes that created them have not been used over the entire surface of the artifact, and the original form of the rock can be determined. It is important to differentiate between unshaped and shaped tools because shaped tools "... reflect deliberate shaping on the part of the manufacturer" (Sanger 1970:76) and this desire for a specific shape suggests the item was created for a specific function. This relationship between shaped tools and specific functions is based on the assumption that the manufacture of shaped tools, when compared to unshaped tools, requires a greater investment of time and energy, and therefore, there was some specific purpose in mind (Binford 1979, 1980, Chapman 1977, Hayden 1986). Furthermore, given the invested time and effort, shaped tools had a longer use-life and were curated (Binford 1973, 1979), both having major implications for Northwest Coast archaeologists.

Table 2.3 presents a summary of the Artifact Types present at each site, the proportion of each artifact assemblage represented by each Artifact Type, along with the number of artifacts. The percentage for each artifact type in Crescent Beach was calculated without including ground stone disc and shell beads due to the high numbers of these two artifact types which greatly skewed the percentages and did not allow for a meaningful comparison between the three artifact assemblages. The proportions for ground stone disc and shell beads have been calculated based on the entire artifact assemblage recovered from Crescent Beach (1197).

The Artifact Types description comprises a major portion of the rest of this chapter. The total number of artifacts for the three artifact assemblages are different from those numbers presented in the original reports. There are several reasons for this. Probably the most important one is the physical disappearance of some of the Crescent Beach artifacts. Of course, this means

Table 2.3 Artifacts From Glenrose, St. Mungo and Crescent Beach Charles Culture Components

Artifact Type	Glenrose		St. Mungo		Crescent Beach	
	Number	%	Number	%	Number	%
Core	54	7.1	49	6.8	55	9.6
Bipolar Implement	4	.5	26	3.6	49	8.6
TOTAL NUMBER	58	7.6	75	10.4	104	18.2
Chipped Stone Implements						
Unshaped Chipped Stone Implements						
Hammerstone	13	1.7	14	2.0	4	.7
Anvilstone	1	.1	1	.1	4	.7
Hammerstone Anvilstone	–	–	–	–	1	.2
Pebble Tool Uniface	16	2.1	16	2.2	16	2.8
Pebble Tool Biface	7	.9	3	.4	3	.5
TOTAL NUMBER C. S. IMPLEMENTS	37	4.8	34	4.7	28	4.9
Unshaped Chipped Stone Flake Tools						
Cortex Spall	11	1.5	3	.4	14	2.4
Utilized Flake	82	10.8	44	6.1	118	20.6
Quartz Microlith	–	–	–	–	1	.2
Unifac. Steep-Angled Retouch. Flake	45	5.9	17	2.4	28	4.9
Notched >-Angled Unifac. Ret. Flake	2	.3	–	–	–	–
Unifac. <-Angled Retouched Flake	86	11.3	57	7.9	19	3.3
Bifacially Retouched Flake	12	1.6	14	2.0	2	.4
Microblade-Like Flake	3	.4	–	–	–	–
Macroblade-Like Flake	–	–	–	–	1	.2
TOTAL NUMBER C. S. F. TOOLS	241	31.8	135	18.8	183	32.0
* >=Steep-angled <=Narrow-angled						
Shaped Chipped Stone Tools						
Microblade	1	.1	–	–	–	–
Graver	2	.3	–	–	–	–
Drill	1	.1	–	–	–	–
Steep-Angled Formed Uniface	10	1.3	2	.3	–	–
Narrow-Angled Formed Uniface	30	3.9	18	2.5	3	.5
Leaf-Shaped Biface	19	2.5	7	1.0	7	1.2
Square-Tang Stemmed Biface	1	.1	–	–	–	–
Contracting Stem Biface No Shoulders	1	.1	5	.7	2	.4
Contract. Stem Biface With Shoulders	2	.3	8	1.1	4	.7
Biface Proximal Fragment	7	.9	3	.4	3	.5
Biface Medial Fragment	5	.7	7	1.0	3	.5
Biface Distal Fragment	4	.5	1	.1	–	–
Unidentifiable Biface Fragment	13	1.7	16	2.2	8	1.4
Chipped <-Angled Tabular Biface Obj.	–	–	–	–	1	.2
Chipped/Ground Biface Leaf-Shaped	1	.1	–	–	–	–
Chipped/Ground Biface Medial Frag.	–	–	1	.1	–	–
Chipped/Ground Biface Distal Frag.	–	–	1	.1	–	–
Chipped and Ground Stone Fragment	–	–	1	.1	–	–
TOTAL NUMBER SHAPED C. S. TOOLS	97	12.6	70	9.6	31	5.4
TOTAL NUMBER CHIPPED STONE TOOLS	433	56.8	314	43.5	346	60.5

Table 2.3 Continued

Artifact Type	Glenrose Number	%	St. Mungo Number	%	Crescent Beach Number	%
Ground Stone Implements						
Abrasive Stone	16	2.1	10	1.4	13	2.3
Formed Abrasive Stone	2	.3	2	.3	5	.9
Leaf-Shaped Ground Stone Biface	2	.3	-	-	-	-
Ground Stone Biface Proximal Frag.	1	.1	1	.1	-	-
Ground Stone Disc Bead	5	.7	4	.6	(508)	(42.4)
Decorated Ground Stone	6	.8	4	.6	1	.2
Miscellaneous Ground Stone	8	1.1	5	.7	1	.2
TOTAL NUMBER G. S. I. (NO BEADS)	40	5.4	26	3.7	20	3.6
TOTAL NUMBER G. S. I. (WITH BEADS)	40	5.4	26	3.7	528	3.6
Pecked and Ground Stone Implements						
Mortar	-	-	1	.1	-	-
Pipe	1	.1	-	-	-	-
TOTAL NUMBER P. AND G. S. IMPLEMENTS	1	.1	1	.1	-	-
Bone Implements						
Worked Bone Medial Fragment	72	9.5	118	16.4	80	14.0
Worked Bone End Fragment	30	3.9	41	5.7	35	6.1
Rodent Incisor	1	.1	3	.4	3	.5
Net Mesh Spacer	-	-	1	.1	-	-
Peg	1	.1	1	.1	-	-
Bone Hook Object	-	-	-	-	1	.2
Perforated Bone Pendant	13	1.7	13	1.8	1	.2
Ground Molar	-	-	4	.6	-	-
Tooth Pendant	8	1.1	8	1.1	2	.4
Bone Bead	-	-	2	.3	4	.7
Ring	1	.1	-	-	-	-
Tube	-	-	2	.3	-	-
Whistle	-	-	1	.1	-	-
Splinter Bone Awl	27	3.6	36	5.0	15	2.6
Split Rib Awl	-	-	-	-	6	1.1
Formed Bone Awl	24	3.2	13	1.8	12	2.1
Metapodial Awl	-	-	1	.1	-	-
Bird Bone Awl	-	-	1	.1	2	.4
Ulna Awl	3	.4	1	.1	2	.4
Blanket Pin	-	-	1	.1	-	-
Bone Drill	-	-	-	-	1	.2
Unipoint	8	1.1	3	.4	4	.7
Bipoint	1	.1	2	.3	1	.2
Pointed Bone Object Fragment	1	.1	-	-	-	-
Bone Chisel With Unilat. Taper End	24	3.2	21	2.9	10	1.8
Bone Wedge	1	.1	1	.1	-	-
Non-Facetted Point Lanceolate-Shaped	5	.7	2	.3	-	-
Non-Facetted Point No Central Cavity	-	-	1	.1	-	-
Non-Fac. Point With Central Cavity	1	.1	5	.7	4	.7
Non-Facetted Point Fragment	-	-	2	.3	1	.2

Table 2.3 Continued

Artifact Type	Glenrose Number	%	St. Mungo Number	%	Crescent Beach Number	%
Bone Implements Continued						
Unid. Wedge, Chisel, Point, Fragment	7	.9	19	2.7	12	2.1
Unilaterally Barbed Fixed Point	-	-	1	.1	-	-
Frag. Unilaterally Barbed Harp/Point	1	.1	1	.1	1	.2
Bilaterally Barbed Fixed Point	1	.1	-	-	-	-
Bone Barb	3	.4	-	-	-	-
Fish Hook Shank	-	-	1	.1	-	-
Decorated Bone Object	1	.1	3	.4	-	-
Grub	1	.1	3	.4	-	-
TOTAL NUMBER B. IMPLEMENTS	235	30.8	312	43.0	197	34.8
Antler Implements						
Worked Antler Medial Fragment	5	.7	11	1.5	1	.2
Worked Antler End Fragment	2	.3	12	1.7	2	.4
Punch	7	.9	4	.6	1	.2
Antler Unipoint	-	-	-	-	1	.2
Antler Bipoint	-	-	-	-	1	.2
Antler Wedge	32	4.2	27	3.8	1	.2
Unilaterally Barbed Fixed Point	1	.1	2	.3	-	-
Frag. Unilat. Barbed Fixed Pt./Harp.	1	.1	-	-	1	.2
Bilaterally Barbed Fixed Point	-	-	2	.3	-	-
Antler Haft	-	-	1	.1	-	-
Anthropomorphic Object	1	.1	-	-	-	-
Comb	-	-	1	.1	-	-
TOTAL NUMBER A. IMPLEMENTS	49	6.4	60	8.4	8	1.6
Shell Artifacts						
Shell Pendant	-	-	-	-	1	.2
Shell Bead	1(135)	.1	-	-	(116)	(9.7)
Shell Adze Blade	-	-	2	.3	1	.2
Misc. Ground Shell Fragment	2	.3	3	.4	-	-
TOTAL NO. S. ARTIFACTS (no beads)	3	.4	5	.7	2	.4
TOTAL NO. S. ARTIFACTS (with beads)	3	.4	5	.7	118	-
TOTAL NO. ARTIFACTS (no beads)	761	99.9	718	99.8	573	100.2
TOTAL NO. ARTIFACTS (with beads)	896	-	718	99.8	1197	-

that some comparisons are not completely accurate indicators of the differences in the artifact assemblages. Another reason for differences in the numbers of artifacts present is due to differences in the definition of artifacts. In the St. Mungo report, many pieces of bone debitage were included in the artifact tally. I have omitted these objects for this analysis because they are by-products rather than artifacts and they were not analyzed for the other two sites.

Lithic Artifacts

In early Northwest Coast prehistoric sites, lithic artifacts are the largest category of artifacts excavated. The range and variety of lithic artifacts is great and there are many different technological processes of artifact manufacture (for example percussion flaking, grinding or pecking). Some artifacts receive very little modification, and some receive modification in very specific areas such as their edge. Some artifacts have been so completely modified that they no longer exhibit any similarity to their original unmodified state. I have divided lithic tools into the following general categories: chipped stone, ground stone and pecked and ground stone.

Chipped Stone

Two categories of artifacts in this classification do not really qualify as tools because they are usually thought of as by-products. These are cores and bipolar cores. In determining information about site function and inter-assemblage variability, cores are an important artifact class. Therefore, cores are included in this artifact description.

CORE:

Table 2.3 lists the variety of cores present at the three sites. Table 2.4 shows the raw material types cores consist of from Glenrose, St. Mungo and Crescent Beach. Basalt is the overwhelming preferred raw material for cores, accounting for 79.6% at Glenrose, 75.5% at St. Mungo, and 76.4% at Crescent Beach. At Glenrose, quartzite is the next most popular raw material (7.4%) while at Crescent Beach chert is the second most popular raw material (9.1%). At St. Mungo the second most popular raw material is comprised of an unknown igneous raw material type (18.4%). Glenrose has the most variety in core raw materials with seven types while Crescent Beach has six and St. Mungo has four. I expected more variety in the core raw materials from Crescent Beach (due to its higher proportion of cores), but this is not the case. There is minimal evidence of a difference in preference of raw materials between the three sites. Chert is more popular at Crescent Beach, but it only comprises five of 55 cores. None of the raw material types present could be considered particularly exotic, but note the one vein quartz core present at Glenrose. There is some evidence vein quartz was utilized as a raw material when it was present, but it was not actively sought at the three sites.

Table 2.4 Raw Material Types for Cores From Glenrose, St. Mungo and Crescent Beach

Raw Material Type	Glenrose %	St. Mungo %	Crescent Beach %
Vein Quartz	1.9	0	0
Unknown Igneous	1.9	18.4	5.5
Granite	3.7	0	0
Andesite	3.7	0	0
Basalt	79.6	75.5	76.4
Unknown Sedimentary	0	0	1.8
Breccia	0	2	0
Chert	1.9	0	9.1
Greenstone	0	0	1.8
Quartzite	7.4	4.1	5.5

BIPOLAR IMPLEMENT:

There are differences apparent in Table 2.3. The most obvious is the paucity of bipolar implements at Glenrose. This could be statistically significant. Unfortunately, debate in archaeology over bipolar implements (including the number of different artifact types and their functions) leaves little information for me to play with. Bipolar reduction is used in later time periods for the creation of quartz microliths. It is interesting but not surprising that bipolar reduction is present earlier in prehistory than usually thought. Bipolar reduction shares a close relationship with raw material because it is best used for reducing small pebbles. One could argue that the difference in bipolar technology reflects differences in raw material availability at the three sites. This argument does not work for the difference between Glenrose and St. Mungo which are virtually identical environmentally.

Looking at the raw materials from which the bipolar implements are made, basalt is the dominant raw material for all three sites. At Glenrose, four bipolar implements are made from basalt. At St. Mungo, 23 of 26 bipolar implements are made from basalt. The other three bipolar implements at St. Mungo are made from chalcedony, chert and quartzite. At Crescent Beach 45 of 49 bipolar implements are made from basalt. Of the four other bipolar implements, two are made of chert, one is made of an unknown metamorphic, and one is made from quartzite. As with the cores, basalt is obviously the raw material of choice. When the raw material types of bipolar implements are compared to the raw material types of cores, it is apparent that there is less variety in the type of raw material desired for the manufacture of bipolar implements. While there is one vein quartz core from Glenrose, there are no

quartz bipolar implements from any of the sites. This further illustrates that quartz was not regularly utilized during the Charles culture on the Mainland.

Core and Bipolar Implements: Conclusions

Looking at the cores and bipolar implement tabulation, there was a great deal more core and bipolar reduction occurring at Crescent Beach, especially when compared to Glenrose (18.2% versus 7.6%). St. Mungo at 10.4% is leaning towards a similarity with Glenrose. This difference amongst the three sites implies a difference in flintknapping activities between Glenrose, St. Mungo and Crescent Beach. One way to test this hypothesis of different emphasis in flintknapping activities would be to examine the debitage from the three artifact assemblages.

Unshaped Chipped Stone Implements

In this large category, a division is made between unshaped chipped stone implements that are cobble core tools and those derived from unshaped by-products or flakes.

COBBLE CORE TOOLS

Cobble tools (including possible cores) are made of large cobbles and are discussed first. These artifacts can be further separated depending on the degree of modification. The two categories are modified cobbles and flaked cobble core tools.

MODIFIED COBBLES

HAMMERSTONE:

Crescent Beach has the most bipolar implements but the fewest hammerstones. What was being used for bipolar reduction?

The dominant raw material for all hammerstones is igneous pebbles or cobbles easily retrieved from the beach front at all three sites. At Glenrose 10 of the 13 hammerstones are made from igneous raw material, including four made from basalt. At St. Mungo 11 of the 14 hammerstones are made from igneous stone, including one made from basalt. At Crescent Beach three of the four hammerstones are of an unknown igneous material. The rest of the hammerstones are made from metamorphic stones with quartzite dominating (three quartzite at Glenrose, and two at St. Mungo). Unknown metamorphic comprise the rest of the metamorphic category.

ANVILSTONE and HAMMER ANVILSTONE:

One would expect more anvilstones at the site with the most bipolar reduction, yet there should be more anvilstones at Crescent Beach. The only hammerstone/anvilstone present is found at Crescent Beach.

FLAKED COBBLE CORE TOOLS

PEBBLE TOOL UNIFACE and PEBBLE TOOL BIFACE:

Cobble tools are present at all sites. Unifacial cobble tools are more common when compared to bifacial cobble tools.

At Glenrose nine of 16 unifacial pebble choppers are made from basalt while St. Mungo has three of 16, and Crescent Beach has four of 16. This is the only major difference in pebble tool raw material types for the three sites. Igneous and metamorphic raw materials are used for all pebble tools. All of

the pebble tools (both unifacial and bifacial) are composed of raw materials from which cores have also been manufactured.

Unshaped Chipped Stone Implements: Conclusions

Artifacts included in Unshaped Chipped Stone Implements are not numerous in any of the artifact assemblages. The percents are all within .2% of each other, with Crescent Beach having the highest percentage (4.9%) of these implements while Glenrose and St. Mungo (4.8% and 4.7%) are very close behind. This similarity is somewhat surprising because I expected Crescent Beach to have more hammerstones and anvilstones due to the higher percentage of cores and bipolar implements present.

Unshaped Chipped Stone Flake Tools

Debitage and unshaped flakes are differentiated by edge treatment. The outer margins of debitage have not been extensively utilized or retouched, while those of unshaped flakes do exhibit either utilization or retouch.

COBBLE FLAKE TOOLS

CORTEX SPALL:

Unlike bipolar implement proportions where St. Mungo and Crescent Beach were more similar, cortex spall proportions show Glenrose and Crescent Beach to be more alike. Whether their presence reflects the emphasis of any specific activity at the sites is difficult to say without a more detailed analysis of these artifacts.

The raw material types for cortex spall tools show some variety from site to site. Glenrose has cortex spall tools made from five different raw

materials: unknown igneous (one), andesite (one), basalt (four), quartzite (four) and gneiss (one). The three cortex spall tools from St. Mungo are made from unknown igneous, basalt and quartzite. At Crescent Beach quartzite is the dominant raw material (eight of 14 are made from it), with basalt (five tools) and chert (one tool) comprising the rest of the raw material assemblage. The variety of raw material types from Glenrose may or may not be due to a wider utilization of different raw material types present at or near the site. Some of this variety could be due to non-cultural factors such as misidentification which is a problem with so many unshaped and nonstylistic chipped stone tools.

UTILIZED FLAKE TOOLS

UTILIZED FLAKE:

It is unclear to me the importance of the small proportion of utilized flakes at St. Mungo.

There is a fair degree of diversity in the raw materials found in the utilized flake category as demonstrated in Table 2.5. Basalt is the dominant raw material comprising 75.6% (62 of 82) of the utilized flakes at Glenrose, 90.9% (40 of 44) at St. Mungo, and 72% (85 of 118) at Crescent Beach. The second and third most common raw materials for the three sites are the following: quartzite (14.6% or 12), andesite (3.7% or three) at Glenrose; slate (4.6% or two), both breccia and quartzite (2.3% or one for each) at St. Mungo; quartzite (16.1% or 19), unknown igneous (5.1% or six) at Crescent Beach. Both Glenrose and Crescent Beach have eight raw material types present while St. Mungo has four. There is once again minimal variety between the raw material types present at the three sites.

Table 2.5 Raw Material Types for Utilized Flakes From Glenrose, St. Mungo and Crescent Beach

Raw Material Type	Glenrose %	St. Mungo %	Crescent Beach %
Vein Quartz	1.2	0	0
Unknown Igneous	1.2	0	5.1
Andesite	3.7	0	0
Basalt	75.6	90.9	72
Obsidian	1.2	0	.9
Mudstone	0	0	.9
Breccia	0	2.3	0
Chert	1.2	0	2.5
Unknown Metamorphic	0	0	.9
Greenstone	0	0	1.7
Quartzite	14.6	2.3	16.1
Slate	0	4.6	0
Schist	1.2	0	0

RETOUCHED FLAKE TOOLS

QUARTZ MICROLITH:

Quartz microliths are not an important presence. There is a single example from Crescent Beach. It was discovered 1.5-1.7 meters below the surface but it is not clear whether it was found in situ in Unit B1. None were found in the Charles component during the 1989 and 1990 excavations. Quartz microliths are not common in the Charles culture according to this data. Quartz microliths as a stylistic marker of the Locarno Beach phase, at least in quantity, still stands.

UNIFACIALLY RETOUCHED FLAKES

UNIFACIALLY STEEP-ANGLED RETOUCHED FLAKE and NOTCHED STEEP-ANGLED UNIFACIALLY RETOUCHED FLAKE:

The presence of steep-angled retouched flakes is fairly substantial at Glenrose and Crescent Beach (6.2% and 4.9%) but not at St. Mungo (2.4%). If the functions of cortex spall tools and steep-angled retouch flakes overlap,

note that both of these artifact types are not common at St. Mungo. This implies that scraping activities were not as common at St. Mungo as they were at Glenrose or Crescent Beach.

The two notched steep-angled retouch flakes from Glenrose are made from basalt. Table 2.6 displays the raw material types for the unifacially steep-angled retouched flakes. Not surprisingly, basalt is the major raw material type for each site (64.4% or 26 of 45 at Glenrose, 70.6% or 12 of 17 at St. Mungo, and 67.9% or 19 of 28 at Crescent Beach). Glenrose has six different raw material types represented. Quartzite is the second most common lithic type, with 10 of 45 artifacts or 22.2% made from it. The four other raw material types besides basalt and quartzite are the following: andesite (6.7%, three), obsidian (2.2%, one), slate (2.2%, one) and schist (2.2%, one). Why would a known exotic raw material such as obsidian be used as an unshaped flake tool? Perhaps it was so uncommon as a raw material, that when encountered people experimented with it and made artifacts from it that would not be made from obsidian in later times. Another explanation is that during the manufacture of a formed tool, a piece of debitage was produced that was appropriate for an expedient tool type. The structure of obsidian is such that its optimal function would be as a cutting tool where there would be less danger of the margin shattering and less need of edge retouch. The three other lithic types from St. Mungo are: chalcedony (5.9%, one), unknown igneous (17.7%, three) and quartzite (5.9%, one). The three non-basalt lithic types from Crescent Beach are: unknown igneous (7.1%, two), chert (7.1%, two) and quartzite (17.9%, five). One small pattern I see is the lack of diversity in raw material types, with little utilization of non-basalt lithic types.

Table 2.6 Raw Material Types for Steep-Angled Retouched Flakes From Glenrose, St. Mungo and Crescent Beach

Raw Material Types	Glenrose %	St. Mungo %	Crescent Beach %
Chalcedony	0	5.9	0
Unknown Igneous	0	17.7	7.1
Andesite	6.7	0	0
Basalt	64.4	70.6	67.9
Obsidian	2.2	0	0
Chert	0	0	7.1
Quartzite	22.2	5.9	17.9
Slate	2.2	0	0
Schist	2.2	0	0

UNIFACIALLY NARROW-ANGLED RETOUCHED FLAKE:

The information in Table 2.3 shows a major difference between the proportions of narrow-angled retouched flakes present at the three sites, but this may be partially explained by the larger proportion of utilized flakes at Crescent Beach.

There is less diversity in the number of raw material types for unifacially narrow-angled retouched flakes when compared to those for unifacially steep-angled retouched flakes. At Glenrose six lithic types were used to create narrow-angled retouched flakes (the same number for steep-angled implements), but a higher proportion of narrow-angled retouched implements are made from basalt (83.7%, 72 of 86). Quartzite is the second most popular raw material, but it is only half the proportion it was with steep-angle retouched implements (11.6%, 10 of 86 versus 22.2%, 10 of 45). There is a similar situation at St. Mungo where basalt accounts for 96.5% of the lithic material types (55 of 57 artifacts). This is also the case for Crescent Beach where basalt comprises 79% of the lithic material types (15 of 19 artifacts).

When the proportions of cortex spalls, utilized flakes, quartz microliths, unifacially steep-angled retouched flakes and notched steep-angled unifacially retouched flakes are added to narrow-angled retouched flakes, the proportions point to fewer expedient flake tools at St. Mungo (16.8%) with Glenrose and Crescent Beach both having larger proportions (29.8% and 31.4%). One question is why are Glenrose and St. Mungo different from each other in terms of expedient flake tools?

Turning once again to unifacially narrow-angled retouched flakes, it is easy to see how one could misinterpret the data from this single artifact type if it was presented on its own without data from other artifact types. The data implies that St. Mungo and Glenrose have a similar proportion of narrow-angled retouched flakes while Crescent Beach has a much smaller number. Yet, over all, Crescent Beach has a much higher proportion of unifacially retouched flake tools in comparison to St. Mungo.

BIFACIALLY RETOUCHED FLAKES

BIFACIALLY RETOUCHED FLAKE:

Up to now, St. Mungo has not had the largest proportions of a single artifact type among the unshaped flake tools, but here among the bifacially retouched flake tools we see St. Mungo with slightly more than Glenrose. Bifacially retouch flakes were not very important at Crescent Beach, although they are present.

The bifacially retouched flakes from Crescent Beach and Glenrose are made from basalt. At St. Mungo, 10 of 14 are made from basalt, two are of unknown igneous, one is of rhyolite and one is of chert.

BLADE-LIKE TOOLS

MICROBLADE-LIKE FLAKE and MACROBLADE-LIKE FLAKE:

The low number of objects represented in microblade-like and macroblade-like flakes suggests the absence of a prepared blade technology at any of the three sites.

Unshaped Chipped Stone Tools: Conclusions

Like the core and bipolar implement data, the data from the category Unshaped Chipped Stone Flake Tools contains some unanticipated results. The most unexpected being the differences between Glenrose and St. Mungo (in the past they were compared based more on similarities and less on differences in the artifact assemblages). There are almost twice as many unshaped flake tools at Glenrose when compared to St. Mungo (31.8% versus 18.8%). The data from cores and bipolar implements does not indicate such a substantial difference in flake tools. Neither does the data from the other non-flake unshaped chipped stone implements. Another result not suggested by the core and bipolar implement data, is the similarity between the proportion of flake tools from Glenrose and Crescent Beach (31.8% versus 32%). A third conundrum is why St. Mungo, with the second highest proportion of cores and bipolar implements, lags behind the other sites in unshaped flake tools.

Looking at the statistics for cores in Appendix B one might ask if the cores from Glenrose are smaller (implying they were completely exhausted before abandonment) than those from Crescent Beach? The smaller size of the Glenrose cores would compensate for the similarity to Crescent Beach in terms of a high proportion of unshaped flake tools (31.8% versus 32%) but a slightly lower proportion of cores than is present at Crescent Beach (7.1% versus

9.6%). The data for mass does not indicate that the cores at Glenrose are on average smaller than those from Crescent Beach. Does this imply that at Glenrose, many unshaped flake tools were brought into the site (having been made elsewhere)? The high proportion of unshaped flake tools at Crescent Beach is associated with the high proportion of cores and bipolar implements because flake tools could be produced during preliminary core or bipolar reduction. There is a negative relationship between the proportion of unshaped flake tools and cores/bipolar implements at St. Mungo although this relationship is not so strong. St. Mungo had the second highest proportion of cores and bipolar implements while the proportion of unshaped chipped stone implements is barely half of that for Glenrose and Crescent Beach. Perhaps some of the unshaped chipped stone implements manufactured at St. Mungo were curated to and used at Glenrose. There is a strong negative correlation between the proportion of unshaped flake tools and cores/bipolar implements at Glenrose.

One general conclusion of the analysis so far is that the activities at the three sites did not require a specialized lithic technology. The multifunctional nature of many of these tools also illustrates a lack of specialized chipped stone implements at this time in Northwest coast prehistory. Specialized chipped stone tools are curated, repaired when broken (rather than discarded), and maintained for a longer life, and all of these factors contribute to skewing the archaeological record to show abundant expedient tools and therefore, possible overepresentation of their importance in site activities. Therefore, my statements about site activities and the lack of specialized lithic artifacts should be tested before a definitive statement can be made. The percentages from all three artifact assemblages indicate

flake tools of an expedient and unshaped nature play an important role in each site's activities.

Another general conclusion from the analysis of the unshaped chipped stone tools is the similarity in raw material types utilized at each site. There are some variations in proportions but there are no meaningful differences. There are no discernible patterns in the raw material data beyond basalt being a raw material used for the manufacture of almost every artifact type present in this section.

Shaped Chipped Stone Tools

Shaped chipped stone tools are modified over most of their surfaces and the original mass of material is significantly altered (Kornbacher 1989:105). Chipped stone shaped implements are often symmetrical in plane view. These shaped objects are often produced differently from unshaped tools. Sullivan and Rozen (1985) point out that core reduction and shaped tool manufacture are different reduction strategies. Many unshaped chipped stone artifacts are produced from the byproducts of core reduction, while many shaped chipped stone tools are the desired end product of many steps of specialized and careful shaped tool manufacture. There is more thought and planning required in the production of shaped chipped stone tools.

BLADE TOOLS

MICROBLADE:

With the data from blade-like and microblade implements pooled together, there is little suggestion of a prepared core and blade technology existing at any of the three sites. As discussed in the introduction to the Mayne phase

artifact assemblage, blade-like and blade tools are sometimes produced unintentionally during lab experiments involving flintknapping. There must be more substantial evidence for a prepared core and blade technology than the single item presented here.

GRAVER and DRILL:

The relative lack of gravers and drills at these sites could result from specific functions being performed by unshaped chipped stone flake tools. This is not the case, as both artifact types are found only at Glenrose which had a high proportion of unspecialized flake tools.

FORMED CHIPPED STONE UNIFACES

STEEP-ANGLED FORMED UNIFACE:

If steep-angled formed unifaces are added to cortex spalls and unifacially steep-angled retouched flakes, Glenrose has the highest proportion (8.7% versus 7.3% for Crescent Beach and 3.1% for St. Mungo) of implements with steep-angled edges. I am unsure whether the presence of 10 steep-angled formed unifaces reflects the importance of the activity the tools were used for. Traditionally, steep-angled tools are associated with scraping hides of large land mammals. These animals were a part of the subsistence pattern at Glenrose, but they were not the most important resource.

NARROW-ANGLED FORMED UNIFACE:

There is a difference in the number of narrow-angled formed unifaces found at each site. Could this difference be related to raw material? Perhaps, but once again (as with the bipolar implements) Glenrose and St. Mungo are from virtually identical environments so differences in raw material

acquisition would be minimal (based on environmental factors, not cultural). Because narrow-angled formed unifaces are a suggested stylistic marker for the St. Mungo phase, their presence at Crescent Beach is more important than suggested by the table alone.

While working on my artifact typology, I discovered a problem concerning the difficulty of defining unshaped versus shaped unifaces. The definition of shaped versus unshaped unifaces can be subjective, and comparisons between different sites must be done through a visual examination of the data.

FORMED CHIPPED STONE BIFACES

LEAF-SHAPED BIFACE:

Is the higher proportion of leaf-shaped bifaces present at Glenrose further suggestion for the importance of land mammals as an integral part of the subsistence base? Is it possible some of these objects were used as hand held knives? The bifaces from Glenrose are more diverse in size (Table B.22).

All of the leaf-shaped bifaces from Glenrose are made from basalt. Six of St. Mungo's leaf-shaped bifaces are made from basalt and the other one is made from obsidian. At Crescent Beach five of seven leaf-shaped bifaces are manufactured from basalt with the other two manufactured of chert and greenstone. Chert at Crescent Beach was used for a variety of artifact types, both unshaped and shaped.

SQUARE-TANG STEMMED BIFACE, CONTRACTING STEM NO SHOULDERS BIFACE and CONTRACTING STEM WITH SHOULDERS BIFACE:

Stemmed bifaces are not common at the three sites, but they are least common at Glenrose (.5%) which had the highest proportion of unstemmed leaf-

shaped bifaces. At St. Mungo stemmed bifaces are only slightly more common than unstemmed ones (1.8%). At Crescent Beach, stemmed bifaces are found in almost the same proportion as unstemmed types (1.1%).

The contracting stem bifaces of Glenrose are made from basalt. This is also true for St. Mungo except for one contracting stem biface without shoulders made from chalcedony. The contracting stem bifaces from Crescent Beach are made of basalt.

The variation in stemmed bifaces at Glenrose and St. Mungo (one could even argue that this is stylistic variation) is interesting considering that the two sites are so similar to each other in terms of non-artifactual data. Whether this difference is statistically significant is unclear. Crescent Beach does not have as many bifaces as either of the other sites, but those it does have are forms found at both Glenrose and St. Mungo. In none of the categories does it have the least numbers present.

INCOMPLETE FORMED BIFACES

BIFACE PROXIMAL, MEDIAL, DISTAL and UNIDENTIFIABLE FRAGMENTS:

The data from the biface fragment categories agrees with previous data for the shaped biface category. Glenrose has a slightly higher proportion of biface fragments (3.8%), versus either St. Mungo (3.7%) or Crescent Beach (2.4%). Within the types of broken bifaces present at each site, as with the unstemmed versus stemmed bifaces, Glenrose and St. Mungo dominate different categories with Glenrose having the most proximal fragments (.9% versus .4% for St. Mungo and .5% for Crescent Beach) and St. Mungo having the most medial fragments (1.0% versus .7% for Glenrose and .5% for Crescent Beach).

For all shaped biface categories, Glenrose and St. Mungo are essentially equal (6.8% versus 6.5%), while Crescent Beach has the lowest proportion (4.7%). Does the lower number of bifaces at Crescent Beach reflect a cultural difference? This kind of variation could result from sample size, or different emphasis of site activities. From the proportion of bifaces at Glenrose and St. Mungo there is little suggestion (based on the artifact types alone) that large land mammals were more important at Glenrose. All types of bifaces are present at Crescent Beach, but they are not common. Stylistically , the bifaces from the three sites are very similar. In comparison to the unshaped chipped stone flake tools, it is obvious how uncommon shaped bifaces of any shape or size are at any of the sites.

SHAPED CHIPPED AND GROUND STONE IMPLEMENTS

CHIPPED SLATE NARROW-ANGLED TABULAR BIFACE OBJECT:

This is an unusual object from Crescent Beach with its closest parallel to a group of implements found at the Locarno Beach site which only differ in shape and not manufacture.

CHIPPED AND GROUND STONE BIFACE LEAF-SHAPED: This artifact from Glenrose is the only example of a chipped and ground stone point.

CHIPPED AND GROUND STONE BIFACE FRAGMENTS

CHIPPED AND GROUND STONE BIFACE MEDIAL, DISTAL AND UNIDENTIFIABLE FRAGMENTS:

There is a paucity of chipped and ground stone implements in the three artifact assemblages. This was not an important technology at these sites during the Charles culture.

Shaped Chipped Stone Tools: Conclusions

In comparison to the high numbers and proportions of Unshaped Chipped Stone Flake Tools, the total number and proportion of all Shaped Chipped Stone Tools is much lower. This is not unexpected. Glenrose has 12.6% while St. Mungo has 9.6% and Crescent Beach, at 5.4%, is a distant third. Glenrose has a high number of both shaped and unshaped chipped stone implements. On the other hand, at St. Mungo there is a high number of shaped tools. One possible explanation for the paucity of unshaped implements is the concentration on making better formed and more specialized chipped stone tools. At Crescent Beach one could make the opposite argument. Unshaped chipped stone implements are more desired for on-site activities and few shaped chipped stone implements are required.

Chipped Stone Tools: Conclusions

The highest proportion of all chipped stone tools in a single artifact assemblage is at Crescent Beach, where 60.5% of the artifacts present are made from chipped stone. Of that proportion only 5.4% of the total artifact assemblage consists of artifact types of a shaped (versus unshaped) nature. This suggests that at Crescent Beach, expedient chipped stone tools were the

dominant artifact type (when cores and bipolar implements are excluded, 36.9% of all chipped stone tools from Crescent Beach are unshaped) and stylistically distinctive or diagnostic artifacts are in very short supply. There could be other explanations why shaped chipped stone implements are uncommon at Crescent Beach and two of the most obvious explanations are curation practices and the lack of specialized site activities.

At Glenrose, 56.8% of the artifact assemblage is comprised of chipped stone implements. This number is almost as high as Crescent Beach, and in fact, may be more meaningful because of the larger artifact assemblage excavated at Glenrose. Of this 56.8%, 12.6% of the total artifact assemblage consists of shaped chipped stone tools, leaving 36.9% of all chipped stone implements unshaped (excluding cores and bipolar implements). A larger proportion of Glenrose's total artifact assemblage is represented by shaped chipped stone tools. Since many of Glenrose's shaped chipped stone implements are bifaces, is this suggestive of a difference in procurement activities between Glenrose and Crescent Beach with there being more of a focus on land mammals at Glenrose? While Glenrose and Crescent Beach share similar proportions of unshaped chipped stone tools, the differences in proportions of cores/bipolar implements and shaped tools point to variation between Glenrose and Crescent Beach.

The biggest difference exhibited in the data so far is that between St. Mungo and the other two sites. At St. Mungo 43.5%, of the total artifact assemblage is comprised of chipped stone. When cores and bipolar implements are subtracted, only 23.5% of the artifacts belong in the unshaped category (compared to 36.9% for Crescent Beach and 36.6% for Glenrose). Furthermore, of the 43.5%, 9.6% of the total artifact assemblage belong to shaped chipped

stone artifact categories. There is a lower ratio of unshaped chipped stone versus chipped stone implements at St. Mungo when compared to Glenrose and Crescent Beach. There are several possible explanations for this different pattern including curation practices, a different emphasis on site activities, and/or a different focus on procurement strategies. This difference in chipped stone tool proportions between St. Mungo and Glenrose suggests that while Glenrose and St. Mungo are similar to each other in terms of artifact assemblages, some differences present are not easily explained.

Ground Stone Implements

Grinding is a technique which can strengthen a rounded surface and help smooth the surface of an artifact (Crabtree 1972:68). The grinding process may result in extensive and intentional modification (Kornbacher 1989:105). The grinding process requires that more time and energy be invested in the manufacture of the artifact compared to unshaped, more expedient, chipped stone tools. Because the grinding process changes the original shape of the raw material, all ground stone implements are by definition shaped rather than unshaped. Slate is the preferred raw material for many ground stone tools, and this is reflected in traditional descriptive names such as ground slate knife. Slate has one strong cleavage plane and because it can be broken into relatively thin tabular pieces, it was a compatible choice for grinding and abrading.

ABRASIVE STONES

ABRASIVE STONE:

Abraders, like many chipped stone tools, are multifunctional. Their presence suggests that ground stone technology was present at all three sites, but the importance of this technology cannot be assessed from the abraders alone. There are many sizes of abraders present (see Table 2.3).

FORMED ABRASIVE STONE:

Compared to unshaped abrasive stones, formed abrasive stones are not common. This may be another reflection of the unimportance of ground stone technology during the Charles culture. Crescent Beach has the largest proportion and number of formed abrasive stones (.9%, five), yet it also has the lowest amount of ground stone implements with one important exception (ground stone disc beads).

FORMED GROUND STONE BIFACES

LEAF-SHAPED GROUND STONE BIFACE:

Two ground stone bifaces are present at Glenrose, while there are no examples from either St. Mungo or Crescent Beach.

GROUND STONE BIFACE FRAGMENTS

GROUND STONE BIFACE PROXIMAL FRAGMENT:

There is a rarity of ground stone bifaces, especially in comparison to Locarno Beach phase artifact assemblages.

GROUND STONE DISC BEAD:

If the information from ground stone disc beads was not included in this analysis, the interpretation would be that ground stone technology was barely present at Crescent Beach. The presence of large numbers of beads suggests that ground stone technology was most apparent at Crescent Beach.

The proportions for ground stone disc beads have been calculated based on the entire artifact assemblage recovered from Crescent Beach (1197), but the proportions for all other artifact types were calculated with ground stone and shell beads excluded. In this way, the other artifact types can be compared more accurately to the other artifact types from Glenrose and St. Mungo. All sites used the same screen size, but some of the difference could result from different excavation and recovery methods in the field. For example, because Percy's dig was a salvage project, there was insufficient time to concentrate on procural of small objects, which would slip through the 1/4 inch screens. Trace's excavation (1981) uncovered 198 ground stone disc beads so we knew that our large number of beads was not unusual for the site. Ground stone disc beads are impossible to see when excavating dark midden soil. Ground stone disc beads are also difficult to see when wet screening, and they easily slip through screens.

As beads are considered personal adornment and potential status markers, the difference in the three artifact assemblages could be a result of two different cultures present at Glenrose/ St. Mungo and Crescent Beach. This is the first indication of a major difference between the three sites. For more information on the ground stone disc beads from Crescent Beach see Thom (1991a and 1991b).

The beads are not comprised of a single raw material, nor in general, are they as well made as beads from later cultural phases. But, the presence of beads does not indicate that Crescent Beach society during the Charles culture was stratified. The beads were recovered throughout the deposits and there were no specific concentrations of beads associated with the burial. A large number of ground stone disc beads were recovered from Charles culture deposits at the Tsawwassen site (Arcas 1991), but they were positively associated with burials. Clearly, the exact place of ground stone disc beads in the Charles culture must be clarified. Ground stone disc beads are the first indicator of possible differences between the three sites.

DECORATED GROUND STONE:

Please note that the decorated ground stone from Crescent Beach is a fragmentary piece of slate with incised lines. It is not of the same type as that found at Glenrose and St. Mungo. The decorated ground stone subclass found at St. Mungo components (see Appendix B) does not appear at Crescent Beach.

While ground stone disc beads are not considered stylistic markers of the St. Mungo phase, decorated ground stone objects are. There is a fair (certainly not abundant) quantity of these implements present at Glenrose (four of the six decorated ground stone implements belong in this subgroup) but, there is only one present at St. Mungo from undisturbed deposits (three are reported by Boehm 1973). These objects are not as common as one might think. Decorated ground stone objects are also found in the Fraser Canyon during the Eayem phase. Perhaps, their presence in St. Mungo components is an indicator of close trading and cultural relationships with cultural groups

living up the Fraser River. Therefore, it is possible that such stylistic markers as incised metamorphosed slate tablets are indicators of a difference in trade relationships rather than indications of cultural differences between Glenrose, St. Mungo and Crescent Beach. If the groups at Glenrose and St. Mungo are the same as those at Crescent Beach, some objects should have worked their way over to Crescent Beach, making this explanation unsatisfactory.

Thus, these implements are the second indicator of possible cultural differences between the three sites. The two possible artifact types so far suggestive of cultural differences among the three artifact assemblages are ground stone artifact types and not chipped stone.

MISCELLANEOUS GROUND STONE:

Miscellaneous ground stone implements are present at all sites, but its presence at Crescent Beach is minimal.

Ground Stone Implements: Conclusions

The highest proportion of ground stone implements is found at Glenrose (5.4%) with St. Mungo and Crescent Beach having similar proportions (3.7% and 3.6%). The proportions for Crescent Beach do not include the ground stone disc beads which, when added into the calculation, comprise 42.4% of Crescent Beach's total artifact assemblage. The abundance of ground stone disc beads at Crescent Beach is not easily explained, and perhaps it should not be over-analyzed until more information is gathered from mainland Charles components. The beads are the first major indicator of differences between Crescent Beach, Glenrose and St. Mungo. There are also non-cultural explanations for the

differences in bead proportions including differing field recovery methods and the small size of the beads from Crescent Beach.

The second important difference between the three sites can be found in the special incised tablets made from metamorphosed slate. These objects have been used as a stylistic diagnostic of the St. Mungo phase since St. Mungo was first defined. At neither Glenrose or St. Mungo are these tablets common. One small fragment of a similar object was discovered at Pitt River as well. There may be non-cultural explanations for the artifact type's absence at Crescent Beach including going back and looking at the non-artifact data from Crescent Beach for evidence of a more specialized site function. A second explanation for the artifact type's absence could be the small sample size.

Disregarding the ground stone disc beads at Crescent Beach, there are only modest numbers of ground stone implements at the three sites. This is an important similarity because there have been questions concerning the presence of ground stone implements during the Charles culture.

Pecked and Ground Stone Implements

The combination of pecked and ground stone processes results in an artifact with irregularly pitted or crushed areas on its surface due to a special type of percussion flaking called 'pecking'. Pecking the surface of stone involves delivering repeated blows with such intensity that the surface of the object is pulverized (Kornbacher 1989:103). Pecking is used to achieve the preliminary desired shape, an abrader is then used to grind the roughened surface to a smoother finish (Stewart 1973:41). The pecking and grinding process alters the original shape of the raw material, making all pecked and ground stone objects by definition, shaped rather than unshaped.

MORTAR and PIPE:

Pecked and ground stone objects are not common during the Charles culture as is shown in the rarity of such implements. There is uncertainty concerning the context of the pipe from Glenrose, making the presence of these two artifact types very rare.

Pecked and Ground Stone Implements: Conclusions

Pecked and ground stone technology was of little importance during the Charles culture at these sites. In fact, this technology may be even more uncommon, as the exact provenience of the pipe from Glenrose is uncertain and it may belong to the Marpole phase artifact assemblage.

Bone Tools

Bone, an organic raw material, is more fragile than inorganic stone. Processes such as grinding and/or abrasion are usually responsible for the surface modifications found on bone artifacts. Unshaped bone artifacts may be difficult to distinguish from faunal remains because the only evidence for working may be an unnatural wear pattern on the artifact's surface. Often, only an experienced faunal analyst can tell the difference between slightly modified artifacts and faunal remains. Bone artifacts are usually split/sectioned or splintered fragments removed from the parent material.

This classification of bone artifacts (as well as the antler artifacts that follow) assigns functional names to objects based on ethnographic analogy. Function-free names for bone and antler objects have not yet been created on the Northwest Coast. More lab experimentation in bone and antler tool manufacture is required before such a step can be implemented.

This classification focuses on classifying bone and antler tools, therefore, objects that are the by-product of bone and antler tool manufacturer are not included.

Shaped Bone Tools

Like all other shaped tools, the original shape and texture of the bone's resource material has been altered significantly. In comparison to inorganic stone, bone is more pliable and can be shaped through many different processes including cutting, chopping, grinding, engraving and drilling (Stewart 1973:110).

MINIMALLY WORKED BONE

WORKED BONE MEDIAL FRAGMENT:

Appendix B and Table 2.3 both portray the importance of bone tools at all three sites. The data from the measurements of the worked bone fragments also demonstrates the fragility of organic tools which break easily in comparison to chipped stone tools. Stem and leaf plots of the two variables weight and length, were utilized to see whether there was any evidence of size differentiation between the three sites (see Appendix B). Stem and leaf plots allow for visual examination of the data and can quickly point to any sub-groups in the data (see Tukey 1977). The stem and leaf plots of weights for worked bone medial fragments reveal a difference between St. Mungo and the other two sites. At St. Mungo small (less than 1 gm) fragments of worked bone dominate while at the other two sites smaller fragments are not as common. Stem and leaf plots of the lengths also show that a larger number of St. Mungo objects are small. Crescent Beach worked bone medial fragments

show a wider distribution of lengths and at Glenrose, the worked bone medial fragments cluster around 2 and 3 cm. Differences in cataloguing methods as well as differences in the classification of bone fragments as faunal remains could contribute to these differences.

Another partial explanation for the dominance of small bone fragments at St. Mungo could be due to the nature of the St. Mungo project. There was enough personnel and time to give excavators and screeners time to look for and collect smaller objects while in the field. This would help to skew the data. Excavations at Glenrose and Percy's excavation at Crescent Beach took place nearly two decade ago and it is likely that slightly worked bone fragments were not recovered/catalogued as rigorously as in the more recent St. Mungo project. This may also be true for objects such as bipolar implements.

WORKED BONE END FRAGMENT:

As with the statistics for medial fragments, end fragments also disclose some differences between the three sites (Appendix B). As is shown in the mean for the St. Mungo worked bone end fragments, there is much more skewness in its data than there is in either Glenrose or Crescent Beach. I have no suggestions why worked bone medial fragments are more common than worked bone end fragments.

RODENT INCISOR and NET MESH SPACERS

Rodent incisors are not common objects. The single example of a net mesh spacer makes any hypotheses about this artifact and its function pointless. If it did function as a net mesh spacer, there should be more

represented in the artifact record (it would take a great deal more than one net mesh spacer for a dip net).

PEG:

Like many other bone objects these, which have been called pegs, are an anomaly.

BONE HOOK OBJECT:

Appendix B gives the measurements of the bone hook object but its uniqueness does not allow for further comment and its incomplete nature does not clarify functional interpretation.

BONE PENDANTS

PERFORATED BONE PENDANT, GROUND MOLAR and TOOTH PENDANT:

Table 2.3 does not suggest an important difference between Crescent Beach and the other two sites. There is a paucity of perforated bone pendants at Crescent Beach (three in total) compared to Glenrose (21) and St. Mungo (25). There are two perforated bone pendants and four tooth pendants missing from the Crescent Beach artifact assemblage (they were present in the original catalogue, but they could not be found for this analysis). From an examination of Percy's pictures and drawings (Percy 1974:210, 212 and 218), there is no similarity in style between Crescent Beach's missing perforated bone pendants and those at Glenrose or St. Mungo. The table does not reflect the stylistic similarity in perforated bone pendants at Glenrose and St. Mungo and the absence of this style at Crescent Beach. This stylistic difference could be an indicator of cultural differences due to the nature of the artifact

type. Personal adornment is a notable area in which groups of people express their cultural similarity or differences. In terms of personal adornment during the Charles culture at Crescent Beach, emphasis was on ground stone disc beads, which is not the case at Glenrose or St. Mungo. There is more similarity between the tooth pendants from the three sites with both grooved and incised hole tooth pendants present at all three sites.

ROUND BONE OBJECTS

BONE BEAD:

Bone beads are not common. At Crescent Beach where other beads were very common, bone beads are not present in large numbers.

RING, TUBE and WHISTLE:

Neither rings, bird bone tubes or bird bone whistles are common during the Charles culture. Whether or not this implies a difference in ceremonial rituals compared to ethnographic information cannot be proven for certain. Both bird bone tubes and whistles played important roles in ceremonial ritual at the time of contact.

AWLS

SPLINTER BONE AWL and SPLIT RIB AWL:

If split rib awls are added to splinter awls, Crescent Beach has a more comparable number of splinter awls (21 versus 27 for Glenrose and 36 for St. Mungo). Split rib awls are an interesting subgroup of splinter awls and their presence suggests the possibility of a specialized activity or a cultural preference for a particular style of awl.

Of the splinter awls from Glenrose 17 of 27 (63.0%) have been categorized as unidentified bone. Three of the 27 splinter awls (11.1%) are

bird bone and the other six are mammal bone. At St. Mungo 25 of 36 splinter awls are bird bone (69.4%) which is a high proportion. Although the sample size of splinter awls from Crescent Beach is smaller than that from St. Mungo (15 versus 25), 60% (nine of 15) are bird bone. We know from the faunal remains that birds were utilized extensively at St. Mungo. The bird bone splinter awls are very distinctive fragments which were not encountered in the analysis of the Locarno Beach components from Locarno Beach and Whalen Farm. Archaeologists will have to be aware of this artifact type to see how widespread it is on the Mainland, Vancouver Island and the Gulf Islands.

FORMED SPLIT BONE AWL:

At Glenrose, formed and splinter awls comprise similar proportions of the artifact assemblage (3.2% and 3.6%). At St. Mungo and Crescent Beach, splinter awls are more common than formed awls (5.0% versus 1.8% at St. Mungo and 3.7% versus 2.1% at Crescent Beach). A general pattern for awls is lacking amongst the three artifact assemblages. When the proportions for splinter and formed awls are added together for each site, there is a good agreement amongst the sites with Glenrose and St. Mungo having 6.8% and Crescent Beach 5.8%.

The raw material proportions for formed bone awls are somewhat different from that for splinter bone awls. At Glenrose 10 (41.7%) are unknown bone, nine are mammal bone (37.5%), and five are bird bone (20.8%). The formed bone awls from St. Mungo are mostly mammal bone (76.9% or 10 of 13) with three made from bird bone (23.1%). The 12 formed bone awls from Crescent Beach are mammal bone.

METAPODIAL AWL, BIRD BONE AWL and ULNA AWL:

None of the three special awl categories defined by raw material type are common or concentrated at any particular site. Perhaps this reflects their specialized functions.

After amalgamating all of the awl categories from each site, Glenrose and St. Mungo have nearly identical proportions (7.2% versus 7.1%) with Crescent Beach following closely behind (6.6%). None of the artifact assemblages contain all six awl types. The biggest difference is the uniqueness of the split rib awls from Crescent Beach. Once again there are differences between Glenrose and St. Mungo. Glenrose has similar proportions of split and formed awls compared to St. Mungo, where splinter awls are twice as numerous as formed awls (St. Mungo had the lowest proportion of unshaped chipped stone tools so does this mean that more time was spent at St. Mungo manufacturing formed lithic versus formed bone implements?). It is interesting that while St. Mungo has the highest proportion of bone tools, not all of thes tools are well formed. The split rib awls at Crescent Beach are probably a more important indicator of cultural differences than the dissimilarity between splinter and formed awl proportions at Glenrose and St. Mungo. Perhaps more time and care were taken in the manufacture of awls at Glenrose because the activities were important enough to make it beneficial to create an awl which was a better made and shaped tool.

BLANKET PIN:

Blanket pins are more often found in later Gulf of Georgia deposits but the single example from St. Mungo suggests that they are also present during the Charles component.

BONE DRILL:

Bone drills are useful and their paucity in the artifact assemblages implies that other tools were used for drilling or perhaps that some bone drills have gone unrecognized.

SMALL POINTED BONE OBJECTS

UNIPOINT, BIPOINT and POINTED BONE OBJECT FRAGMENT:

Unipoints, bipoints and pointed bone objects show little difference between the artifact assemblages. These artifacts are not common in Charles components.

BONE CHISELS, WEDGES, AND POINTS

BONE CHISELS

BONE CHISEL WITH UNILATERALLY TAPERED END:

As the proportions from Table 2.3 indicate, bone chisels with unilaterally tapered ends are present and fairly common in all three artifact assemblages, with Glenrose having twice the proportion of Crescent Beach (3.2% versus 1.8%) and St. Mungo showing a similar proportion to Glenrose (2.9%). This artifact type is present during the Locarno Beach phase as well.

BONE WEDGE:

As Table 2.3 displays, bone wedges are not very common based on my separation of bone wedges and chisels. It is probable that bone chisels and wedges overlap each other both in shape and function.

BONE POINTS

NON-FACETTED BONE POINT LANCEOLATE-SHAPED:

Lanceolate-shaped bone points are not common, so their absence at Crescent Beach could be due to sample size rather than cultural processes.

NON-FACETTED BONE POINT WITH NO CENTRAL CAVITY:

Non-facetted bone points lacking central cavities are more common during the Locarno Beach phase.

NON-FACETTED POINT WITH CENTRAL CAVITY:

Non-facetted points with central cavities are found at all three sites.

NON-FACETTED BONE POINT FRAGMENT:

Grouping all of the different bone point categories together demonstrates the variety of these objects present in the three Charles components. What Table 2.3 does not show is how many of these artifact types are also present during the Locarno Beach phase, but in greater numbers. During the Locarno Beach phase, facetted bone points appear for the first time. Non-facetted bone points demonstrate continuity between the Charles and Locarno Beach phases.

UNIDENTIFIED BONE WEDGE, CHISEL, POINT FRAGMENT:

There are a great number of objects suggestive of bone chisels, wedges and points, but they are too fragmentary for further analysis.

It is important to reiterate the continuity demonstrated between the bone chisel, wedge and point artifact types from the Charles and Locarno Beach phases. There is a difference in proportions through time, but many of the artifact types overlap. St. Mungo has the largest proportion of artifacts

that fall into these categories (7.1%) while Glenrose and Crescent Beach have 5% and 4.8% respectively. There are no obvious inconsistencies amongst the overall groups. The large proportion of artifacts belonging to these categories attests to the importance of these artifact types. More information and experimentation focusing on plausible functions is needed.

BARBED BONE POINTS AND HARPOONS

UNILATERALLY BARBED FIXED POINT, FRAGMENT UNILATERALLY BARBED HARPOON/POINT and BILATERALLY BARBED FIXED POINT:

Barbed bone points are not common (five are present for the three sites), yet in the past archaeologists have often used them as stylistic markers for cultural phases. To me, they are not common enough to be used in such a manner because sample size, analyst error and differential rates of preservation skew their presence in the archaeological record.

Barbed bone points are a specialized artifact type and their absence may be indicative of a lack in fishing specialization, or the use of organic implements for fishing which have not been preserved.

BONE BARB:

These implements may or may not be part of the fishing tool kit. They are distinctive.

FISH HOOK SHANK:

This single artifact from St. Mungo is unique and not discussed in the literature.

DECORATED BONE

DECORATED BONE OBJECT:

Decorated bone is not commonly found in Charles components and those pieces that are found are fragmentary.

GRUB:

Grub effigies, like the decorated ground stone tablets of metamorphosed slate, are found further up the Fraser River towards the Fraser Canyon. Both of these artifact types indicate ties amongst the people who lived on the Fraser. Unfortunately, neither artifact type is found at Crescent Beach.

Bone Implements: Conclusions

St. Mungo has the largest proportion of bone artifacts (43.0%) with Crescent Beach having the second highest proportion of 34.8% and Glenrose trailing with 30.8%. These numbers reveal that bone implements were more common and presumably more important than chipped stone at St. Mungo.

Once again we see dissimilarity between the proportions at Glenrose and St. Mungo. Glenrose has a lower proportion of bone tools (30.8%) relative to St. Mungo. This suggests that tool manufacture at St. Mungo focused on manufacturing implements which took more time and care to make. At Glenrose, with more unshaped chipped stone implements and a much lower proportion of shaped bone implements, tool manufacture was more expedient in nature. A non-cultural explanation for the differences in bone tool proportions between Glenrose and St. Mungo could be due to preservation factors at St. Mungo being more conducive towards bone than preservation factors at Glenrose. Personal communication with Matson indicates that many of the Charles component artifacts at Glenrose came from units 2 and 8 which

did not have extensive shell deposits. Crescent Beach has a bone tool assemblage comprising 34.8% of its total artifact assemblage making it more similar to Glenrose.

Of all the bone artifact types, three may indicate possible cultural differences between the sites. The first is the absence of flat, rectangular perforated bone pendants at Crescent Beach. The main form of personal adornment at Crescent Beach was ground stone disc beads, and there is little other evidence of personal adornment at the site.

The second difference of possible significance between the three sites is the presence of splinter awls made from split mammal rib. They are present only at Crescent Beach, and Percy has suggested they be considered a diagnostic artifact type for the Mayne phase. The presence of this artifact type may also be due to a preference for splinter awls at Crescent Beach. One reason for this difference in manufacturing preference at Crescent Beach could be due to the presence of a different cultural tradition, or perhaps due to the availability of mammal rib.

The final possible important difference between the three sites is the absence of grub effigies at Crescent Beach. They are most common at St. Mungo, which has the largest sample size of bone artifacts, and there are three from intact deposits. At Glenrose only one was found in intact deposits. The absence of grub effigies at Crescent Beach could be due to sampling error.

Compared to the ground stone category, there is much less disparity indicated in the bone artifacts. All evidence points to the importance of bone artifacts in the artifact assemblage and the diversity of bone artifact types is great. Yet, there is no evidence of the overwhelming non-utilitarian bone

objects found in later time periods on the Northwest Coast. There is also a lack of decorated bone objects. The presence of non-utilitarian objects such as bird bone tubes and whistles so early in the archaeological record may reflect the importance of particular ethnographic ceremonies in which we know these objects were used, but it is doubtful the Charles culture ceremonies were the same as those at contact. The Central Coast Salish people at contact differed from prehistoric people in terms of subsistence, social organization and technology (all of these types of information have been used to trace cultural evolution on the Central Northwest Coast). Therefore, to assume that ideology has not also changed is naive. Many archaeologists use the information gathered at the time of contact as a snapshot of the culture in question. Then, taking this synchronic snapshot, go back into prehistory, and through analogy assume that what was true at contact was also true several thousand years into the past. This is a fallacy. If we assume cultural continuity for a long period of time, how can we then take this information concerning past people and use it to study the evolution of prehistoric Northwest Coast societies (which is supposedly one of the main goals of Northwest Coast archaeologists)?

Antler Implements

Antler tools, like bone tools, are organic and disappear rapidly from the archaeological record. In general, antler tools are not as common as bone tools at most Northwest Coast sites. Antler tools are usually not made from split or sectioned antler because the most common or numerous antler implements excavated by archaeologists are tools exploiting the natural shape of the antler and requiring little alteration in order to perform the desired

activity. This type of tool is also known as a an expedient tool. The most common split or sectioned antler tools are barbed points or harpoons and they are manufactured in a manner similar to their bone counterparts.

Shaped Antler Tools

Like all other shaped tools, the original shape and texture of the antler has been altered significantly. In comparison to inorganic stone, antler is more pliable and can be shaped through many different processes including cutting, chopping, grinding, engraving and drilling (Stewart 1973:110).

MINIMALLY WORKED ANTLER

WORKED ANTLER MEDIAL FRAGMENT and WORKED ANTLER END FRAGMENT:

Comparing worked bone and antler fragments reveals some important differences. Antler tools are never as common as bone partially due to the short time in which antler can be obtained whereas bone is available throughout the year. Once again, there are more small fragments of worked antler at St. Mungo compared to the other sites (see Appendix B). I think the same arguments for worked bone apply and these differences between St. Mungo and the other two sites is a result of different collection strategies while in the field. Another explanation for the higher proportion of antler at St. Mungo versus Glenrose and Crescent Beach could be due to different periods of site occupation or a difference in procurement activities at St. Mungo compared to Glenrose and Crescent Beach.

PUNCH:

While punches are present at all three sites, they are most common at Glenrose (.9% versus .6% for St. Mungo and .2% for Crescent Beach).

SMALL POINTED ANTLER OBJECTS:

ANTLER UNIPOINT and ANTLER BIPOINT:

Antler unipoints and bipoints are present only at Crescent Beach but bone unipoints and bipoints were present at all three sites. These implements are much less common than bone unipoints and bipoints.

ANTLER WEDGE:

I did not expect to see such apparent differences between Glenrose, St. Mungo and Crescent Beach's antler wedges. Only one antler wedge was recovered in the Charles component at Crescent Beach, so the difference is not due to missing artifacts. Perhaps the large number of bipolar implements implies that some of those objects functioned as wedges useable for woodworking. The only other artifact type capable of taking the place of antler wedges are wood wedges but they were not preserved and therefore, it is not definite that wooden wedges were used for woodworking at Crescent Beach as opposed to antler wedges. The absence of antler wedges at Crescent Beach may demonstrate a different type of woodworking technology or the absence of woodworking activities at Crescent Beach.

BARBED ANTLER POINTS

UNILATERALLY BARBED FIXED POINT, FRAGMENT OF UNILATERALLY BARBED FIXED POINT/HARPOON and UNILATERALLY BARBED FIXED POINT:

There is a paucity of antler barbed fixed points/harpoons (there is a total of seven for the three sites). One unilaterally barbed fixed point/harpoon fragment is missing from Crescent Beach.

When bone fixed points/harpoons are added to the totals it is clear that barbed points are rare. There are no complete harpoons from any of the sites. The only noticeable absence is of bilateral points at Crescent Beach, but there is one example from Glenrose and one from St. Mungo so its absence could be due to sampling error.

ANTLER HAFT:

This artifact type is in a somewhat tenuous position as I am not entirely convinced that it is a haft.

DECORATED ANTLER

ANTHROPOMORPHIC OBJECT:

It is appropriate that Glenrose's little man would stand alone in its category because it is a unique object that has no equal during the Charles culture on the Mainland. If it functioned as a haft for a rodent incisor, it may also reflect the importance of woodworking at Glenrose. This is also suggested by the high proportion of antler wedges at Glenrose (4.2% versus 3.8% at St. Mungo and .2% at Crescent Beach). This hypothesis needs to be backed by more positive evidence.

COMB:

Like blanket pins, combs are often associated with the later Gulf of Georgia phase, but the example from St. Mungo indicates an earlier presence than previously thought.

Antler Artifacts: Conclusions

If the proportion of antler implements is added to bone implements, St. Mungo has many more organic artifacts than the other two sites. (St. Mungo has 51.4% versus 37.2% for Glenrose and 36.4% for Crescent Beach). One major difference amongst the three sites is the almost complete absence of antler implements at Crescent Beach. The scarcity of antler wedges at Crescent Beach cannot be easily explained. Their absence suggests either a lack of woodworking activities or a different method of procuring wood which did not require the use of antler wedges. Perhaps the large number of bipolar implements have something to do with the absence of antler wedges (since archaeologists have often said that one function of bipolar implements was as a stone wedge). There would need to be some experimentation with bipolar implements in order to determine the verity of this hypothesis. A third explanation for the difference in proportion of antler wedges could be that there was little on-site woodworking activities at Crescent Beach and perhaps this implies that site function at Crescent Beach was somewhat different than the site functions of Glenrose and St. Mungo.

Shell Artifacts

Shell artifacts are never as numerous as stone, bone or antler implements. This seems almost paradoxical, because shell constitutes a large

percentage of the middens excavated on the Northwest Coast. A partial explanation for the sparseness of shell artifacts is that, as a raw material, only certain types of shell were desired and those with access to these specific types benefitted.

Shaped Shell Artifacts

The following is based on Stewart (1973:158). To work shell one used the same technique as for making ground slate objects, because both possessed a brittleness. Grinding with a whetstone produced the bevelled edge for a chisel or adze blade which could be resharpened when it became dull. Shell was cut by incising along a line and snapping off the desired piece.

SHELL PENDANT:

This shell pendant is an unusual and unique object.

SHELL BEAD:

There are many shell beads from Glenrose (135) but they were in varying states of poor condition making them unavailable for metric analysis (most were associated with burial 5). Nevertheless I included them into Table 2.3 under the final tabulation of Glenrose artifacts with beads. In this light, what is most striking is the absence of shell beads at St. Mungo. Shell beads are not common later in time on the Northwest Coast. Comparing the measurements of shell beads at Crescent Beach to ground stone disc beads suggests a much more restricted size range. For further comment on the shell beads from Crescent Beach see Thom (1991a and b).

SHELL ADZE BLADE:

Shell adze blades are not common. Later in time adze blades become slightly more common, but they are never abundant on the Northwest Coast because they are quickly replaced with more durable ground stone adze blades.

MISCELLANEOUS GROUND SHELL FRAGMENTS:

Neither shell tools or shell tool fragments are common in early Northwest Coast prehistory.

Shell Artifacts: Conclusions

The proportion of shell artifacts from each site is minimal when shell beads are not included. As other archaeologists have often argued, one reason for this lack of shell artifacts could be due to many shell artifacts going unrecognized in the field (when in a shell midden dealing with hundreds of pieces of shell in one bucket, it is not surprising that fragments of shell artifacts go unnoticed.

Artifact Analysis: Conclusions

Such an intensive descriptive analysis of each artifact type from the three artifact assemblages is necessary because it allowed for a closer examination of small and manageable groups of data. Once a familiarity with the data was reached, I attempted to collate the smaller data sets into larger groupings of artifact types from which general conclusions could be drawn. The degree of variation apparent between Glenrose, St. Mungo versus Crescent

Beach, is not unexpected, but the contrasts between Glenrose and St. Mungo were not anticipated.

Glenrose and St. Mungo have long been closely associated with each other, but by examining the artifacts side by side it becomes apparent that these two sites have their own separate identities. For example, there are differences in the percentage of bipolar implements present along with differences in the proportions of unshaped chipped stone flake tools at the two sites. More importantly, of the two key artifact types used to define the St. Mungo phase, each site dominates with the other site retaining one example of the artifact type. Glenrose has a larger number of decorated ground stone tablets (four versus one for St. Mungo), while St. Mungo has a larger number of grub effigies (three versus one). Some of these differences are not easily accounted for, yet St. Mungo and Glenrose are rarely considered to be anything but similar to one another. Two sites often thought to be virtually identical have manifested variation in the artifact assemblages that is not easily explained.

Some variation in the Glenrose and St. Mungo artifact assemblages is due to sample size, collection/excavation strategy, difference in analysis procedures, missing artifacts, differential artifact preservation, or human error. Along with these biases introduced by archaeologists there are so many other variations and processes (both natural and cultural) which could be responsible for observed differences. If unexplained variation is present at two sites as closely related as Glenrose and St. Mungo, one can expect unexplained variation when comparing Crescent Beach's artifact assemblage to the others.

As one examines the differences between Glenrose, and St. Mungo versus Crescent Beach it should be kept in mind just how indicative of cultural groups are the artifact types commonly used to define the St. Mungo phase. Is it safe to define a cultural phase on the presence and absence of incised tablets of metamorphosed slate, perforated bone pendants, split rib awls, grub effigies and beads? The absence of artifact types in itself is a perilous way to define cultural phases because often sample size or site function provide an adequate explanation of why a certain artifact type is absent at a site. It is likely that the smaller sample of artifacts present at Crescent Beach is partially responsible for the absence of some artifact types.

Unique Artifact Types

By analyzing the number and variety of artifact types present at each site, one can make further comparisons between the three artifact assemblages. To begin, one may ask how many artifact types do the three sites have in common, and how many unique artifact types are found at only Glenrose and St. Mungo or at Crescent Beach? Unique artifact types have been mentioned throughout Chapter Two, and are presented in Table 2.7. St. Mungo has the most diverse artifact assemblage with 71 different artifact types present while Glenrose has 67 and Crescent Beach has the least number of artifact types present (57). This implies that artifact diversity is lower at Crescent Beach than it is at either Glenrose or St. Mungo based on a simple tally of presence and absence of artifact types.

Table 2.7 Unique Artifact Types at Glenrose, St. Mungo and Crescent Beach

Artifact Type	Crescent Beach Number	%
Hammerstone Anvilstone	1	.2
Quartz Microlith	1	.2
Macroblade-like Flake	1	.2
Chipped <-Angled Tabular Object	1	.2
Bone Hook Object	1	.2
Split Rib Awl	6	1.1
Bone Drill	1	.2
Antler Unipoint	1	.2
Antler Bipoint	1	.2
Shell Pendant	1	.2
Total	15	2.9

	Glenrose		St. Mungo	
Artifact Type	Number	%	Number	%
Steep-Angled Formed Uniface	10	1.3	2	.3
Biface Distal Fragment	4	.5	1	.1
Ground Stone Biface Proximal Frag.	1	.1	1	.1
Decorated Ground Stone	6	.8	4	.6
Peg	1	.1	1	.1
Bone Wedge	1	.1	1	.1
Non-Facetted Point Lanceolate-Shaped	5	.7	2	.3
Decorated Bone Object	1	.1	3	.4
Grub	1	.1	3	.4
Unilat. Barbed Fixed Point Antler	1	.1	2	.3
Misc. Ground Shell Fragments	2	.3	3	.4
Total	33	4.2	23	3.1

Crescent Beach has 10 unique artifact types. The number of artifacts found in these artifact types is 15, comprising 2.9% of Crescent Beach's total artifact assemblage. This is not a large number of artifacts, and means that 97.1% of the artifacts comprising 47 artifact types exist at either one or both of the other two sites. For comparative purpose, there are 14 unique artifact types present at Glenrose (comprising 2.6% of the total artifact assemblage) and 15 (consisting of 2.4% of the total artifact assemblage) present at St. Mungo. The similarity in proportions of distinctive artifact types found at each site is intriguing, but not necessarily statistically significant.

The single Crescent Beach quartz microlith in Table 2.7 does not imply that quartz microliths are diagnostic of the Charles culture. Due to the high number of bipolar implements present at Crescent Beach one might expect to see some variety in the lithic materials bashed open, such as the single example of a quartz pebble. Quartz microliths should stay as a Locarno Beach phase diagnostic until more are discovered in Charles components.

The only noticeable number of artifacts found in any of the unique artifact types in Table 2.7 are the six split rib awls from Crescent Beach, and they have been suggested as a stylistic diagnostic marker for the Mayne phase (Percy 1974). At this point it is inappropriate to state that the presence of this one unique artifact type is definitive evidence for the Mayne phase at Crescent Beach. In fact, just the opposite can be argued. There is little stylistic variation amongst these 10 unique artifact types, and that present is not suggestive enough to indicate that a particular cultural group with its own separate ideological, sociological and technological organization existed at Crescent Beach and did not exist at Glenrose and St. Mungo. One could argue that cultural variation may be present at Crescent Beach but it exists amongst the differences in proportions found in the artifact types present at all three sites. From the analysis of individual artifact types this was not the case. Crescent Beach and Glenrose demonstrate affinity for each other especially in the lithic tool assemblage.

Eleven artifact types are present at both Glenrose and St. Mungo. Present in these categories are 4.2% of Glenrose's artifacts and 3.1% of St. Mungo's artifacts. This is not a large proportion of artifacts and the degree of difference is less than indicated by Table 2.7. For example, there are no steep-angled formed unifaces at Crescent Beach, but there is a large number

of steep-angled retouched flakes from which some of the artifacts, if analyzed by another archaeologist, might be placed into the steep-angled formed uniface category. The absence of biface distal fragments at Crescent Beach does not demonstrate a cultural difference, it demonstrates a difference in breakage patterns. The decorated ground stone tablets of metamorphosed slate are one of two of the most stylistically distinct artifact types present on the list. Their absence at Crescent Beach could be due to cultural differences, as could the absence of grub effigies. Neither artifact type is common at either Glenrose or St. Mungo. While there are no unilaterally barbed fixed points made of antler found at Crescent Beach there is one fragment of a unilaterally barbed fixed point/harpoon made from antler. The absence of non-facetted lanceolate-shaped bone points may be important, but there is another style of non-facetted bone point present at both Crescent Beach and the other two sites. The data indicates differences in the three artifact assemblages. However, when the low proportions represented by these differences are considered, these differences are minimal.

Shared Artifact Types

Of the 98 artifact types created for this analysis, 41 can be found at all three sites and they are compiled in Table 2.8. Table 2.8 confirms the results from Table 2.7. There is little dissimilarity between the three artifact assemblages in terms of the artifact types present and absent. Most of the artifacts from these three sites can be found in the same 41 artifact types. It was somewhat unexpected to see such high proportions of artifacts represented by the 41 artifact types found at all three sites. However, because this was the first time I had tried such an approach, there was no

Table 2.8 Artifact Types Present at all Three Sites

Artifact Type	Glenrose		St. Mungo		Crescent Beach	
	#	%	#	%	#	%
Core	54	7.1	49	6.8	55	9.6
Bipolar Implement	4	.5	26	3.6	49	8.6
Hammerstone	13	1.7	14	2.0	4	.7
Anvilstone	1	.1	1	.1	4	.7
Pebble Tool Uniface	16	2.1	16	2.2	16	2.8
Pebble Tool Biface	7	.9	3	.4	3	.5
Cortex Spall	11	1.5	3	.4	14	2.4
Utilized Flake	82	10.8	44	6.1	118	20.6
Unifac. >-Angled Retouch. Flake	45	5.9	17	2.4	28	4.9
Unifac. <-Angled Retouched Flake	86	11.3	57	7.9	19	3.3
Bifacially Retouched Flake	12	1.6	14	2.0	2	.4
Narrow-Angled Formed Uniface	30	3.9	18	2.5	3	.5
Leaf-Shaped Biface	19	2.5	7	1.0	7	1.2
Contract. Stem Biface No Shoulders	1	.1	5	.7	2	.4
Contr. Stem Biface With Shoulders	2	.3	8	1.1	4	.7
Biface Proximal Fragment	7	.9	3	.4	3	.5
Biface Medial Fragment	5	.7	7	1.0	3	.5
Unidentifiable Biface Fragment	13	1.7	16	2.2	8	1.4
Abrasive Stone	16	2.1	10	1.4	13	2.3
Formed Abrasive Stone	2	.3	2	.3	5	.9
Ground Stone Disc Bead	5	.7	4	.6	504	42.3
Decorated Ground Stone	6	.8	4	.6	1	.2
Miscellaneous Ground Stone	8	1.1	5	.7	1	.2
Worked Bone Medial Fragment	72	9.5	118	16.4	80	14.0
Worked Bone End Fragment	30	3.9	41	5.7	35	6.1
Rodent Incisor	1	.1	3	.4	3	.5
Perforated Bone Pendant	13	1.7	13	1.8	1	.2
Tooth Pendant	8	1.1	8	1.1	2	.4
Splinter Bone Awl	27	3.6	36	5.0	15	2.6
Formed Bone Awl	24	3.2	13	1.8	12	2.1
Ulna Awl	3	.4	1	.1	2	.4
Unipoint	8	1.1	3	.4	4	.7
Bipoint	1	.1	2	.3	1	.2
Bone Chisel with Unilat. Taper End	24	3.2	21	2.9	10	1.8
Non-Fac. Point With Central Cavity	1	.1	5	.7	4	.7
Unid. Wedge, Chisel, Point, Fragment	7	.9	19	2.7	12	2.1
Frag. Unilaterally Barbed Harp/Point	1	.1	1	.1	1	.2
Worked Antler Medial Fragment	5	.7	11	1.5	1	.2
Worked Antler End Fragment	2	.3	12	1.7	2	.4
Punch	7	.9	4	.6	1	.2
Antler Wedge	32	4.2	27	3.8	1	.2
Total	711	93.7	671	93.4	549	96.3

standard for comparison. Of Crescent Beach's artifacts, 96.3% are found in artifact types also found at Glenrose and St. Mungo. Glenrose has 93.7% of its artifacts present in these 41 artifact types while St. Mungo has 93.4% present. Of all the 98 artifact types defined for this analysis, less than half contain almost all of the artifacts. This leaves little room for differences in terms of stylistic variation and that which is present could be due to many factors besides cultural variation.

Unique and Shared Artifact Types: Conclusions

One has to ask at some point how similar two distinctive cultural groups are if the archaeological record shows a high degree of similarity between the two hypothesized cultural groups in terms of their artifact assemblage and other non-artifactual data. One must also ask how wise it is to define a cultural tradition using artifact types comprising a minimal portion of the archaeological record. Archaeologists must continue to consider the feasibility of defining a unique culture type using a small number of unique artifact types which may or may not be culturally important and therefore culturally diagnostic. It is also time for archaeologists to step back from the artifacts and integrate the artifact data with other types of information, such as environmental, faunal and debitage, in order to produce a larger and more definitive pattern incorporating and tallying all the data rather than just one small section. Furthermore, archaeologists must be more aware of their own personal bias and how it influences what they see in the archaeological record. There can be several logical explanations why a single artifact is present at one site and not another. Probably the most important reasons have nothing to do with the presence/absence of cultural groups but have

more to do with sample size, excavation strategy and site function, all greatly influenced by human bias and expectations.

Raw Material Comparison

A comparison of specific raw material types may also indicate possible cultural differences between the three sites. For example, vein quartz along with obsidian are two important raw materials used to differentiate the St. Mungo and Mayne phases because both raw materials are more common in the Mayne phase. Besides comparison of specific raw material types, a general comparison of raw materials (stone, bone, antler and shell) may also indicate differences in artifact assemblages. Table 2.9 exhibits the number and percentage of artifacts found in each of the different raw material types found at each site. Figure 2.7 presents a bar graph of the proportions of all raw material types present at each site.

Table 2.9 and Figure 2.7 demonstrate the similarity of raw material types existing at Glenrose, St. Mungo and Crescent Beach. These tabulations do not include the ground stone and shell beads because there is no unique raw material type present in these artifact types.

The mineral raw material type demonstrates little evidence of raw material preference. Quartz (both crystal and vein) is present at all three sites, but none have both types. It is clear that the mineral quartz was not used to great extent at any of the sites.

In the igneous category, basalt was the preferred lithic raw material at all three sites. Basalt dominates all other lithic raw materials, comprising 44.0% of Glenrose's artifacts, 42.9% of Crescent Beach's and 34.4% of St. Mungo's. While artifacts made from obsidian were used to define the Mayne

Table 2.9 Raw Material Types

Raw Material	Glenrose #	Glenrose %	St. Mungo #	St. Mungo %	Crescent Beach #	Crescent Beach %
Mineral						
Quartz Crystal	–	–	–	–	1	.2
Chalcedony	1	.1	3	.4	–	–
Vein Quartz	2	.3	–	–	–	–
TOTAL MINERAL	3	.4	3	.4	1	.2
Igneous						
Unknown Igneous	8	1.1	40	5.6	23	4.0
Granite	6	.8	–	–	2	.4
Rhyolite	4	.5	1	.1	–	–
Andesite	10	1.3	–	–	–	–
Basalt	335	44.0	247	34.4	246	42.9
Obsidian	6	.8	1	.1	1	.2
TOTAL IGNEOUS	369	48.5	289	40.2	272	47.5
Sedimentary						
Unknown Sedimentary	–	–	2	.3	4	.7
Sandstone	15	2.0	9	1.3	16	2.8
Siltstone	7	.9	5	.7	–	–
Mudstone	–	–	–	–	1	.2
Breccia	–	–	2	.3	–	–
Chert	4	.5	2	.3	15	2.6
TOTAL SEDIMENTARY	26	3.4	20	2.9	36	6.3
Metamorphic						
Unknown Metamorphic	1	.1	1	.1	3	.5
Greenstone	–	–	–	–	5	.9
Quartzite	51	6.7	15	2.1	46	8.0
Slate	13	1.7	12	1.7	2	.4
Schist	9	1.2	1	.1	–	–
Gneiss	2	.3	–	–	1	.2
TOTAL METAMORPHIC	76	10.0	29	4.0	57	10.0
TOTAL LITHIC	474	62.3	341	47.5	366	64.0
Bone						
Unknown Bone	116	15.2	2	.3	3	.5
Mammal	76	10.0	224	31.2	160	27.9
Bird	13	1.7	56	7.8	18	3.1
Burned Bone	–	–	1	.1	10	1.8
Burned Mammal	21	2.8	14	2.0	1	.2
Turtle	–	–	1	.1	–	–
TOTAL BONE	226	29.7	298	41.5	192	33.5

Table 2.9 Continued

Raw Material	Glenrose #	Glenrose %	St. Mungo #	St. Mungo %	Crescent Beach #	Crescent Beach %
Tooth						
Unknown Tooth	8	1.1	11	1.5	2	.4
Rodent Incisor	1	.1	3	.4	3	.5
Mammal Tooth	-	-	1	.1	-	-
TOTAL TOOTH	9	1.2	15	2.0	5	.9
Antler						
Unknown Antler	49	6.4	59	8.2	8	1.4
TOTAL ANTLER	49	6.4	59	8.2	8	1.4
Shell						
Unknown Shell	3	.4	-	-	1	.2
California Mussel	-	-	5	.7	1	.2
TOTAL SHELL	3	.4	5	.7	2	.4
TOTAL INORGANIC	287	37.7	377	52.4	207	36.2
TOTAL	761	100.0	718	99.9	573	100.2

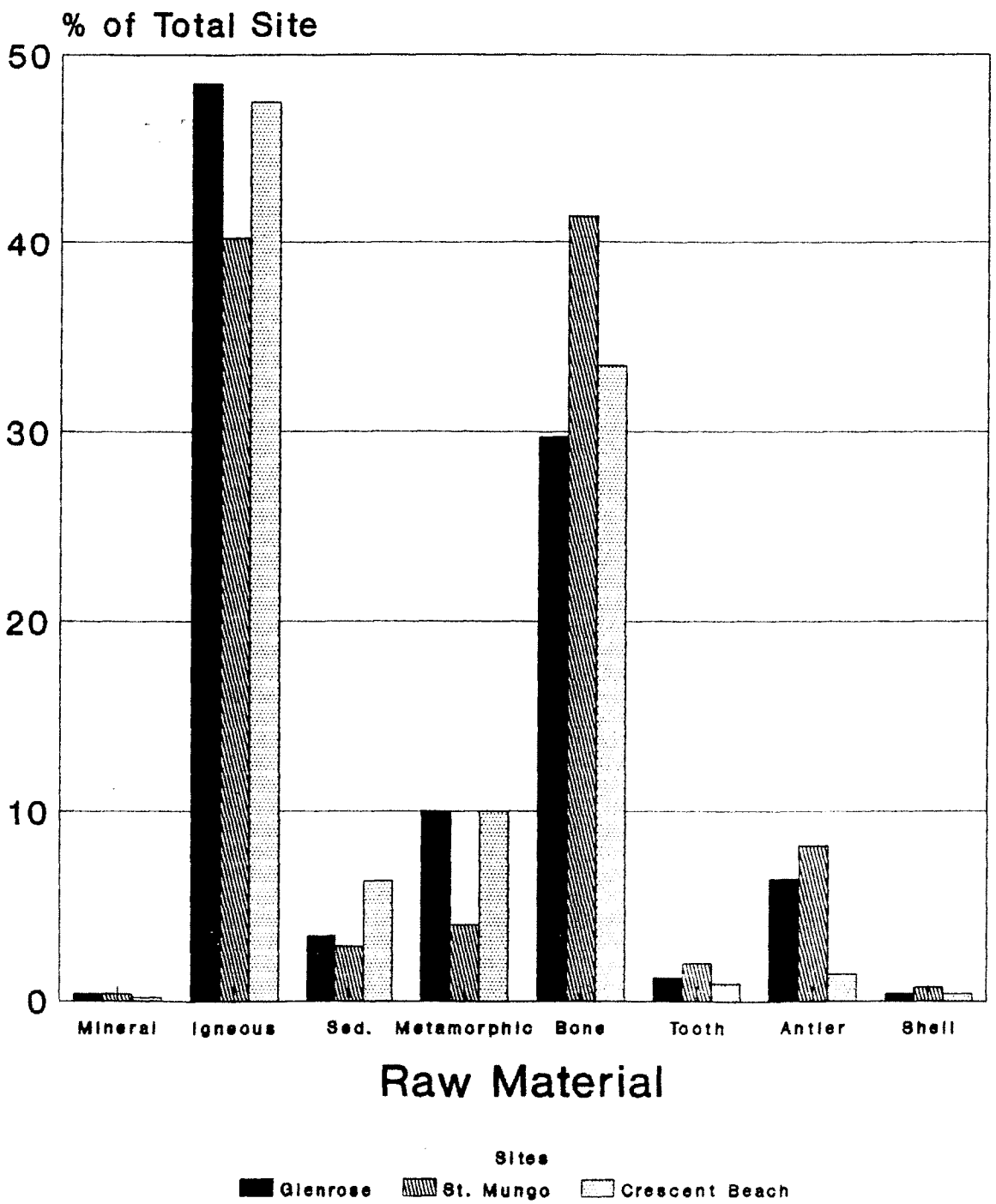


Figure 2.7 Bar Graph of Raw Material Proportions for Glenrose, St. Mungo and Crescent Beach

phase, the highest number of obsidian objects is at Glenrose and not at Crescent Beach. Like quartz, obsidian was not a common raw material.

In the sedimentary category, chert comprises the only major difference between the sites. Crescent Beach has a higher proportion of chert artifacts (2.6%) than either Glenrose (.5%) or St. Mungo (.3%). Chert is not a common raw material type on the coast, so the difference between 2.6% and .5% is not that great, but at least chert is present at all three sites. Crescent Beach chert artifacts are both unshaped and shaped with no obvious usage pattern.

Quartzite is the most prominent raw material in the metamorphic category. Both Crescent Beach and Glenrose contain fairly high proportions (8.0% and 6.7%) while St. Mungo has a smaller percentage (2.1%).

When all the artifacts comprised of lithic raw materials are added together, Crescent Beach and Glenrose are similar in proportions (64.0% and 62.3%) while St. Mungo has a smaller assemblage of lithic artifacts (47.5%). This difference has already been noted in the artifact type analysis so it will not be discussed here. This domination of lithic tools is reflected in the higher numbers of lithic raw material types present at Glenrose (16). Crescent Beach, which has the highest number of lithic implements, has 14 different lithic raw material types, as does St. Mungo. One would expect there to be less variety in lithic types present at St. Mungo because it has less implements derived from lithic raw materials, but this is not the case.

Four unique lithic raw material types are found at both Glenrose and St. Mungo and not at Crescent Beach (chalcedony, rhyolite, siltstone and schist). The only real difference is the absence of schist which is the raw material decorated ground stone tablets are derived from. The paucity of these objects is reflected in the St. Mungo and Crescent Beach numbers (one at St.

Mungo and zero at Crescent Beach). Glenrose has nine objects made from schist (of which four are fragments of decorated tablets). Once again there is a difference between proportions at Glenrose and St. Mungo. There are three unique raw materials present at Crescent Beach, but none are present in large numbers. These raw materials are: quartz crystal, mudstone and greenstone. One question I had was whether there were any obvious differences between the lithic types from Glenrose and Crescent Beach, because each had similar artifact numbers belonging to stone tool types. There is little indication from the lithic types that either site was practising different procurement strategies for flintknapping.

St. Mungo dominates the bone raw material categories as demonstrated earlier in discussion of bone artifact types. St. Mungo is the only site to have present all but one category of organic raw material types. In comparison to the 21 lithic raw material types there are only 12 different organic raw material types (reflecting the lack of variety of organic raw materials preserved in the archaeological record). There is little doubt that the preservation of all organic objects would greatly decrease the dominance of lithic objects. Unfortunately, preservation factors cannot be manipulated. In comparison to Glenrose and Crescent Beach, the people at St. Mungo relied more heavily on bird bone as a raw material type (this is also reflected in the faunal remains). The absence of antler at Crescent Beach is unexpected and must be partially related to an absence of woodworking activities on the site (assuming antler wedges were used for woodworking).

There is no indication from the raw material types present at Glenrose, St. Mungo and Crescent Beach that major cultural differences are present

between the three sites. At each site, basalt is the dominant lithic raw material type while bone dominates the organic raw material types.

General Conclusions

In this chapter I have presented the results of analyses conducted in order to address my first research question -- what degree of cultural variation is manifest in the three artifact assemblages from the Glenrose Cannery, St. Mungo Cannery and Crescent Beach sites. The evidence supports the hypothesis that the three artifact assemblages, when compared to each other, show a minimal degree of interassemblage variability, implying the three artifact assemblages are from a single cultural tradition.

While there is minimal variation between the artifact assemblages, the largest differences appeared between Glenrose and St. Mungo compared to Crescent Beach. Surprisingly, differences are also apparent between the artifact assemblages from Glenrose and St. Mungo. The biggest difference is in the overall proportion of chipped stone tools. Glenrose has a higher proportion than St. Mungo especially in the unshaped chipped stone implement category. St. Mungo has a higher proportion of organic implements with many unique organic artifact types. While St. Mungo has the lowest proportion of chipped stone artifacts at the same time, it also has the lowest ratio of unshaped versus shaped chipped stone artifacts. It was unexpected to see such diversity between the two artifact assemblages from Glenrose and St. Mungo. There were also more specific differences, with the most obvious being the near absence of beads at St. Mungo.

It is now proven that Crescent Beach is not a representative of the Mayne phase (at least not as originally defined). There is a general similarity with both Glenrose and St. Mungo apparent in both the non-artifactual and artifactual data. The artifact assemblage from Crescent Beach does not share Helen Point's higher proportion of ground stone implements (diagnostic ground stone implements such as ground stone knives, points or labrets are absent) nor does Crescent Beach share evidence for a prepared blade technology. There is minimal evidence of a quartz microlith technology (which is quite apparent at Helen Point) nor is there any utilization of obsidian (also present in noticeable amounts at Helen Point). All of which suggests that the Charles component at Crescent Beach does not belong to the Mayne phase.

On a general level, the three components are similar enough to each other to allow me to confirm my first hypothesis. It should also be noted, however, that there are some notable differences between Crescent Beach and the two St. Mungo components artifact assemblages including; the absence of incised ground stone objects, grub effigies, the near absence of bone pendants along with the presence of numerous ground stone beads and split rib awls. One must ask whether the differences between Glenrose, St. Mungo (as a unit) and Crescent Beach are functional or cultural. If the differences are shown to be functional, Crescent Beach can take it place beside Glenrose and St. Mungo as another representative of the St. Mungo phase. If the differences manifest at Crescent Beach are proven cultural in nature, and these artifacts are the type archaeologists use to define cultural differences, then one must ask whether Crescent Beach represents a new phase of the Charles culture. Linguistically we know that the Crescent Beach area may

have been occupied by non-Halkomelem people, but the evidence is not conclusive.

Regardless of future debate over the correct naming of the Charles component at Crescent Beach, the first research question has been answered in support of the first hypothesis.

CHAPTER THREE

RESEARCH QUESTION TWO: The Relationship Between the Charles Culture and the Locarno Beach Period at Crescent Beach

Research Question Number Two concerns the exact relationship between the Charles and Locarno Beach phases at Crescent Beach. From this research question I developed the following hypotheses that focus on the degree of culture change present through time in the two earliest components from Crescent Beach.

Hypothesis Number Two: The Charles and Locarno Beach artifact assemblages from Crescent Beach demonstrate continuity with one another, implying that the two artifact assemblages are part of a continuum of in situ cultural evolution in the Fraser Delta. Alternatively, the Charles and Locarno Beach artifact assemblages from Crescent Beach do not demonstrate continuity with one another implying that the two artifact assemblages are not part of a gradual in situ cultural evolution in the Fraser Delta.

In order to test this hypothesis, the first section of this chapter introduces the two earliest components (One and Two) from the Crescent Beach site (DgRr 1). This discussion must determine how similar the two components are in terms of site function, so that any obvious differences in the two artifact assemblages can be attributed to cultural rather than functional differences.

Once the similarity of site function has been determined for the two phases represented by the two artifact assemblages, the second section of this chapter focuses on the artifact assemblages. This section uses the artifact

and Locarno Beach phase artifact assemblages from Crescent Beach. This chapter summarizes the information derived from the artifact comparison. The complete artifact typology for this chapter is located in Appendix C. The final section of Chapter Three presents a brief comparison of the Locarno Beach component artifact assemblage from Crescent Beach with the earliest component from the Locarno Beach typesite in order to determine the representativeness of the Locarno Beach component at Crescent Beach.

Component One and Two From Crescent Beach

Site Location

The site boundaries of the Crescent Beach site (DgRr 1) have varied through time as sea level and the area have built up. The two earliest components are present in the area where we and Percy dug, but the earliest component (One) does not extend into the area west of our trenches (Trace 1981). See Figure 2.3 for a map of the excavation trenches vis-a-vis each other. Present depths of the two components vary throughout the site.

The stratigraphy of Component Two shows more diversity than Component One. Most of the stratigraphy for Component One was dominated by either mussel shell or a dark sandy matrix. In Component Two, it was easier to delineate distinct and different layers that were comprised of a variety of different shellfish and soil types (Matson et al. 1991:Figure 5, 6 and 8). This implies utilization of a greater portion of the overall ecological area during Component Two or perhaps less constant use.

Chronology

Table 3.1 Radio Carbon Dates Summarized From the Locarno Beach and Charles Components at Crescent Beach Uncorrected Dates (Before Present)

Component One (Charles Component)	3590±85 (WSU 4245) 3710±80 (WSU 4244) 3780±80 (SFU 794) 3910±90 (SFU 793) 4440±80 (SFU 795)
Component Two (Locarno Comp.)	3010±85 (WSU 4246) 3060±80 (SFU 727) 3210±110 (WSU 4247)
Trace's Locarno Beach Comp.	2570±90 (WSU 1948) 2980±80 (WSU 1702) 3030±80 (WSU 1703) 3260±80 (WSU 1701)

As indicated by Table 3.1 (based on Matson et al. 1991:Table 1 and 2) the terminus date for Component One lies between 3210±110 BP (WSU 4247) and 3590±85 BP (WSU 4245). The beginning of Component Two falls within these same two dates and terminates sometime after 3080±100 BP (WSU 4243) and sometime before 1810±70 BP (SFU 726) which does not give a very accurate time range for the second component. Percy had no dates for his second component so he cannot help demarcate the time span. Trace's dates (1981:17) for his Locarno Beach component range from 3260±80 BP (WSU 1701), to 2570±90 BP (WSU 1948) (See Table 3.1). From our excavations, Component Two lies between layers CO and CT/U in the South Trench. Component One is composed of layers CU to CY in the South Trench. In the North Trench Component Two lies between 190 - 210 cm, while Component One lies below 220 cm and Feature Nine (which will be discussed in the Feature section).

Faunal Remains

Mammalian faunal remains recovered in 1989 from Component Two were sparse with very few identifiable pieces. Of the identified pieces, 23 of 30 are dog. The only other mammal with more than one piece present is deer (two pieces are identified). Other species represented include: harbour seal (one), fox? (two), and dog/raccoon (one). This list is even sparser than that for Component One. Pacific I.D. (1990b) concludes that more dog is present in the later deposits and interestingly, dog remains from two layers in Component Two (CO and CP-2) were of dogs noticeably smaller than most of the archaeological remains they had seen. They hypothesized that this may be is the "wool dog" the Coast Salish bred for its wool. Bird remains are minimal with the following identified species represented: sanderling (two), goose (two), cooper's hawk (one), robin (one), and large duck (one). Unfortunately, there were no seasonal indicators located in the faunal remains from Component Two. While it is not appropriate to use such a small assemblages of identified mammal remains as an indicator of the complete prehistoric culture present at the site, the faunal variety present in the remains implies a great deal of diversity in terms of resource procurement.

The following description of the fish remains from Component Two are a summation of Crockford and Wigen (1990a, 1991a and 1991b). The fish remains from Component Two exhibit species which are also present in Component One. The difference is of intensity and a general decrease in diversity of fish resources over time. As previously mentioned in the discussion of fish remains for Component One, salmon is the dominant fish remains for all of Component Two with proportions of salmon remains ranging from 50% to 75% of all identifiable fish. Throughout this component flatfish stays at a constant

proportion of about 20% with a peak of 33.3% in layer CT (which also has a fairly high number of herring parts present) and 29% in layer CP-1. Throughout Component Two, flatfish are procured and or consumed on site as whole fish while salmon are procured and or consumed on site with their head parts missing. Seasonality for Component Two, from the apparently stored salmon, flatfish and herring remains suggest a site occupation of early spring. Matson (1992) suggests that the faunal remains from Feature Nine in the North Trench suggest a late fall to late spring occupation, a slightly different perspective than that presented for the Locarno component in the South Trench. The salmon remains from Feature Nine contain head parts which he argues indicates fish procurement and consumption on-site (something that would happen during the fall salmon fishing season) as opposed to the case in the South Trench where head parts are almost completely absent.

The shellfish remains from Component Two at Crescent Beach differ from Component One in two ways (Rankin 1991a, 1991b): 1. There is more diversity in the shellfish remains present during Component Two. Mytilus is still the most common shellfish resource but there is more diversity including clams such as Clinocardium, Saxidomus and Protothacus. Gradually the clam species become more common and Mytilus decreases through time; 2. The shellfish samples from Component Two exhibit larger absolute weights for the shellfish species present. While the shellfish weights, per sample, for Component One were in the tens of grams (and none were over 30 grams), the shellfish weights from shellfish samples in Component Two are in the hundreds of grams and in one layer (CT) the absolute weight of the shellfish species present was 1416.5 grams (Rankin 1991a, 1991b). There is a noticeable increase in the proportion of shellfish present in the shellfish samples from

Component Two. The diversity of shellfish remains in Component Two have allowed us to separate natural layers and the difference between layers is distinctive. The diversity of the shellfish found in the different layers composing Component Two does not increase immediately, instead, Mytilus is gradually de-emphasized while other shellfish species are gradually increased. In terms of seasonality, there is no one perfect time to exploit the diverse number of shellfish species present in Component Two.

Features

There is little difference in features between the two early components at Crescent Beach with one possible exception in the North trench. A feature (Feature Nine) was uncovered in Component Two. Feature Nine has been dated to the Locarno Beach phase and shows affinity to the living surfaces found at both St. Mungo and Glenrose. This living floor contained a more varied mixture of shellfish (of the two shellfish samples analyzed, Clinocardium had the largest absolute value of 42.6 grams while Mytilus had a value of 33.8 grams, Protothacus was also present in noticeable proportions). The other layers (all of which belong to Component One) in the North Trench had little evidence of Protothacus or Clinocardium (Matson et al. 1991:110). There were three possible small postmolds associated with this feature and Matson has hypothesized that it may be the interior of a small dwelling. It should also be noted that the only herring remains in the North Trench were recovered from this Locarno-aged feature.

From our excavations in Component Two, we did not uncover any clay-lined features like those from the North trench, but Percy had one in Component Two (Percy 1974:29).

Hearth features were the most common feature type from either component. Chapter Two describes the typical hearth feature uncovered at Crescent Beach.

We did not recover human remains from our Component Two but Percy recovered five burials in his controlled excavation trenches. While the information gathered from these burials may or may not help determine site function, there are differences between these skeletons and those from Component One. Of the five skeletons four bear evidence of labret wear and of these four, three are determined to be male and one is of an indeterminate sex. Burial 5 has evidence of both labret wear and a purposely deformed skull (Beattie 1980:197). This was not disputed by Cybulski (1991). Furthermore, this mature male had a large number of grave goods including several flake tools, a projectile point, two abraders, beads and three awls (Percy 1974:40).

For the first time, during Component Two, at Crescent Beach we see evidence of a group of people physically differentiating themselves. But, all of the skeletons with physical deformations (both labret wear and deformed skulls) are mature and in those cases where sex can be determined, male. There is no evidence that society at Crescent Beach has become ranked; it has changed from the Charles culture social organization where physical expression of differences was not yet expressed in ways which would be adopted and practised for many generations, but there is no evidence as of yet that one was born into one's rank. For further information about the physical anthropology of the early time periods on the Northwest Coast refer to Beattie (1980) or Cybulski (1990).

Component One and Two Non-Artifactual Data Conclusions

In conclusion, there is a great deal of variation between the two early components at Crescent Beach in nearly every type of data discussed. These variations are to be expected because these two components represent two dissimilar time periods and cultural phases. In trying to determine the difference in site function it is difficult to differentiate between dissimilarities resulting from cultural change and differences resulting from an actual change in the function of the site. At this time I am not sure of the similarity in site function for Component One and Two at Crescent Beach but I am inclined to argue that both are base camps.

In general, there is evidence that site activities in Component Two concentrated on different procurement strategies (e.g., salmon on site were consumed and or processed without headparts while salmon in Component One was consumed and or processed as a whole fish, but this is not true for all of the Locarno Beach component, as salmon headparts were found in the matrix of Feature Nine which is Locarno Beach in age). Furthermore, while there is a similarity in the type of faunal and fish remains found in Component One and Component Two, salmon becomes the dominant fish remain for all of Component Two while it is actually fairly equal in proportion to flatfish in Component One. Herring is present only in Component Two. There is a lack of seasonal indicators for Component Two beyond spring in the South Trench, (from the herring found in some of the layers, the salmon and flatfish remains) and fall to early spring for Feature Nine.

The variety of food resources and the seasons so far determined for site occupation suggest that during the Locarno Beach phase Crescent Beach was occupied on a regular basis suggestive of it being a base camp rather

than a limited activity site at least for the North trench and Feature Nine. It was not occupied for every season of every year as there is no evidence for a summer or early fall occupation, but a base camp does not have to be occupied all year round. Evidence suggests that during the Locarno Beach phase in the South trench it was a place where prehistoric people were living in early spring time subsisting on salmon previously caught as well as exploiting the spawning herring and flatfish. They were not present at the site to exploit one particular resource which is why it is inappropriate to define Component Two as representative of a limited activity site. They were consuming one particular resource more than others, but they were not at Crescent Beach just because of that resource (salmon). They were at Crescent Beach because it was a productive place to stay. They wintered there for part of the Locarno Beach phase according Feature Nine's faunal remains.

If true, this implies that the two early components are similar in that base camp activities took place, but they are different in that the season of occupation during Component Two limited the resources available. It may be that site occupation decreased during Component Two, and site function was of a less intensive base camp occupation with seasonal exploitation of key resources such as shellfish and salmon.

This concludes the discussion of non-artifactual data from Components One and Two at Crescent Beach. The next section presents a detailed comparison of the artifact assemblages from the two components.

Artifact Classification

Typology Organization

The artifact assemblages recovered from both Percy's and our excavations have been merged together for the purpose of this analysis. The joining together of two different artifact assemblages brings risks which must be acknowledged. I have proceeded with caution while amalgamating the data, knowing that it has been acquired from two separate excavations. The advantage to joining the two artifact assemblages was that it enabled me to work with a moderately large artifact collection less affected by sample size.

The artifact typology for Chapter Three is set up the same as that discussed in Chapter Two, with additional artifact types added when applicable. Appendix C contains the full artifact classification along with the tables of measurements for each artifact type. Now that it has been determined that Component One at Crescent Beach is from a similar cultural tradition as the Glenrose and St. Mungo Charles culture components, the next step is determining the cultural similarity of a Charles culture artifact assemblage to a Locarno Beach phase artifact assemblage.

Table 3.2 summarizes the artifact types present in Component One and Two at Crescent Beach, the proportion of each artifact assemblage represented by each individual artifact type, along with the number of artifacts present in each artifact type. The artifact classification is condensed to avoid repetition of the information provided in Chapter Two.

The description of individual artifact types encompasses a large section of this chapter. To be consistent, the proportions for the artifact types are calculated without the inclusion of either ground stone disc beads or shell beads (see previous discussion of why this was done in Chapter Two). In this

Table 3.2 Artifact Tabulation for Components One and Two at Crescent Beach

Artifact Type	Component One Number	%	Component Two Number	%
Core	55	9.6	29	10.6
Bipolar Implement	49	8.6	6	2.2
TOTAL NUMBER	104	18.2	35	12.8
Chipped Stone Implements				
Unshaped Chipped Stone Implements				
Hammerstone	4	.7	7	2.6
Anvilstone	4	.7	1	.4
Hammerstone Anvilstone	1	.2	1	.4
Pebble Tool Uniface	16	2.8	12	4.4
Pebble Tool Biface	3	.5	2	.7
TOTAL NUMBER C. S. IMPLEMENTS	28	4.9	23	8.5
Unshaped Chipped Stone Flake Tools				
Cortex Spall	14	2.4	8	2.9
Utilized Flake	118	20.6	65	23.6
Quartz Microlith	1	.2	11	4.0
Unifac. Steep-Angled Retouch. Flake	28	4.9	19	6.9
Unifac. <-Angled Retouched Flake	19	3.3	10	3.6
Bifacially Retouched Flake	2	.4	3	1.1
Macroblade-Like Flake	1	.2	-	-
TOTAL NUMBER C. S. F. TOOLS	183	32.0	116	42.1
Shaped Chipped Stone Tools				
Narrow-Angled Formed Uniface	3	.5	-	-
Leaf-Shaped Biface	7	1.2	1	.4
Contracting Stem Biface No Shoulders	2	.4	1	.4
Contract. Stem Biface With Shoulders	4	.7	4	1.5
Biface Proximal Fragment	3	.5	-	-
Biface Medial Fragment	3	.5	-	-
Biface Distal Fragment	-	-	3	1.1
Unidentifiable Biface Fragment	8	1.4	2	.7
Chipped <-Angled Biface Object	-	-	2	.7
Chipped <-Angled Tabular Biface Obj.	1	.2	-	-
TOTAL NUMBER SHAPED C. S. TOOLS	31	5.4	13	4.8
TOTAL NUMBER CHIPPED STONE TOOLS	346	60.5	187	68.2

Table 3.2 Continued

Artifact Type	Component One Number	%	Component Two Number	%
Ground Stone Implements				
Saw	-	-	1	.4
Abrasive Stone	13	2.3	17	6.2
Formed Abrasive Stone	5	.9	3	1.1
Ground Stone Disc Beads	(508)	(42.4)	(392)	(56.2)
Ground Stone Ring	-	-	1	.4
Adze	-	-	1	.4
Gulf Island complex	-	-	3	1.1
Labret	-	-	2	.7
Decorated Ground Stone	1	.2	-	-
Miscellaneous Ground Stone	1	.2	1	.4
TOTAL NUMBER G. S. I. (NO BEADS)	20	3.6	29	10.7
TOTAL NUMBER G. S. I. (WITH BEADS)	528	-	421	-
Pecked and Ground Stone Implements				
Mortar	-	-	2	.7
TOTAL NUMBER P. AND G. S. IMPLEMENTS	-	-	2	.7
Bone Implements				
Worked Bone Medial Fragment	80	14.0	16	5.8
Worked Bone End Fragment	35	6.1	7	2.6
Rodent Incisor	3	.5	-	-
Bone Hook Object	1	.2	-	-
Perforated Bone Pendant	1	.2	-	-
Tooth Pendant	2	.4	-	-
Bone Bead	4	.7	-	-
Splinter Bone Awl	15	2.6	4	1.5
Split Rib Awl	6	1.1	-	-
Formed Bone Awl	12	2.1	3	1.1
Metapodial Awl	-	-	1	.4
Bird Bone Awl	2	.4	1	.4
Ulna Awl	2	.4	-	-
Ulna Tool	-	-	1	.4
Bone Drill	1	.2	-	-
Unipoint	4	.7	2	.7
Bipoint	1	.2	1	.4
Pointed Bone Object Fragment	-	-	1	.4
Bone Chisel With Unilat. Taper End	10	1.8	5	1.8
Non-Fac. Point With Central Cavity	4	.7	1	.4
Non-Facetted Point Fragment	1	.2	-	-
Unid. Wedge, Chisel, Point Fragment	12	2.1	1	.4
Frag. Unilaterally Barbed Harp/Point	1	.2	-	-
Bone Labret	-	-	1	.4
TOTAL NUMBER B. IMPLEMENTS	197	34.8	45	16.7

Table 3.2 Continued

Artifact Type	Component One Number	%	Component Two Number	%
Antler Implements				
Worked Antler Medial Fragment	1	.2	2	.7
Worked Antler End Fragment	2	.4	2	.7
Punch	1	.2	-	-
Antler Unipoint	1	.2	1	.4
Antler Bipoint	1	.2	-	-
Antler Wedge	1	.2	4	1.5
Frag. Unilat. Barbed F. Pt./Harp.	1	.2	-	-
Zoomorphic Object	-	-	1	.4
TOTAL NUMBER A. IMPLEMENTS	8	1.6	10	3.7
Shell Artifacts				
Shell Pendant	1	.2	-	-
Shell Bead	(116)	(9.7)	(30)	(4.4)
Shell Labret	-	-	1	.4
Shell Adze Blade	1	.2	-	-
Misc. Ground Shell Fragment	-	-	1	.4
TOTAL S. ARTIFACTS (NO BEADS)	2	.4	2	.8
TOTAL S. ARTIFACTS (WITH BEADS)	118	-	32	-
TOTAL NO. ARTIFACTS (no beads)	573	100.3	275	100.2
TOTAL NO. ARTIFACTS (with beads)	1197	-	697	-

way, comparisons between the two components at Crescent Beach as well as the two St. Mungo components from Glenrose and St. Mungo will be possible. Furthermore, I did not include beads in the proportions because almost all of the beads from Crescent Beach came from our excavation, demonstrating the differences between ours and Percy's excavation strategies.

There is a difference between the Crescent Beach components that was not present for the comparison of the Glenrose, St. Mungo and Crescent Beach Charles components. Component Two is less than half the size of Component One. With such large differences in artifact numbers, the absence of artifact types in Component Two results from a smaller sample size. This difference in sample size skews the data from Component Two; it also makes each Component Two artifact more important in terms of proportions. Each individual artifact in Component One represents .2% of the total artifact assemblage, while in Component Two, each artifact represents .4% of the total artifact assemblage.

One could ask whether there is a cultural explanation for this lower density of artifacts in Component Two. Perhaps fewer artifacts are present because prehistoric people did not intensively occupy Crescent Beach during Component Two. The difference in artifact assemblage size could be explained as representative of a change in site occupation between the two components, as was previously discussed in the non-artifactual data.

Lithic Artifacts

Chipped Stone

CORE:

While fewer cores are found in Component Two, they actually represent a higher proportion of the total artifact assemblage relative to Component One

because of the smaller artifact assemblage size in Component Two. The high proportions of cores in both components implies that they were important artifacts. In Component Two the mean and median are similar and both the range and IQR are closer together for both weight and length (Appendix C).

Table 3.3 demonstrates the differences in raw materials exhibited in the cores from Component One and Two. The three main raw materials in Component One are: basalt (76.4%), chert (9.1%) and unknown igneous which ties with quartzite (5.5%). The top three raw materials in Component Two are: basalt (65.5%), quartz crystal (17.2%) and unknown igneous (6.9%). While basalt still dominates the raw material types, there is a reduction of 11% in its popularity, while chert, which was the second most popular raw material in Component One, is now represented by one core in Component Two. Quartz crystal cores reflect the increase use of quartz crystal implements in Component Two. Unknown igneous in Component Two is represented by two cores (6.9%) while quartzite is represented by one (3.45%). Considering the difference in sample size, note that both components have the same number of raw material types - six.

Table 3.3 Raw material Types of Cores in Component One and Two From Crescent Beach

Raw Material Types	Component One %	Component Two %
Quartz Crystal	0	17.2
Unknown Igneous	5.5	6.9
Basalt	76.4	65.5
Unknown Sedimentary	1.8	0
Chert	9.1	3.5
Greenstone	1.8	0
Quartzite	5.5	3.5
Steatite	0	3.5

It has been suggested that during the St. Mungo phase there was a reliance on water worn pebbles for tool manufacture, while during the Locarno

Beach phase there was a more focused effort to procure basalt as a raw material (Matson personal communication 1991). Based on the raw material data from Crescent Beach this is not entirely true, because basalt actually decreases in importance in Component Two compared to Component One.

In general, basalt is dominant throughout both components, but there is a change in emphasis on secondary raw materials with chert, quartzite and unknown igneous decreasing through time, while quartz crystal and steatite are two raw materials appearing only in Component Two. While there is a general trend towards continuity in the usage of basalt, there is some variation occurring in secondary raw materials.

BIPOLAR IMPLEMENT:

There are notable differences in the numbers and proportions of bipolar implements for the two components. Of the artifact assemblages so far analyzed, Component Two has the lowest number of bipolar implements. It is unexpected to find bipolar technology minimally implemented on-site during Component Two. This result is even more puzzling when one realizes that quartz microliths increase in numbers in Component Two as does quartz debitage, but the cores from which these objects were derived are missing. The assumed products (quartz microliths) and by-products (debitage) of a bipolar technology are present in Component Two but the objects from which the others were obtained are not. Perhaps we missed the flintknapping areas in Component Two.

The raw material proportions for bipolar implements must be examined with caution due to the low sample size at Component Two. Of the six bipolar implements in Component Two, one is made from quartz crystal, while the other

five are of basalt. The bipolar implements in Component One are composed of the following raw materials: 45 of 49 are basalt, two are chert, one is of unknown metamorphic and one is quartzite. Based on past assumptions concerning the manufacture of quartz microliths, one would expect to see greater evidence of bipolar implements made from quartz (either quartz crystal or vein quartz). This is not the case at Crescent Beach. Perhaps my own inexperience at classifying bipolar implements has influenced this unexpected pattern. If not, there is evidence that quartz microliths were made from cores which do not exhibit evidence of bipolar percussion.

Core and Bipolar Implements: Conclusions

Based on the core and bipolar implement data, one can surmise that more core and bipolar reduction occurred in Component One. The proportions for cores are very similar, but there is a large decrease in bipolar implements in Component Two, although the products and by-products of bipolar implements actually increase. An intensive debitage analysis comparing the proportions of objects thought to be created from a bipolar technology would be useful.

Unshaped Chipped Stone Implements

COBBLE CORE TOOLS

MODIFIED COBBLES

HAMMERSTONE:

Table 3.2 indicates an increase in the number and proportion of hammerstones in Component Two. The increase of hammerstones in Component

Two could be interpreted as an indirect result of core and bipolar reduction, but hammerstones can be used for other activities besides flintknapping.

There is no change in the types of raw materials used for hammerstones through time. Igneous and metamorphic raw material types are used in both components.

ANVILSTONE and HAMMER ANVILSTONE:

The near absence of anvilstones and hammer/anvilstones in Component Two is not unexpected due to the previously mentioned paucity of evidence for bipolar reduction. The low number of these objects in both components points to a similarity in flintknapping techniques which is not there. The differences in numbers and proportions of cores and bipolar implements demonstrate these differences. From the data analyzed so far, neither anvilstones or hammer/anvilstones are accurate indicators of on-site flintknapping activities. Curation has something to do with this misrepresentation. It may be the case at Crescent Beach that Anvilstones/Hammer anvilstones were site furniture present and anticipatory in character (Binford 1977). They may not have been used to a great extent, but were present in case of future need.

FLAKED COBBLE CORE TOOLS

PEBBLE TOOL UNIFACE and PEBBLE TOOL BIFACE:

Cobble tools are present in each component. Unifacial cobble tools are more common than bifacial cobble tools. The proportions are similar. This was not expected because I assumed cobble tools would decrease through time and be less numerous in Component Two. Besides the unexpected similarity in proportions, there are no obvious differences.

There is some difference in the raw material types present in the pebble tool uniface category. In Component One, unknown igneous (seven/43.8%), basalt (four/25.0%) and quartzite (four/25%) are the three major raw material types. In Component Two, quartzite (four/33.3%) and basalt (three/25%) are the two top raw materials while five other raw material types are also represented. Four raw material types are represented in Component One versus seven in Component Two. Pebble tool unifaces have doubled their proportion of the Component Two artifact assemblage along with an increase in the number of raw material types present. This artifact category is one of the exceptions to the rule that basalt is the dominant raw material. Quartzite surpasses basalt as the most important raw material type.

Unshaped Chipped Stone Implements: Conclusions

Objects included in the Unshaped Chipped Stone Implements are proportionately twice as numerous in Component Two (23 and 8.5%) as they are in Component One (28 and 4.9%). Component Two has the highest proportions of Unshaped Chipped Stone implements from the four artifact assemblages analyzed.

One often assumes that the 'cruder' and technologically simple objects become less common through time on the Northwest Coast. This is true in a general sense, but there probably are other sites like Crescent Beach where technologically simpler tools exist in high proportions during time periods where they had previously been assumed less important. Regardless of their technological simplicity, these implements were made and used for particular activities which continued through time. Obviously, not all objects were replaced by technologically more sophisticated tools.

In the past, Northwest Coast archaeologists have emphasized the stylized and technologically complex artifacts discovered in an artifact assemblage while de-emphasizing the less stylized objects such as Unshaped Chipped Stone Implements. In order to gain a proper perspective on early Northwest Coast prehistory, we must present all the artifacts in such a manner that no artifact category (regardless of its importance for determining specific cultural phases) is denied equal representation.

Unshaped Chipped Stone Flake Tools

COBBLE FLAKE TOOLS

CORTEX SPALL:

The proportions of cortex spalls are similar for both components. The raw materials for both components also exhibit similarity. Quartzite is the most important raw material (8/57.1% in Component One versus 4/50.0% in Component Two). Basalt is the second most common raw material type in both components as well (5/35.7% in Component One and 2/25.0% in Component Two).

UTILIZED FLAKE TOOLS

UTILIZED FLAKE:

The proportions of utilized flakes are nearly the same for the two components (20.6% in Component One and 23.6% in Component Two). They are more similar to each other than to the proportions of utilized flakes present at Glenrose (10.8%) or St. Mungo (6.1%).

Table 3.4 displays the raw material types found in the utilized flake category at Components One and Two at Crescent Beach. Both components have eight different raw material types. Obsidian, mudstone and unknown

metamorphic are found only in Component One and have one artifact present for each raw material type. In Component Two the unique raw material types are chalcedony, slate and schist (each represented by one artifact). In Component One basalt (85/72.0%) is the most common raw material type, while quartzite (19/16.1%) is second and unknown igneous (six/5.1%) is third. In Component Two basalt (45/69.2%) is the most common raw material type, while unknown igneous (seven/10.8%) and quartzite (six/9.2%) are second and third. In Component One the top three raw material types contain 93.2% of the artifacts while in Component Two the top three raw material types contain 89.2% of the artifacts. There is very little variation in this artifact category beyond the disappearance of three raw material types and the appearance of three new raw material types.

Table 3.4 **Raw Material Types for Utilized Flakes in Component One and Two From Crescent Beach**

Raw Material Types	Component One %	Component Two %
Chalcedony	0	1.5
Unknown Igneous	5.1	10.8
Basalt	72.0	69.2
Obsidian	.9	1.5
Mudstone	.9	0
Chert	2.5	1.5
Unknown Metamorphic	.9	0
Greenstone	1.7	1.5
Quartzite	16.1	9.2
Slate	0	3.1
Schist	0	3.1

RETOUCHED FLAKE TOOLS

QUARTZ MICROLITH:

Quartz microliths are a much more noticeable presence in Component Two. As previously mentioned, quartz microliths and bipolar implements are

often assumed to be positively correlated but they are not in this case. Quartz microliths have in the past been used as cultural marker for the Locarno Beach phase. Their presence in Component Two and near absence in Component One suggests a major difference between the two components.

UNIFACIALLY RETOUCHED FLAKES

UNIFACIALLY STEEP-ANGLED RETOUCHED FLAKE:

Table 3.2 demonstrates the similarity in proportions of steep-angled retouched flakes from the two components (4.9% Component One and 6.9% Component Two). There are proportionately more steep-angled retouched flakes present in Component Two. This implies that scraping activities (usually associated with large land mammals) were an important activity at the site through time, although Northwest Coast archaeologists often emphasize the increasing importance of sea resources. On a general level it is true that the resources of the sea increase in importance while land resources decrease, but on a site by site basis, a major trend is not always so obvious. There is another explanation of why steep-angled retouched flakes would be an important artifact for on-site activities. Steep-angled retouched flakes are a tool type that could be used to make other tools. For example, they could be used to create wooden tools.

The most common raw material type for steep-angled retouched flakes in both components is basalt (67.9% in Component One and 79% in Component Two). There are no unique raw material types present in either component. Basalt, unknown igneous (7.1% versus 10.5%), quartzite (17.9% versus 5.3%) and chert (7.1% versus 5.3%) are all present.

UNIFACIALLY NARROW-ANGLED RETOUCHED FLAKE:

The data (Appendix C) from this artifact category does not suggest any metric differences except for more diversity in Component One (which is perhaps due to larger sample size).

Crescent Beach has a smaller proportion of narrow-angled retouched flakes in Component One, but this is partially compensated for by the large proportion of utilized flakes. This trend continues into Component Two. Unfortunately, we cannot look at the Locarno Beach component at St. Mungo or Glenrose (because there is no Locarno Beach component) to see whether the trend at those sites continues to emphasize narrow-angled retouched flakes and de-emphasize utilized flakes.

Basalt is the dominant raw material for both components (79.0% in Component One and 90.0% in Component Two). In Component One there is slightly more variation with basalt, quartzite (15.8%) and gneiss (5.3%) present. In Component Two, basalt and unknown igneous (10.0%) are the major raw material types present. There is minimal difference in raw material types for steep versus narrow-angled retouched flakes.

BIFACIALLY RETOUCHED FLAKES

BIFACIALLY RETOUCHED FLAKE:

Bifacially retouched flakes are not important artifacts in either component.

BLADE-LIKE TOOLS

MACROBLADE-LIKE FLAKE:

There is no indication of a blade technology in the two earliest components from Crescent Beach.

Unshaped Chipped Stone Tools: Conclusions

When the proportions for all of the Unshaped Chipped Stone Flake Tools are added together, 32% of Component One's artifacts are represented versus 42.1% of Component Two. Of the four artifact assemblages analyzed here, Component Two at Crescent Beach has the highest proportion of Unshaped Chipped Stone Flake Tools. At Crescent Beach one cannot argue that unshaped tools during the Locarno Beach phase were not important members of the artifact assemblage. The core and bipolar implement data, for the two components, does not accurately predict the difference in Unshaped Chipped Stone Flake Tools. Component One has the highest proportion of cores/bipolar implements, but a lower proportion of unshaped flake tools.

Basalt dominates both assemblages with high proportions in most artifact types. Quartzite is the only raw material that usurps basalt's dominance and that happens only rarely. The biggest change is in the procurement and use of quartz as a raw material in Component Two.

In general, the conclusion from Chapter Two that the activities undertaken at Crescent Beach did not require a very specialized lithic technology still stands. Specialized single function tools (as will be seen) are not common in either component.

Shaped Chipped Stone Tools

FORMED CHIPPED STONE UNIFACES

NARROW-ANGLED FORMED UNIFACE:

Narrow-angled formed unifaces are a possible cultural marker for the Charles culture, but their absence in Component Two cannot be regarded as a certainty because of the small sample size. They are not common at Crescent Beach in Component One. Unlike Glenrose and St. Mungo, there are no steep-angled formed unifaces at Crescent Beach, although steep-angled retouched flakes are present. This absence continues through time into Component Two.

FORMED CHIPPED STONE BIFACES

LEAF-SHAPED BIFACE:

The near absence of leaf-shaped bifaces in Component Two confirms the long established assumption that while leaf-shaped bifaces continue through time on the Northwest Coast, they decrease in numbers through time.

The leaf-shaped biface in Component Two is made from basalt, while five/seven bifaces in Component One are also made from basalt. Of the two remaining bifaces in Component One, one is made from chert and the other is made from greenstone.

CONTRACTING STEM BIFACE NO SHOULDERS and CONTRACTING STEM BIFACE WITH SHOULDERS:

Neither contracting stem bifaces with or without shoulders are common in either component, although contracting stem bifaces with shoulders is the most common biface style in both components.

All of the contracting stem bifaces (with or without shoulders) are made from basalt.

Looking at Percy's original table of bifaces (1974:46-48) there are a number of catalogued bifaces that could not be relocated for this artifact analysis. This is an important explanation for their scarcity at Crescent Beach.

INCOMPLETE FORMED BIFACES

BIFACE PROXIMAL, MEDIAL, DISTAL and UNIDENTIFIABLE FRAGMENT:

Broken bifaces are more common in Component One, but, distal fragments are the only type of broken bifaces (besides unidentified biface fragments) present in Component Two. Furthermore, they are not present in Component One. This suggests a difference in breakage patterns.

Of the identifiable biface fragments from both components, only one object from Component Two is not made from basalt. One biface distal fragment in Component Two is made from chert. In both components all of the unidentified biface fragments except for one chert fragment in Component One, are basalt.

Component One has more shaped bifaces than Component Two, but the numbers are not very high in either component. Shaped bifaces are not important in terms of their proportion in the total artifact assemblage, but they are highly curated because much work and time was put into their creation. Therefore, they were not abandoned as quickly as utilized flakes.

SHAPED CHIPPED AND GROUND STONE IMPLEMENTS

CHIPPED STONE NARROW-ANGLED BIFACE OBJECT and CHIPPED NARROW-ANGLED TABULAR BIFACE OBJECT:

There is a paucity of chipped and ground stone implements at Crescent Beach. Chipped stone narrow-angled bifaces are a fairly common artifact at the Locarno Beach site and they have been used as cultural markers for the Locarno Beach phase (Mitchell 1968:187-189). They were also discovered at Georgeson Bay (Haggerty and Sendey 1976:32).

Chipped Stone Tools: Conclusions

Component Two at Crescent Beach has the higher proportion of chipped stone tools (68.2% versus 60.5% for Component One). Only 4.8% of the total artifact assemblage is comprised of implements which can be considered shaped tools. This is a slightly lower proportion than Component One's 5.4% which was the lowest amongst the Charles components. In Component Two even more so than Component One, unshaped expedient stone tools clearly dominate the artifact assemblage. While one may hypothesize that through time one would expect to see more shaped stone tools with more specialized functions, this is not the case at Crescent Beach. This lack of specialization is very evident even in the smaller artifact assemblage from Component Two. Perhaps this emphasis on expedient technology is indicative of a difference in site function over time at Crescent Beach.

One difference between the two components suggested by the proportions of chipped stone tools is not immediately apparent. There are more inorganic objects recovered from the earliest component. Could a situation such as this in which older organic tools survive and younger do

not, be explained by natural occurrences such as site formation processes and preservation factors alone? Or is it possible this variation results from cultural differences (usually Locarno Beach components have a high proportion of organic versus inorganic), or site procurement activities? There are many possible explanations. In the long term we know there is a shift through time away from lithic tools towards organic tools. Perhaps during the Locarno Beach phase we see the beginning of the de-emphasis of stone tools and the lithic tools present become more generalized in nature and more multi-functional because inorganic tools shift towards more function specific tasks.

Ground Stone Implements

ABRASIVE STONES

SAW:

Saws are not common objects at Crescent Beach.

ABRASIVE STONE:

Abrasive stones are much more common in Component Two than in Component One. The lack of bone and antler implements suggests that abrasive stones were presumably used for grinding stone implements (although ground stone artifacts are not plentiful). In the four components analyzed, Component Two has the highest proportion of abrasive stones. This implies that ground stone technology was becoming a more important technology.

FORMED ABRASIVE STONE:

It was assumed there would be a larger difference in proportions of formed abrasive stones than was actually the case. Component Two contains a higher proportion of formed abrasive stones because as abrasive stones become more common in Northwest Coast prehistory, they become more shaped,

reflecting more time spent on their manufacture. From Percy's original description (Percy 1974:146) it is probable that one or two formed abraders are missing, but this still implies a lower proportion of formed abrasive stones than one would expect based on previous information gathered from a literature search.

GROUND STONE DISC BEAD:

While the actual number of ground stone disc beads discovered in Component Two has decreased, the proportion has increased by over 10%. The ground stone disc beads from Component Two are on average slightly larger than those from Component One. Ground stone disc beads were far more common the first year of our excavations at Crescent Beach. For more detailed information on the beads from Crescent Beach see Thom (1991a and b).

GROUND STONE RING:

This is an unique object and therefore little can be interpreted from it.

This implement is made from an unknown sedimentary material type.

ADZE:

Small adzes, such as the single example from Component Two are first found in the Locarno Beach phase. Their appearance reflects the rising significance of both ground stone technology and woodworking.

This implement is made from nephrite.

GULF ISLAND COMPLEX IMPLEMENTS

GULF ISLAND COMPLEX:

Gulf Island complex objects (Duff 1956) first occur during the Locarno Beach phase. Their presence in Component Two is notable as is their absence in Component One. None of the examples present are complete and it is possible that at least one of the fragments may be a labret section. Gulf Island complexes are fairly well represented in Component Two considering the small sample size. To me this implies the importance of Gulf Island complex in artifacts in the lives of prehistoric people.

All three Gulf Island complex objects are made from steatite.

LABRET:

One labret in Component Two is complete (note that there is also a bone labret present which will be discussed in the bone artifact section).

Both labrets are made from steatite.

DECORATED GROUND STONE:

Decorated ground stone is not a major artifact type in either component at Crescent Beach.

MISCELLANEOUS GROUND STONE:

The lack of ground stone objects at Crescent Beach is continued with only two miscellaneous ground stone objects present.

Ground Stone Implements: Conclusions

Comparing the proportions of ground stone objects recovered from all four components, ground stone is twice as common in Component Two as it is

in any of the Charles culture components. Percy's original excavation had a paucity of ground stone at Crescent Beach in comparison to other excavations from similar time periods.

I examined the proportions of ground stone objects recovered from Trace's excavation at Crescent Beach (Trace 1976:41-50) and with beads included, 20% of all objects were ground stone. Trace dry screened excavated material through 1/4 inch screens so it is likely that many beads were not recovered. With beads omitted, ground stone implements comprise 4% of the total assemblage. Trace's Locarno Beach component yielded three ground stone knives, two ground stone projectile points and a stone pendant. Trace's Locarno Beach assemblage was almost twice as large as Percy/ours combined (1245 versus 697). Even with the increase in sample size, there is little ground stone recovered from Crescent Beach (barring ground stone beads).

Nevertheless, there is a definite increase in the proportion of ground stone objects present during the Locarno Beach phase versus the Charles culture (at least with this data). The next step would be to compare my data with some Marpole assemblages to see how much ground stone increases after the Locarno Beach phase. The trend of large numbers of ground stone disc beads is maintained in Component Two so neither 'luck' nor 'chance' were responsible for the large number of beads at Crescent Beach. If anything was responsible, it was water screening through 1/8 inch screens.

From the ground stone assemblage, one can say that while the proportion of chipped stone is higher than expected for a Locarno Beach artifact assemblage, the appearance of a higher proportion of abraders, an adze, two labrets, three Gulf Island complexes and the increase in the overall

proportion of ground stone, indicates that Component Two is Locarno Beach in nature.

Pecked and Ground Stone Implements

MORTAR:

Like the Charles culture assemblages, pecked and ground stone objects were not an important aspect of the artifact assemblage at Crescent Beach during either the Charles or Locarno Beach phase. The two mortars present in Component Two are similar in size and are quite small. There is no evidence of use.

One of the mortars is made from an unknown igneous raw material type while the other is made of quartzite.

Bone Tools

Shaped Bone Tools

MINIMALLY WORKED BONE

WORKED BONE MEDIAL FRAGMENT and WORKED BONE END FRAGMENT:

Table 3.2 demonstrates the large reduction in bone objects recovered from Component Two compared to Component One. Bone tools are not as common in Component Two and while a partial explanation may be sample size, it cannot be the complete answer. The decrease in sample size would not lead to a decrease in proportions. As with Component One and the other two Charles culture assemblages, worked bone medial fragments are more common than worked bone end fragments. In both components, worked bone fragments are the most common bone objects (20.1% in Component One and 8.4% in Component Two).

In the worked bone fragment categories, mammal bone is the dominant raw material type (78.8% of worked bone medial fragments and 94.3% of worked bone end fragments in Component One versus 81.3% of worked bone medial fragments and 100% of worked bone end fragments in Component Two).

Please note that unless otherwise specified, all objects are made from mammal bone.

RODENT INCISOR:

While the presence of an adze in Component Two suggests an increasing importance in woodworking, rodent incisors are not present.

BONE HOOK OBJECT:

This object is unique and making any detailed analysis premature.

BONE PENDANTS

PERFORATED BONE PENDANT and TOOTH PENDANT:

As previously mentioned, there is a paucity of perforated bone pendants at Crescent Beach in the Charles component in comparison to Glenrose and St. Mungo. This is also the case for the Locarno Beach component, but bone pendants are not as common during the Locarno Beach phase (compared to the Charles culture).

ROUND BONE OBJECTS

BONE BEAD:

While ground stone and shell beads are common in both components, bone beads are not. Why would bone beads be less common? One answer

could be that the absence of bone beads indicates cultural preference for stone and shell beads. Perhaps the lack of bone beads reflects the decreasing availability or use of bone as a raw material at Crescent Beach through time. This hypothesis is negated when the evidence for antler objects is discussed.

AWLS

SPLINTER BONE AWL:

While splinter awls are present in both components, they are not common and those in Component Two are not as diverse in size.

The popularity of splinter awls made from bird bone continues from Component One to Component Two. While there are only four splinter awls present in Component Two, two are made from bird bone and demonstrate continuity with the splinter awls made from bird bone in Component One.

SPLIT RIB AWL:

Split rib awls are only present in Component One. The technique for creating this subgroup of splinter awls goes out of use fairly quickly at Crescent Beach.

FORMED SPLIT BONE AWL:

There is a paucity of formed awls in Component Two, although proportions in both components are low when compared to Glenrose and St. Mungo. I thought there would be more formed bone awls versus splinter awls in the Locarno Beach component, but the scarcity of these objects makes any conclusions somewhat tenuous.

METAPODIAL AWL, BIRD BONE AWL and ULNA AWL:

None of the subgroups of awls based on raw material usage are common.

The total proportions of awls in Component One are 6.6% versus 3.4% for Component Two. The lack of such multifunctional artifacts in Component Two implies to me either a decrease in the intensity of site use over time, or a decrease in the time spent at the site (or both) during Component Two.

ULNA TOOL:

Ulna tools may be broken ulna awls, or they may be other objects. They become more common after the Charles culture.

BONE DRILL:

Bone drills are not common during the early phases at Crescent Beach, but Ham (1982) discovered a good sample of them in the later components.

SMALL POINTED BONE OBJECTS

UNIPOINT, BIPOINT and POINTED BONE OBJECT FRAGMENT:

Pointed bone objects are most commonly assumed to be associated with fishing activities on the Northwest Coast. They are not very common at Crescent Beach, but we know from the faunal remains that fishing was an important part of the diet in both components.

BONE CHISELS, WEDGES, AND POINTS

BONE CHISELS

BONE CHISEL WITH UNILATERALLY TAPERED END:

Bone chisels are interesting objects we need to do more experimentation with in order to determine their functions. Bone chisels hold the same

proportion through time at Crescent Beach, but this proportion is lower than those from Glenrose (3.2%) and St. Mungo (2.9%).

BONE POINTS

NON-FACETTED POINT WITH CENTRAL CAVITY and NON-FACETTED BONE POINT FRAGMENT:

Bone points of any style are not an important artifact type at Crescent Beach. This difference may be meaningful because bone points of varying styles are a stylistic marker for the Locarno Beach phase. It may also be the case that these objects are not present due to site activities which did not require their use.

UNIDENTIFIED WEDGE, CHISEL, BONE POINT FRAGMENT:

Unidentified bone wedge, chisel and point fragments for Component Two reflect the overall decrease in this large group of implements which were fairly common in Charles components. The general decrease hides the fact the bone chisels retain their proportion, but bone points decrease in importance.

While bone chisels, wedges and points are not common at Crescent Beach, there is continuity in the general artifact categories. Bone wedges are not present in Component Two, but neither are they a common artifact type in the Charles artifact assemblages. There is much greater diversity in these artifact types during the Locarno Beach phase, but the evolution of these artifact types begins prior to the Locarno Beach phase.

BARBED BONE POINTS

FRAGMENT UNILATERALLY BARBED HARPOON/POINT:

Barbed bone points are not common at Crescent Beach, in fact, they are rare.

BONE LABRET:

Along with the appearance of ground stone labrets in Component Two, bone labrets are also introduced. They are represented by a single broken example.

Bone Implements: Conclusions

Component One has twice as many bone artifacts in terms of proportion of total artifact assemblage (34.8% versus 16.7%). Of the total number of bone objects in Component One, 58% are worked bone fragments. In Component Two, 51% of the total bone artifact assemblage is comprised of worked bone fragments. The dramatic decrease in the bone artifact assemblage cannot be easily explained away. Perhaps the most logical explanation is that this shift is a direct result of a change in site activities. This shift does not necessarily indicate a decrease in sample size because even with a smaller sample size, I expected to see similar proportions of bone objects. I thought there would be a higher proportion of bone objects vis-a-vis chipped stone objects because it has been demonstrated that through time chipped stone implements decrease while both ground stone and bone implements increase. This is not the case at Crescent Beach. If this general trend in prehistoric technology is true, one must ask what kind of site activities would necessitate a movement away from bone objects towards unshaped expedient stone tools,

which is the case at Crescent Beach in Component Two. One change in site activities that would create the differences seen at Crescent Beach would be a shift from base camp, residential activities to a limited activity site.

Antler Objects

Shaped Antler Tools

MINIMALLY WORKED ANTLER

WORKED ANTLER MEDIAL FRAGMENT and WORKED ANTLER END FRAGMENT:

The worked antler categories, unlike the worked bone categories, show no decrease in antler usage - there is a slight increase.

PUNCH:

Punches are not common objects at Crescent Beach in either component.

SMALL POINTED ANTLER OBJECTS:

ANTLER UNIPOINT and ANTLER BIPOINT:

Small pointed antler objects were not present at Glenrose or St. Mungo. They are not common at Crescent Beach, but the presence of antler unipoints in both components demonstrates continuity through time in the unipoint and bipoint artifact categories.

ANTLER WEDGE:

Antler wedges are more common at Crescent Beach in the Locarno Beach artifact assemblage. While a total of four implements cannot be considered evidence of a great deal of woodworking activity, note how much the

proportion has increased, especially when one considers that bone objects in general have decreased drastically in Component Two.

BARBED ANTLER POINTS

FRAGMENT OF UNILATERALLY BARBED FIXED POINT/HARPOON

Table 3.2 demonstrates the scarcity of barbed antler points at Crescent Beach. In general, barbed points (or either bone or antler) are not very common at any of the three sites and four artifact assemblages.

DECORATED ANTLER

ZOOMORPHIC OBJECT:

This object is illustrated in Percy (1974:243-245) and is a bird (perhaps that favourite of Marpole phase carvers - Ardea herodias - The Great Blue Heron).

Antler Artifacts: Conclusions

While bone artifacts decrease through time at Crescent Beach, antler artifacts double in frequency (3.7% versus 1.6%). Even with this increase, antler artifacts are still not as common at Crescent Beach as they are in the Charles components at Glenrose or St. Mungo. This increase in antler through time negates the hypothesis that the reason for the decrease in bone was due to a decrease in available raw material. One could say that bone/antler are positively correlated raw materials (unless the bone is from sea mammals, which is not the case at Crescent Beach). This increase in the frequency of antler objects also negates the hypothesis that differential preservation resulted in the decrease of organic objects in Component Two. If the

bone/antler proportions are combined, Component One has a total of 36.4% versus 20.4% for Component Two.

Shell Artifacts

Shaped Shell Artifacts

SHELL PENDANT:

Shell pendants are rare at Crescent Beach.

SHELL BEAD:

Shell beads experience a big decrease in numbers in Component Two, but proportions are not quite as drastic (9.7% in Component One and 4.4% in Component Two). Shell beads do exist beyond the Charles culture. As with ground stone beads, shell beads in Component Two are slightly larger than in Component One. For more information about the beads from Crescent Beach see Thom (1991a and b).

SHELL LABRET:

Along with ground stone and bone labrets, a single shell labret is present in Component Two. There is an increase in the proportions of labrets from 0% in Component One to 1.5% in Component Two with a total of four present. Given that Component One is approximately twice the size of Component Two and if labrets were equally common in both components, one would expect there to be eight labrets present in Component One. This is not the case and is further suggestion of the immediate significance of labrets during the Locarno Beach phase.

SHELL ADZE BLADE:

As with past information, Crescent Beach data on shell adze blades demonstrates that these objects are most often found in Charles culture artifact assemblages. It is assumed that this is due to the introduction and use of more durable ground stone adzes during the Locarno Beach phase.

MISCELLANEOUS GROUND SHELL FRAGMENTS:

Fragments of ground shell implements are rare at Crescent Beach.

Shell Artifacts: Conclusions

There is a minor increase in shell implements through time (.4% in Component One versus .8% in Component Two) not counting shell beads which decrease in importance.

Artifact Analysis: Conclusions

This second step in my analysis has allowed a closer examination of two artifact assemblages from the same site with the earliest assemblage evolving into the later with no indication of a cultural hiatus.

Stepping back from the detailed artifact type analysis, one can make further comparisons between Components One and Two through examination of the number and variety of artifact types present in each component. Component One has 57 artifact types, which is the lowest number of artifact types present amongst the Charles components at Glenrose, St. Mungo and itself. Component Two (Locarno Beach component) has 51 artifact types present which makes it the least diverse artifact assemblage of all four components from Glenrose, St. Mungo and Crescent Beach. One might expect

this number to be lower due to the small sample size for Component Two. The lower artifact diversity for Component Two implies that it was not as intensely occupied as Component One. Does it also imply that during the time period covered by Component Two, the site was used as a limited activity site? There should be an even larger gap between the number of artifact types present in the two components, if one was a limited activity site and the other was a base camp. Part of the explanation for the decreasing diversity of artifact types in Component Two may be due to the site not being occupied during all seasons, as non-artifactual data suggests that the site was mainly occupied during the late winter and early spring. Subsistence activities were minimal because the main food source was previously procured salmon. There would be less need for a diversity of artifact types in this situation.

Another non-cultural explanation for the decrease in artifact diversity during the Locarno Beach phase results from the shorter time period covered by Locarno Beach (approximately 900-700 years) versus St. Mungo (approximately 1200-1000 years). This argument may be difficult to prove, but it could be more fully explored.

Thirdly, perhaps what I have perceived as a small sample size is untrue when compared to other artifact assemblages. It may be the case that this sample size is adequate. Examining the data used in past studies (for example, Matson 1974, Burley 1980), the sample size of Component Two from Crescent Beach is not that small.

As previously mentioned, through time in the Northwest Coast, chipped stone tools become less common while ground stone and organic bone implements increase in abundance. Is it also possible that there is an accompanying increase in the proportion of wooden implements which would be

partially reflected in the archaeological record by a decrease in task specific stone tools (their tasks are now completed by wooden objects), and an increase in generalized expedient chipped stone implements? This could be the case at Crescent Beach in Component Two, but it is just a hypothesis.

Unique Artifact Types

The unique artifact types, their number and proportion of total artifact assemblage (not including beads), are presented in Table 3.5.

Component One has 21 unique artifact types with 39 artifacts comprising 7.2% of the total artifact assemblage. Component Two has 15 unique artifact types with 22 artifacts comprising 8.3% of the total artifact assemblage. This relatively high proportion of unique artifact types in each component is somewhat different from the three Charles components. Undoubtedly one reason why Component One has a higher proportion of unique artifact types than Component Two results from the relative lack of bone objects in Component Two. Secondly, the smaller size of Component Two vis-a-vis Component One also must be considered a reason for the higher number of unique artifact types in Component One. One would expect that with the smaller sample size and less diversity of artifact types, there would be fewer unique artifact types in Component Two. This is not the case. Of the 51 artifact types found in Component Two, 36 are also found in Component One. This is a lower number of common artifact types than was the case with Component One, Glenrose and St. Mungo where 47 artifact types from Component One were found in the artifact assemblages of either/or Glenrose and St. Mungo. This implies to me that Component One has more in common with the other two Charles components and is therefore a Charles component.

Table 3.5 Unique Artifact Types
From Crescent Beach Components One and Two

Component One Artifact Type	Number	%
Macroblade-like Flake	1	.2
Narrow-Angled Formed Uniface	3	.5
Biface Proximal Frag.	3	.5
Biface Medial Frag.	3	.5
Chipped <-Angled Tabular Object	1	.2
Decorate Ground Stone	1	.2
Rodent Incisor	3	.5
Bone Hook Object	1	.2
Perforated Bone Pendant	1	.2
Tooth Pendant	2	.4
Bone Bead	4	.7
Split Rib Awl	6	1.1
Ulna Awl	2	.4
Bone Drill	1	.2
Non-Facetted Point Frag.	1	.2
Frag. Unilat. Barbed Harp/Point	1	.2
Punch	1	.2
Antler Bipoint	1	.2
Frag. Unilat. Barbed Point/Harp	1	.2
Shell Pendant	1	.2
Shell Adze Blade	1	.2
Total	39	7.2

Component Two Artifact Type	Number	%
Biface Distal Fragment	3	1.1
Chipped <-Angled Biface Object	2	.7
Saw	1	.4
Ground Stone Ring	1	.4
Adze	1	.4
Gulf Island complex	3	1.1
Labret	2	.7
Mortar	2	.7
Metapodial Awl	1	.4
Ulna Tool	1	.4
Pointed Bone Obj. Fragment	1	.4
Bone Labret	1	.4
Zoomorphic Object	1	.4
Shell Labret	1	.4
Misc. Ground Shell Frag.	1	.4
Total	22	8.3

93.7% of Component Two's and 92.5% of Component One's artifacts can be found in the 36 artifact types common to both Component Two and One. These proportions are slightly lower than those from the Glenrose, St. Mungo and Component One comparison. One would expect that the three Charles components would share more than two components from separate prehistoric cultural phases. The artifact types present in both Component One and Two are presented in Table 3.6.

Corresponding Artifact Types

Table 3.6 shows that while there are some differences between the two artifact assemblages, they are very similar to each other in the same way that Glenrose and St. Mungo were to each other vis-a-vis Crescent Beach. Of the 72 artifact types found in the two components, over 90% of all the artifacts are found in 50% of the artifact types. This statistic is similar for the Glenrose, St. Mungo and Component One analysis, but those three components were either from the same cultural phase or a product of the same regional culture. In this case, two different cultural phases are being compared and according to this measurement, the artifact assemblages shows the same degree of similarity as that found amongst three components belonging in the same cultural phase. This situation can be more formerly examined in the statistical analysis included in Chapter Four. This is a controversial discovery.

A partial explanation for the degree of similarity between Component's One and Two points to both components belonging to the same site where undoubtedly some mixture of cultural deposits has taken place. Furthermore, environmental factors for both components are held constant.

Table 3.6 Artifact Types Present in both Components One and Two at Crescent Beach

Artifact Type	Component One		Component Two	
	#	%	#	%
Core	55	9.6	29	10.6
Bipolar Implement	49	8.6	6	2.2
Hammerstone	4	.7	7	2.6
Anvilstone	4	.7	1	.4
Hammer Anvilstone	1	.2	1	.4
Pebble Tool Uniface	16	2.8	12	4.4
Pebble Tool Biface	3	.5	2	.7
Cortex Spall	14	2.4	8	2.9
Utilized Flake	118	20.6	65	23.6
Quartz Microlith	1	.2	11	4.0
Unifac. >-Angled Retouch. Flake	28	4.9	19	6.9
Unifac. <-Angled Retouched Flake	19	3.3	10	3.6
Bifacially Retouched Flake	2	.4	3	1.1
Leaf-Shaped Biface	7	1.2	1	.4
Contract. Stem Biface No Shoulders	2	.4	1	.4
Contract. Stem Bif. With Shoulders	4	.7	4	1.5
Unidentified Biface Frag.	8	1.4	2	.7
Abrasive Stone	13	2.3	17	6.2
Formed Abrasive Stone	5	.9	3	1.1
Ground Stone Disc Beads	(508)	(42.4)	(392)	(56.2)
Miscellaneous Ground Stone	1	.2	1	.4
Worked Bone Medial Fragment	80	14.0	16	5.8
Worked Bone End Fragment	35	6.1	7	2.6
Splinter Bone Awl	15	2.6	4	1.5
Formed Bone Awl	12	2.1	3	1.1
Bird Bone Awl	2	.4	1	.4
Unipoint	4	.7	2	.7
Bipoint	1	.2	1	.4
Bone Chisel W. Unilat. Taper End	10	1.8	5	1.8
Non-Fac. Point W. Central Cavity	4	.7	1	.4
Unid. Wedge, Chisel, Point, Frag.	12	2.1	1	.4
Worked Antler Medial Fragment	1	.2	2	.7
Worked Antler End Fragment	2	.4	2	.7
Antler Unipoint	1	.2	1	.4
Antler Wedge	1	.2	4	1.5
Shell Bead	(116)	(9.7)	(30)	(4.4)
Total	534	93.7	253	92.5

Unique and Similar Artifact Types: Conclusions

Where I do see differences in this section of the data, is in the more obvious stylistic differences present in the artifact types not common to both components. Also, while there are some stylistic differences, there is also a great underlying current of continuity flowing between the Charles and Locarno Beach components at Crescent Beach. The question is how appropriate is it to define two cultural phases that when examined vis-a-vis each other are discovered to have artifact assemblages with over 90% of the artifact types present in both cultural phases? A partial explanation for this similarity in artifact assemblage is due to the arbitrary excavation levels employed for part of the excavations undertaken at Crescent Beach. Another partial explanation for the similarity in artifact assemblages from the two different cultural phases is the similarity in the faunal types exploited through time which is due to the similarity in environment through time. Although, as previously mentioned, we know that procurement strategies and emphasis on certain food sources changed through time, there is an overall similarity in the types of resources procured. One would expect overall similarities between the two components for this reason, but a similarity of 90% is still somewhat unexpected as one would think that the change in site seasonality and the storage of salmon would result in changes to "functional artifact types". This comparison is somewhat general and does not account for the proportions in each artifact category. The general analysis indicates a good match between the artifact assemblages. The statistical analysis in Chapter Four also examines the components using a different and probably more sensitive measure.

When it came time to do the detailed analysis of Crescent Beach, it became clear that there were problems in delineating some artifacts into components due to the nature of the excavation Percy had undertaken. Excavation by arbitrary levels leads to a mixture of natural layers and I was worried that the delineation of Component One and Two would not be very accurate. Now I think the mixing of deposits (in some excavation units) was high. In many of the arbitrary 10 cm levels, artifacts were placed in both Component One or Two. For example, in Unit C2 artifacts found 120 to 140 cm below surface were placed into either Component One or Two, but this designation only took place for stylistic artifacts such as bifaces and labrets. The less diagnostic artifacts from these culturally mixed layers were not designated to either of the components (at least not on the original artifact sheets which I worked from). It was often a judgement call on my part as to where less diagnostic artifacts should be placed. If all of the excavations at Crescent Beach had been done by natural layers, the differences between the two components would be greater.

Ninety two percent of the artifacts from both components are found in artifact types present in both components. This proportion is almost as high as it was for the comparison of the three Charles components. This finding implies that Component One and Two do not represent different cultural phases according to the artifactual data (yet the stylistic artifacts for the two components are different). At this point we do not know precisely what differences in proportions of artifact types would be similar in two different cultural components because this type of analysis has not been common on the Northwest Coast. With further study it may turn out that temporally adjacent cultural phases are more similar to each other in terms of artifacts than

previously thought. One walks a fine line between general similarities of overall artifact assemblage proportions and stylistically distinctive artifacts. The over emphasis of one or the other could lead to a skewed analysis and perspective.

In the unique artifact types found in Component Two, six are based on ground stone technology. This implies that ground stone technology while not yet as important as chipped stone, was present and being used to create new artifact types. The appearance of labrets is almost like an explosion in Component Two, for ground stone, bone and shell labrets all appear. This was one artifact type that established itself immediately once it was introduced. Traditionally labrets are seen as cultural markers for the Locarno Beach phase, but with the evidence from Pender (Carlson 1985, 1986), this assumption will have to be reexamined. Stylistically the unique artifact types from Component Two are more distinct and most are fairly complex shaped objects. A list of artifact types that could be considered stylistic markers include: saw, ground stone ring, Gulf Island complex, labret (all three types), mortar, ulna tool and zoomorphic object. The presence of new (usually more technologically sophisticated) artifact types is traditionally the evidence used for cultural differentiation between components. One must ask how appropriate this approach is when unique artifact types are overemphasized in site reports while component similarity is not discussed. In the past it was not uncommon for a component to be defined as representative of phase such and such based on the presence of particular artifact types. This practice has lead to the overemphasis of single artifact types to the detriment of overall artifact assemblage proportions.

Many of the unique artifact types in Component Two are non-utilitarian objects unlike some of the unique artifact types in Component One which were utilitarian in nature (for example split rib awls or bone drills). Non-utilitarian goods are becoming more plentiful throughout time, even in this small artifact assemblage. This increasing presence of non-utilitarian objects may be indicative of a Locarno Beach component at Crescent Beach. One could hypothesize that non-utilitarian goods would be even more in evidence in a larger artifact assemblage excavated from a Locarno Beach aged multi-seasonal base camp.

While I am inclined to see differences between the artifact assemblages from Crescent Beach, the same questions I asked about the minimal differences between Glenrose, St. Mungo versus Crescent Beach should also be kept in mind. While it is always tempting to see slight differences between artifact assemblages as irreconcilable differences due to mutually exclusive cultural groups, archaeologists must remember that depending on their own research goals and perspectives, there will always be more than one explanation for the patterning they see in the archaeological record.

There are many uncertainties concerning this second stage of my analysis because there is still the question of site function through time. Another point to remember is that from the fish remains (especially the salmon), there is a suggestion of a shift in subsistence strategies sometime at the end of Component One. There is little evidence of this in the artifact assemblage from Component One. The non-artifactual data for Component Two points to two different types of seasonal occupation throughout Component Two (the South Trench versus Feature Nine). If it is true that storage was invented and used near the end of Component One and was carried out into

Component Two, why is there so little difference in the artifact assemblages? Would not such a major change in the daily lives of prehistoric people be reflected in the technology used? The more answers retrieved from the analysis the more questions there are left to answer.

Raw Material Types

Table 3.7 tabulates the Raw Material Types from Crescent Beach. In each of the types, the number and proportion of artifacts found in that type can be found. Figure 3.1 is a bar graph of the Raw Material Types.

Both Table 3.7 and Figure 3.1 indicate that while there is a great deal of similarity in the raw materials found in the two components, there are also several differences apparent in the general comparison of inorganic versus organic raw material types. As with the first stage of my analysis, these tabulations do not include the ground stone and shell beads found at Crescent Beach.

The first dissimilarity in Table 3.7 is in the Mineral category. There is a noticeable difference between the two components with Component One having only one object made from a mineral raw material type, while in Component Two, 19 (7.0%) objects are made from mineral raw material types. Seventeen objects are made from quartz crystal, while there was only one such object in Component One. Vein quartz does not appear at Crescent Beach. The quartz crystal objects are quartz microliths. Matson et al. (1991:119) display a graph indicating that as salmon becomes a more important food source, quartz microliths also increase in importance. From Flenniken's (1981) experiments with quartz microliths archaeologists learned that these

Table 3.7 Raw Material Types at Crescent Beach

Raw Material	Component One #	Component One %	Component Two #	Component Two %
Mineral				
Quartz Crystal	1	.2	17	6.2
Chalcedony	-	-	1	.4
Nephrite	-	-	1	.4
TOTAL MINERAL	1	.2	19	7.0
Igneous				
Unknown Igneous	23	4.0	19	6.7
Granite	2	.4	1	.4
Basalt	246	42.9	113	41.1
Obsidian	1	.2	-	-
TOTAL IGNEOUS	272	47.5	133	48.2
Sedimentary				
Unknown Sedimentary	4	.7	3	1.1
Sandstone	16	2.8	17	6.2
Siltstone	-	-	1	.4
Mudstone	1	.2	-	-
Chert	15	2.6	5	1.8
TOTAL SEDIMENTARY	36	6.3	26	9.5
Metamorphic				
Unknown Metamorphic	3	.5	2	.7
Greenstone	5	.9	3	1.1
Quartzite	46	8.0	21	7.6
Slate	2	.4	5	1.8
Schist	-	-	3	1.1
Gneiss	1	.2	-	-
Steatite	-	-	6	2.2
TOTAL METAMORPHIC	57	10.0	40	14.5
TOTAL LITHIC	366	64.0	218	79.2
Bone				
Unknown Bone	3	.5	-	-
Mammal	160	27.9	39	14.2
Bird	18	3.1	4	1.5
Burned Bone	10	1.8	2	.7
Burned Mammal	1	.2	-	-
TOTAL BONE	192	33.5	45	16.4

Table 3.7 Continued

Raw Material	Component One #	Component One %	Component Two #	Component Two %
Tooth				
Unknown Tooth	2	.4	-	-
Rodent Incisor	3	.5	-	-
TOTAL TOOTH	5	.9	-	-
Antler				
Unknown Antler	8	1.4	10	3.6
TOTAL ANTLER	8	1.4	10	3.6
Shell				
Unknown Shell	1	.2	2	.7
California Mussel	1	.2	-	-
TOTAL SHELL	2	.4	2	.7
TOTAL ORGANIC	207	36.2	57	20.7
TOTAL	573	100	275	99.9

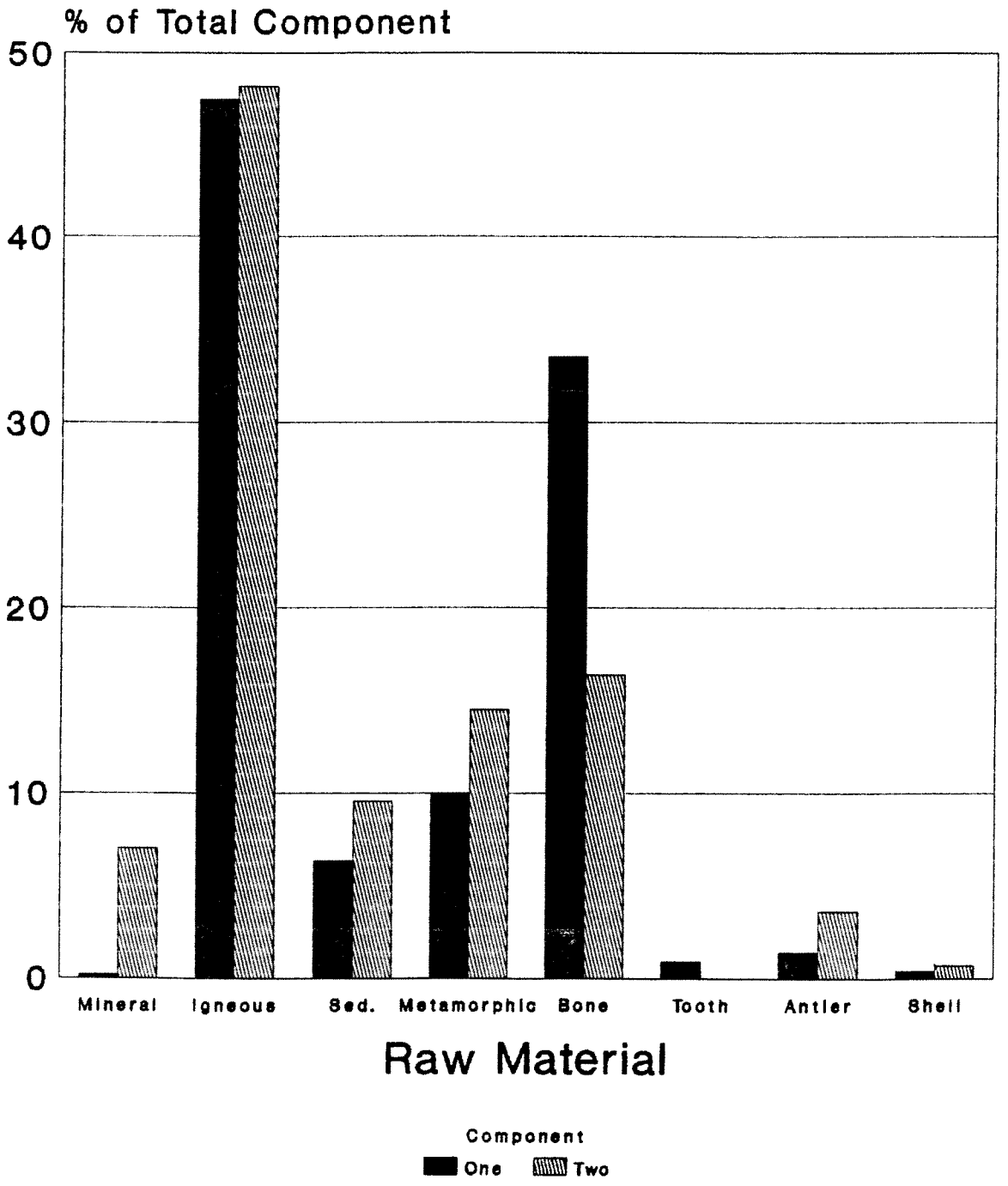


Figure 3.1 Bar Graph of Raw Material Types Found at Crescent Beach in Components One and Two

objects were the perfect tools for cutting fish. At Crescent Beach during the Locarno Beach component it has been determined that the major occupation of the site was in late winter/early spring and it is doubtful there was much processing of fresh salmon. This is the case in the South Trench but in the North Trench both flatfish and salmon were present and the quartz microliths could have been used to process either. Therefore, I would suggest that quartz microliths at Crescent Beach were used to cut up previously processed fish as well as freshly caught flatfish and salmon. Along with quartz during Component Two, chalcedony and nephrite are newly introduced raw material types.

In the igneous raw material types, basalt still maintains its dominance and reflects the high proportion of chipped stone tools present in Component Two. There is a slight decrease in the number of other igneous raw material types present in Component Two, but the proportions do not reflect this due to the smaller sample size. While quartz increased substantially in Component Two, obsidian, a raw material type often associated with quartz due to its glassy nature, does not appear in Component Two. Obsidian cannot be considered an important raw material type in either component.

There is a minor increase in the sedimentary raw material type category and this reflects the increase in the number of sandstone abraders found in Component Two. There is a small decrease in the proportion of chert found in Component Two.

In the metamorphic raw material types quartzite is still the most important raw material type. Steatite is a metamorphic raw material type introduced in Component Two. It is most commonly used to make Gulf Island complex objects of which there are three examples in Component Two.

When lithic raw material proportions are compiled, 79.2% of Component Two's artifacts are made from inorganic lithic raw material types while 64.0% of Component One's artifacts are made from inorganic lithic raw material types. Component Two has by far the highest proportion of lithic tools amongst the four artifact assemblages. The most striking difference between lithic artifact assemblages is found between Component Two and the Charles component at St. Mungo (79.2% versus 47.5%). Exactly what such differences imply is open to debate. There is some cultural difference in raw material preference which must be partially related to the on-site activities that took place at the two sites through time.

There are 16 different lithic raw material types present in Component Two while 14 different types are present in Component One. Component Two and Glenrose are tied for the most diverse number of lithic types present. One would expect that with a smaller sample of artifacts, Component Two would not have the same diversity of lithic raw material types, yet this is not the case.

Component One dominates the bone category with twice as many bone implements (33.5% versus 16.4%). There are two types of bone not present in Component Two, unknown bone and burned mammal. Besides the overall decrease in bone, bird bone experiences a decline in importance.

The large decrease in bone is not reflected in a similar decrease in antler. Antler actually enjoys a small increase (1.4% in Component One and 3.6% in Component Two). Antler is still not as common a raw material as it should be and this absence of antler leaves one wondering why antler wedges are so rare at Crescent Beach.

Shell, like antler, enjoys a small increase in importance (.2% in Component One versus .7% Component Two), but it is not a major raw material at Crescent Beach until one adds in shell beads.

Unlike the great overall similarity in raw material types present and absent from Glenrose, St. Mungo and Component One, the similarities between Component One and Two are not as great. The proportions of inorganic and organic raw material types are different and one must ask whether this difference reflects the presence of two distinct cultures, and how much of this difference reflects a change in site function over time.

One possible explanation for the drastic decrease in organic raw material types in Component Two may be that the density of shell remains was not as extensive as in Component One. Based on the shell weights from the shell samples obtained in both components this is not the case (Rankin 1991a:98). As mentioned in the shellfish section, the exact opposite is true. There is an increase in shell density in most of the layers comprising Component Two versus the layers comprising Component One. The increase in the proportion of antler tools in Component Two also negates this hypothesis.

In each component, basalt is the dominant lithic raw material type, while mammal bone dominates the organic raw material types. Quartz crystal and sandstone are two important raw materials not previously utilized to a great extent in Component One (both reflecting the increasing importance of artifact types less numerous in Component One). Other newly introduced raw material types with a more minor role to play in Component Two include: steatite, nephrite and chalcedony. These raw material types reflect the increasing importance of stylistic artifacts including Gulf Island complexes and adzes. Common raw material types in Component One are not present in Component

Two. Among the inorganic raw material types there is less diversity in Component Two amongst bone and tooth raw material types. Antler experiences an increase in Component Two, as does shell. All of these differences could result from cultural differences of the two components. This is to be expected, because the two components are from two distinct cultural phases. Along with the differences there are also similarities between the two components such as the continual use of the raw materials basalt and mammal bone which are the most common raw material types in the inorganic and organic raw material types for both components.

The Crescent Beach Component Two Artifact Assemblage Compared With the Locarno Beach Typesite

Locarno Beach Introduced

While Component Two at Crescent Beach has been defined as representative of the Locarno Beach phase, a brief comparison of the artifact assemblages from Component Two and the Locarno Beach site would be informative. I was able to do this comparison because as part of our Crescent Beach Project, several of Professor Charles Borden's past excavations were analyzed in anticipation of publishing the results. I analyzed the artifact assemblage excavated by Professor Borden at the Locarno Beach site during the spring and summer of 1948 (Borden 1950:14-17). The artifacts present from this excavation have been incorporated into the artifact typology I created for my thesis. This allows for a direct comparison of the two Locarno Beach artifact assemblages.

Unfortunately, there are problems with such a comparison. Little non-artifactual data is available for the Locarno Beach site, making comparison of site occupation and function difficult. Therefore, it should be kept in mind that differences in the artifact assemblages may or may not reflect a lack of control over non-artifactual data.

Ethnographic Culture Area

The Locarno Beach site is located in the ethnographic boundaries of the Halkomelem speaking Musqueam who belong in the larger Central Coast Salish culture area.

Excavation Procedures

A second problem soon presented itself with the Locarno Beach artifact assemblage. Two separate trenches were dug during the excavation. While both were presumably supervised by Professor Borden, one trench (Trench 4) was excavated solely by volunteers. Borden gives little information about Trench 4 in his field notes and no diagrams or maps of the trench exist, although there are some photographs. Uncertainty about where the Trench 4 artifact assemblage fit in with the Trench 1 artifact assemblage resulted in the decision to separate the artifacts from the two trenches. For this preliminary analysis I have not included the 82 artifacts excavated from Trench 4, but a full list of all the artifacts excavated at Locarno Beach can be found in Matson et al. (1991:138-146).

The spring in which Borden dug was the rainiest on record and as a result, the trenches suffered considerable damage due to cave ins. Uncertainty about the provenience of the artifacts found in the cave in

slumpage lead us to a decision to group all cave in artifacts together and not include them with the artifacts found during regular excavations. We thought it was probable that only the 'better' artifacts were collected from the cave ins, leading to an over representation of them in the collection. Artifacts recovered from the cave ins are not listed in this analysis but they can be found in Matson et al. (1991:144).

Chronology

Two charcoal samples collected in situ from two of the lower layers present at Locarno Beach were submitted to the Simon Fraser Radiocarbon Laboratory. The dates retrieved were of 2840±80 BP (SFU 767), and from the lowermost sample 3280±70 BP (SFU 766). There is no indication that a Charles component is present at the Locarno Beach site. Sample One was located at a depth of 102" and was associated with what Borden described in his field notes as an ashy layer encircled by fire cracked rock. This sample was almost located at the bottom of Borden's cultural deposits. Sample Two was located at a depth of 70-90", and was not associated with any particular feature. These two dates are in accord with other Locarno Beach dates, and the early dates retrieved from the Saskatchewan lab should be rejected (Borden 1970:96). Both samples were large and half of the original samples submitted are being retained for future dating clarification.

Faunal Remains

Sheryl Steifel (1985) focused on the subsistence economy of the Locarno Beach culture for her MA thesis. She examined the faunal remains from three Locarno Beach aged components, including the component from the Locarno

Beach site. The focus of subsistence in the three components analyzed is not based on marine mammal resources, but on an economy emphasizing foreshore resources (Steifel 1985:177). Mammals (including deer, elk and bear) and avifauna (with diving ducks the most common) are present but are not the most important resource. Salmon is the most important fish and vertebrate resource with flatfish the second most abundant fish resource with herring also present. Screens were not used for the original excavations of the three components she analyzed, so she looked at the faunal remains present from some of the midden samples collected in the field. In this way she was able to discover the smaller bones of herring and smelt.

Site occupation of the Locarno Beach site during the Locarno Beach phase is suggested to be late winter--early spring, as well as spring to early summer for the surf smelt runs. There was no shellfish analysis. The seasonal indicators for the Locarno Beach component from Crescent Beach focused on spring. Seasonal occupation for the Locarno Beach component at Locarno Beach implies that the site was utilized for a greater part of the year than the Locarno Beach component from Crescent Beach.

These findings are very similar to the faunal analysis of the Charles culture and do not suggest any drastic change in the continued reliance upon fish resources especially salmon and flatfish. There is one difference between the Charles and Locarno Beach phases with herring becoming more apparent during Locarno Beach. It would be useful to attempt a more detailed analysis of the salmon and flatfish remains vis-a-vis each other in the Locarno Beach component from Locarno Beach in order to determine whether flatfish become less common and salmon more common through time, which is what happened at Crescent Beach in the Locarno Beach component.

Artifact Assemblage

While some existing catalogued artifacts could not be included in the major analysis because of uncertain provenience, there was an overall gain in the number of artifacts because all of the Assorted Material Bags collected during the 1948 field season were examined, and from them a fair number of artifacts not previously recognized were collected and catalogued, if they had good provenience. These artifacts were incorporated into the artifact counts and are presented in the overall tabulation of Locarno Beach artifacts.

There is the possibility of an existing Marpole phase component from the top strata at Locarno. Therefore, in the future, all of the artifacts will be laid out vis-a-vis each other according to their provenience in the hopes of examining this hypothesis.

Table 3.8 presents a tabulation of the Locarno Beach artifact assemblage from Locarno Beach's Trench One and Crescent Beach's Component Two.

The first difference evident in Table 3.8 is in the number of artifacts present at each site. Locarno Beach has 432 while Crescent Beach has 275. This difference in numbers should be kept in mind throughout this analysis because it skews artifact proportions.

There are 92 artifact types present at either one or both sites. Of those 92, 43 artifact types are present only at Locarno Beach, and 11 artifact types are present only at Crescent Beach. This is a dramatic increase in the number of unique artifact types. Of the 38 artifact types found at both sites, 74.1% of Locarno Beach's total artifact assemblage and 83.5% of Crescent Beach's total artifact assemblage exist in these mutual artifact categories. This is the largest difference I have so far encountered. Thirty four of the unique artifact types present in either component contain proportions of less

Table 3.8 Locarno Beach Artifacts From Component Two at Crescent Beach and Locarno Beach

Artifact Type	Locarno Beach #	Locarno Beach %	Crescent Beach #	Crescent Beach %
Core	8	1.9	29	10.6
Bipolar Implement	-	-	6	2.2
TOTAL NUMBER	8	1.9	35	12.8
Chipped Stone Implements				
Unshaped Chipped Stone Implements				
Hammerstone	14	3.2	7	2.6
Battered Flake	1	.2	-	-
Anvilstone	-	-	1	.4
Hammer Anvilstone	-	-	1	.4
Pebble Tool Uniface	-	-	12	4.4
Pebble Tool Biface	-	-	2	.7
TOTAL NUMBER C. S. IMPLEMENTS	15	3.4	23	8.5
Unshaped Chipped Stone Flake Tools				
Cortex Spall	-	-	8	2.9
Utilized Flake	52	12.0	65	23.6
Quartz Microlith	1	.2	11	4.0
Unifacially >-Angled Retouched Flake	13	3.0	19	6.9
Unifacially <-Angled Retouched Flake	11	2.5	10	3.6
Bifacially Retouched Flake	6	1.4	3	1.1
TOTAL NUMBER C. S. F. TOOLS	83	19.1	116	42.1
Shaped Chipped Stone Tools				
Steep-Angled Formed Uniface	1	.2	-	-
Steep-Angled Formed Biface	3	.7	-	-
Leaf-Shaped Biface	9	2.1	1	.4
Contracting Stem Biface No Shoulders	5	1.2	1	.4
Contracting Stem Biface With Shoulders	4	.9	4	1.5
Corner Notched Biface	1	.2	-	-
Excurvate Biface	1	.2	-	-
Biface Proximal Fragment	2	.5	-	-
Biface Medial Fragment	2	.5	-	-
Unidentified Biface Fragment	2	.5	2	.7
Chipped Slate <-Angled Biface Object	8	1.9	2	.7
Chipped Slate Diamond Shaped Biface	1	.2	-	-
Chipped Slate Fragment	2	.5	-	-
C.and G. Stone <-Angled Retouched Implement	1	.2	-	-
TOTAL NUMBER SHAPED C. S. TOOLS	42	9.8	13	4.8
TOTAL NUMBER CHIPPED STONE TOOLS	148	34.2	187	68.2

Table 3.8 Continued

Artifact Type	Locarno Beach #	Locarno Beach %	Crescent Beach #	Crescent Beach %
Ground Stone Implements				
Saw	-	-	1	.4
Abrasive Stone	19	4.4	17	6.2
Formed Abrasive Stone	8	1.9	3	1.1
Ground Stone Knife	14	3.2	-	-
Leaf-Shaped Ground Stone Point	2	.5	-	-
Contract. Stem Lancelot-Shaped Ground Stone Point	4	.9	-	-
Lancelot-Shaped Concave Base Ground Stone Point	1	.2	-	-
Straight-Stem Ground Stone Point	1	.2	-	-
Ground Stone Point Proximal Fragment	5	1.2	-	-
Ground Stone Point Medial Fragment	1	.2	-	-
Ground Stone Point Distal Fragment	1	.2	-	-
Leaf-Shaped Facetted Ground Stone Point	9	2.1	-	-
Parallel-Sided Facetted Ground Stone Point	3	.7	-	-
Ground Stone Disc Bead	2	.5	(392)	(56.2)
Adze	1	.2	1	.4
Gulf Island complex	3	.7	3	1.1
Labret	1	.2	2	.7
Miscellaneous Ground Stone	22	5.1	1	.4
TOTAL NUMBER G. S. IMPLEMENTS (WITH BEADS)	-	-	421	-
TOTAL NUMBER G. S. IMPLEMENTS (NO BEADS)	97	22.4	29	10.7
Bone Implements				
Worked Bone Medial Fragment	37	8.6	16	5.8
Worked Bone End Fragment	24	5.6	7	2.6
Net Gauge	1	.2	-	-
Ground Molar	3	.7	-	-
Tooth Pendant	3	.7	-	-
Whistle	1	.2	-	-
Splinter Awl	1	.2	4	.5
Formed Split Bone Awl	17	3.9	3	1.1
Metapodial Awl	2	.5	1	.4
Bird Bone Awl	15	3.5	1	.4
Ulna Awl	9	2.1	-	-
Ulna Tool	1	.2	1	.4
Knife Slitting Implement	2	.5	-	-
Unipoint	5	1.2	2	.7
Bipoint	2	.5	1	.4
Pointed Bone Object	1	.2	1	.4
Needle	3	.7	-	-
Bone Chisel With Unifacially Tapered Distal End	3	.7	5	1.8
Bone Chisel With Bifacially Tapered Distal End	2	.5	-	-
Bone Wedge	1	.2	-	-
Non-Facetted Bone Point Lancelot-Shaped	3	.7	-	-
Non-Facetted Bone Point.With Central Cavity	3	.7	1	.4
Facetted Bone Point	3	.7	-	-
Facetted Bone Point With Central Channel	17	3.9	-	-
Unidentified Bone Wedge, Chisel or Point Fragment	6	1.4	1	.4

Table 3.8 Continued

Artifact Type	Locarno Beach #	Locarno Beach %	Crescent Beach #	Crescent Beach %
Bone Implements Continued				
Unilaterally Barbed Fixed Bone Point	1	.2	-	-
Unilaterally Barbed Bone Harpoon	1	.2	-	-
Fragment Unilaterally Barbed Fixed Point or Harpoon	2	.5	-	-
Bilaterally Barbed Fixed Bone Point	1	.2	-	-
Toggled Harpoon Point	1	.2	-	-
Toggled Harpoon Head	1	.2	-	-
Decorated Bone Object	1	.2	-	-
Anthropomorphic Object	1	.2	-	-
Bone Labret	1	.2	1	.4
TOTAL NUMBER BONE IMPLEMENTS	175	40.4	45	16.7
Antler Implements				
Worked Antler End Fragment	2	.5	2	.7
Worked Antler Medial Fragment	1	.2	2	.7
Antler Unipoint	-	-	1	.4
Antler Wedge	-	-	4	1.5
Self-Armed Toggle Harpoon Valve	1	.2	-	-
Decorated Haft	3	.7	-	-
Atlatl	1	.2	-	-
Zoomorphic Object	-	-	1	.4
TOTAL NUMBER ANTLER IMPLEMENTS	8	1.8	10	3.7
Shell Implements				
Shell Bead	-	-	(30)	(4.4)
Shell Labret	-	-	1	.4
Miscellaneous Ground Shell Fragments	4	.9	1	.4
TOTAL NUMBER SHELL ARTIFACTS (WITH BEADS)	-	-	32	-
TOTAL NUMBER SHELL ARTIFACTS (NO BEADS)	4	.9	2	.8
TOTAL NUMBER ARTIFACTS (WITH BEADS)	432	-	697	-
TOTAL NUMBER ARTIFACTS (NO BEADS)	432	99.7	275	100.4

than 1% of the total artifact assemblage. There is a great deal more diversity in artifact types at Locarno Beach, but most of the unique artifact types are represented by one or two artifacts. Nevertheless, this is the largest degree of difference I have yet seen and it leads one to ask the question of how representative is the Locarno Beach component at Crescent Beach?

Unshaped Chipped Stone Implements

Crescent Beach has a higher proportion of cores and bipolar implements. Bipolar implements are not common at Crescent Beach, but they are entirely absent at Locarno Beach. Bipolar implements are often associated with later phases. Does this difference reflect a difference in excavation strategy?

Unshaped Chipped Stone Implements are almost three times more common at Crescent Beach (8.5% versus 3.4%). Crescent Beach has five artifact types in this category while Locarno Beach has two.

Unshaped Chipped Stone Flake Tools

Unshaped Chipped Stone Flake Tools reveal a major difference between the two sites. 42.1% of Crescent Beach's total artifact assemblage is found in this category, while only 19.1% of Locarno Beach's is found in this category. One possible explanation may be due to the dissimilarity of excavation techniques given a tendency for these types of objects to be underrepresented in artifact assemblages collected pre-1960. Since the 1960's Northwest Coast archaeologists have focused more on obtaining all artifacts excavated rather than the pre-1960's notion of focusing on more stylistically distinct artifacts and artifact types. I would therefore argue that some of the discrepancy in this category of chipped stone implements is caused by differences in field techniques, rather than prehistoric cultural differences.

We had anticipated such a problem which is why we meticulously analyzed the Assorted Material bags for artifacts. Although there is a large difference between the two components in this category, there is only one artifact type unique to Crescent Beach and that is the cortex spall. The near absence of quartz microliths at Locarno Beach, probably results from the difficulty in retrieving these objects even under the best field conditions. As previously mentioned, quartz microliths are now considered to be cultural markers of the Locarno Beach phase, yet they are not present at the typesite!

Shaped Chipped Stone Artifacts

In Shaped Chipped Stone Tools there is some variation present between the two sites. At Locarno Beach, 9.8% of the total artifact assemblage reside in this category and there is a large number of chipped stone biface styles represented only at Locarno Beach, although the most common shaped biface styles (leaf-shaped and contracting stem) are present at both sites. Chipped slate objects are present at Locarno Beach and Crescent Beach (11 versus 2). These chipped slate objects are considered unique to the Locarno Beach phase (there was one such object recovered at Crescent Beach in the Charles culture artifact assemblage). Steep-angled formed bifaces are present at Locarno Beach. These objects are absent at Crescent Beach. Both sites share an absence of a true microblade technology. The differences in this category are not as important as those in the Unshaped Chipped Stone Flake Tools.

Ground Stone Implements

As with the Shaped Chipped Stone Tools, Locarno Beach has twice as many objects represented in the Ground Stone Implements category (22.4% versus 10.7% for Crescent Beach). Locarno Beach has a diverse number of projectile point styles not present at Crescent Beach. From past comparisons

it is important to remember that Crescent Beach has a minimal number and diversity of shaped bifaces. What Crescent Beach does have and Locarno Beach does not, is ground stone disc beads. Unfortunately, screening techniques at Locarno Beach were not rigorous and ground stone disc beads would not necessarily be discovered. Due to the higher proportion and variety of ground stone objects present at Locarno Beach I was expecting a much higher proportion of abrasive and formed abrasive stones, but this was not the case. Ground stone points (both non-facetted and facetted) are stylistic markers for the Locarno Beach phase. While these artifact types are absent at Crescent Beach, adzes, Gulf Island complexes and labrets are present and exist in similar proportions to Locarno Beach. Ground stone knives are also considered diagnostic of the Locarno Beach phase, but they are absent at Crescent Beach.

Bone and Antler Tools

The difference in proportions of bone implements is greater than that for Unshaped Chipped Stone Flake Tools. Just over forty percent (40.4%) of Locarno Beach's total artifact assemblage can be found in the bone implement category. Just over sixteen percent (16.7%) of Crescent Beach's artifacts are bone. There are no unique artifact types within this category at Crescent Beach. The difference in excavation strategy (Borden did not use screens) is at least partially responsible for the lower proportion of worked bone fragments from Locarno Beach.

There are some differences in the bone awl categories. Formed bone awls are much more common at Locarno Beach (3.9% versus 1.1% at Crescent Beach). There is also a noticeable increase in the proportion of bird bone awls (3.5% at Locarno Beach versus .4% at Crescent Beach).

One similarity between the two components is the low proportion of bone chisels (.7% at Locarno Beach and 1.8% at Crescent Beach).

Crescent Beach does not have a variety of bone points (there is only one example). At Locarno Beach there is a great variety of different bone points, including non-facetted and facetted styles. Like their ground stone counterparts, these implements are associated with the Locarno Beach phase. It is important to note that some of the non-facetted styles present at Locarno Beach were found at either Glenrose or St. Mungo so there is evidence of continuity through time.

Unilaterally and bilaterally barbed points and harpoons are present at Locarno Beach, but not in great numbers. The first evidence of toggling harpoons is also found at Locarno Beach with one example present. Considering the difference in sample size and the rarity of toggling harpoons, it is not surprising that this artifact type is absent from Crescent Beach. Specialized fishing gear is very rare at any of the sites so far analyzed. Fishing (salmon in particular) was an important part of the diet during the Locarno Beach phase, yet this is not reflected in a higher proportion of highly specialized fishing implements.

It should also be noted that a single example of a bone labret is present at both sites. They are similar in size.

Locarno Beach displays an even lower proportion of antler objects than Crescent Beach. Antler is not an important raw material during the Locarno Beach phase, relative to the St. Mungo components from Glenrose and St. Mungo. Based on the comparison of antler objects from Component One and Two at Crescent Beach, there was a slight increase in antler through time, but both proportions were low compared to St. Mungo and Glenrose. Perhaps this

reflects the decreasing emphasis on large land mammals as a major source of subsistence. While wedges are rare in Component Two at Crescent Beach, they are absent at Locarno Beach. Their absence lead Borden to hypothesize that woodworking activities were not extensive during the Locarno Beach phase (Borden 1970). Perhaps this decrease in antler wedges reflects an increase in the use of perishable wooden wedges (which of course do not survive in most situations). The antler objects which are present at Locarno Beach are highly stylized perhaps reflecting a different attitude towards the use of antler as a raw material. Perhaps the absence of antler suggests a utilization of the Locarno Beach site during a time of the year when antler was not readily available as a raw material.

Shell Artifacts

Shell implements are not common in either component. The absence of shell beads at Locarno Beach probably reflects a difference in excavation strategies rather than a prehistoric cultural difference.

Conclusion of Comparison of Crescent Beach Component Two and Locarno Beach Artifact Assemblages

One could argue that both components are representative of the Locarno Beach phase; they are simply variations on the same theme. Many diagnostic artifact types are found in both artifact assemblage although Crescent Beach does not have the same degree of diversity as Locarno Beach. From the artifact assemblage data, I suggest that the Locarno Beach site was occupied on a fairly intensive and probably multi-seasonal basis during the Locarno Beach phase. This comparison of the two sites further suggests that Component Two at Crescent Beach was not as intensively occupied as the other

components so far analyzed. There is also little doubt that a great deal of continuity is present between the Locarno Beach and Charles artifact assemblages. The emphasis on herring at Locarno Beach and the salmon emphasis at Crescent Beach could partially explain some of the differences between the two sites. The raw material sources (particularly lithics) are also dissimilar and could also help explain some of the differences present. Neither of these arguments are very convincing, but they are somewhat plausible.

General Conclusions

In this chapter I have presented the results of the analysis to address my second research question on the relationship between the Charles (Component One) and Locarno Beach (Component Two) components at Crescent Beach.

The evidence from my analysis is equivocal. Hypothesis Number Two states that the two artifact assemblages, while being different cultural entities, demonstrate a continuum of <u>in situ</u> evolution in the Fraser Delta. This is not in my mind fully proven using the evidence gathered to date. The high degree of similarity between the two components supports the section of Hypothesis Number Two stating that there is continuity. The problem is too much continuity and the overwhelming similarity between the two artifact components could be used to argue that both components represent the same cultural phase.

There is a continuum demonstrated in the non-artifactual data, most importantly in the fish and shellfish remains. There is a continuum demonstrated in the high proportion of artifacts found in artifact types present in both components. While there are some changes in the proportion

of raw material types, the changes are in quantity and not in kind. I do not doubt the evolution of Component One into Component Two.

Analysis of the two artifact assemblages from Component Two and Locarno Beach showed differences between these two components which are both conventionally thought to be representative of the Locarno Beach Culture Type, the term used by Mitchell (1971:56). Regardless of the term used, one must ask how important the differences are between the two components. These differences may be indicative of prehistoric cultural differences, but differences in site function, excavation strategy and intensity of site occupation also influence the high degree of differentiation present. Furthermore, the faunal remains from the two sites indicate different emphasis on fish remains (herring and surf smelt at Locarno with Crescent Beach having salmon and flatfish more important than either herring or smelt). Another possible explanation for the differences is the difference in raw materials utilized at the two sites. There is some suggestion that Component Two at Crescent Beach is not representative of the Locarno Beach phase; but until more similar types of studies are undertaken it is best to accept past interpretation that Component One is Charles and Component Two is Locarno Beach. It must be remembered that Component Two is only one example of the Locarno Beach cultural phase. Direct comparisons must always be done with the knowledge that the differences in variables such as site function and occupation intensity can also be reflected in the artifact assemblage.

CHAPTER FOUR

RESEARCH QUESTION THREE: A Closer Examination of The Charles Culture

Research Question Number Three concerns the plausibility of a Charles culture existing on a regional level encompassing the area from the Fraser Canyon to the Gulf Islands. From this research question I developed the following hypothesis that focuses on the degree of regional diversity present or absent in the sites thought to belong to the Charles culture.

Hypothesis Number Three: During the time period between approximately 5000 and 3500 years ago, there was a cultural similarity between groups of prehistoric people living in the Gulf Islands, the Lower Mainland and the Fraser Canyon. Alternatively, during the aforementioned time period, there is little evidence of cultural similarity encompassing a regional area comprised of the Fraser Canyon, the Lower Mainland and the Gulf Islands.

This hypothesis is meant to focus and guide my research of the cultural variability present during the Charles culture. This hypothesis is also a means of testing the validity of current statements concerning the Charles culture. During this analysis, if alternative classifications present themselves, they will be considered.

The first section of this chapter discusses the Eayem phase, the third phase belonging to the Charles culture. This phase originates in the Fraser Canyon and was first defined by Charles Borden in the 1960's (Borden 1968). The discussion of the Eayem phase compares two artifact assemblages from the Esilao and Maurer site. Information is also provided on non-artifactual data such as chronology, features and site function giving a general idea of how

one another in terms of other types of information. The second part of the Eayem phase discussion briefly introduces a third component thought to belong to the Eayem phase, but not yet fully published due to the recent excavation of the deposits. This third component comes from the Hatzic site.

The second major section of this chapter discusses controversial Charles culture components not included in the discussion of the St. Mungo and Mayne phases. Two un-dated artifact assemblages from the Marpole and Bliss Landing sites have been tentatively described as belonging to the Mayne phase. Other artifact assemblages that have been divided into dated Charles culture components and questionable dated Charles culture components include: Pitt River, Pender Canal, Birch Bay, Denman Island, Tsawwassen, Duke Point and Deep Bay.

The final section of this chapter compares several Charles culture and Locarno Beach components using quantitative techniques in order to determine the similarity of the two separately defined cultural phases. This final section discusses the feasibility of such a long period of cultural similarity over such a wide area and reviews the Charles culture as it stands from the data presented in this thesis.

The Eayem Phase

Esilao

Site Location

Prof. Charles Borden first worked in the lower Fraser Canyon during a site survey programme carried out in the summer of 1956 (Borden 1960). From this preliminary survey it was determined there were potentially very old deposits to be excavated. In the years of 1959-1963 Borden did extensive excavations at two adjacent sites in the Fraser Canyon, Milliken (DjRi 3) and Esilao Village (DjRi 5), located on the left bank of the Fraser river in a 5 mile narrow stretch of the canyon 2.5 miles north of Yale (Borden 1960, 1961, 1968). The two sites are a few hundred yards north of the mouth of Siwash Creek (Borden 1960:106). The Fraser river must force itself through this narrow channel and in doing so is a major obstacle to the salmon runs which must hug the banks in order to utilize any backwater or eddy (Duff 1952:62).

Ethnographic Culture Area

The Milliken and Esilao Village sites fall in the ethnographic boundaries of the Tait, the easternmost group of the Stalo Nation, who belong in the larger grouping of Central Coast Salish (Borden 1960:101). Duff (1952:30-34) lists and describes the location of 23 sites in Tait territory. As part of the survey work done in the summer of 1956, most of these 23 sites were visited and examined (Borden 1960:101). Both sites are located on what is now the Yale Indian Reserve (Mitchell 1963:xiii).

Chronology

During excavation of the extensive deposits at Milliken and Esilao Village, Borden discovered a more or less continuous occupation from 9500 years ago until historic times. He defined several cultural phases to cover this vast time period.

The oldest occupation at Esilao Village is approximately 5500 to 3500 BP, although Borden did not hit sterile deposits (Borden 1968). He defined this time period as the Eayem phase, named after a small pithouse village on the opposite side of the river (Borden 1975:72). Mitchell (1963) did a MA thesis on some of the data recovered from Esilao. The name means "lucky place" for catching salmon (Duff 1952:30). In a later publication Borden (1975:72) extends the ending date of the period to 3100 BP. Four dates were retrieved from the Eayem component. The dates are as follows: 3790±130 BP (GSC 456), 4420±160 BP (M 1544), 4880±180 BP (M 1546) and 5490±500 BP (M 1547) (Borden 1975:72). No provenience is given for the Eayem dates.

Maurer

Site Location

Besides the component from Esilao, there is one other component thought to belong in the Eayem phase. It was discovered at the Maurer site (DhRk 8) which is located approximately two miles southwest of the downtown core of Agassiz (LeClair 1976:33).

Ethnographic Culture Area

The Maurer site is in the ethnographic boundaries of the Pilalt (Duff 1952:21), who belong in the Stalo Nation and the larger grouping of Central Coast Salish.

Chronology

There are four dates from the site which are: 3860±110 BP (GaK 4926), 4240±110 BP (GaK 4922), 4720±380 BP (GaK 4923) and 4780±340 BP (GaK 4927) (Borden 1975:77). As with the Eayem phase dates, there is no provenience give for these dates.

The dates are remarkably similar for the Maurer and Eayem components. There is no discussion of any discrepancy found in these dates so they shall be taken at face value. The 5490±500 BP (M 1547) date from Esilao has the highest degree of uncertainty, making the beginning date of the phase anywhere from 6000 to 5000 years ago. This is an extensive time span. Conservatively, one could stick with the 5500 BP date with the understanding that this date may be too old and the starting date is actually closer to 5000 B.P, which is where the next oldest dates from the two components cluster. Borden states that he did not hit sterile deposits at Esilao, and perhaps there is an older component present at the site.

This proposed starting date for the Eayem phase is at least 500 and possibly 1000 years earlier than the beginning date for the St. Mungo phase. Does this imply that the Charles culture originated in the Fraser Canyon and diffused through to the Lower Mainland? Perhaps, but this assumes that the pre-5000 BP date is correct. Another problem with this hypothesis is the early dates found on the Gulf Islands at Helen Point and Pender Canal. The

St. Mungo components are flanked both east and west by older Charles culture assemblages. The question concerning the evolution of the Charles culture is not one that can be easily solved at this time due to the need for more published and dated artifact assemblages falling in its time period. One possible explanation for the earlier dates on the Gulf Island ties into Mitchell's argument that the Obsidian Culture from further north gradually migrated into or greatly influenced the Gulf Island culture area (Mitchell 1988).

Esilao and Maurer Artifact Assemblage Comparison

The two artifact assemblages comprising the Eayem phase have never been completely published, so it is difficult to make detailed comparisons or definitive statements. When the data is published, it is almost certain that there will be differences between the preliminary data now available and the final data to be published sometime in the future.

Unshaped Chipped Stone

Chipped stone tools dominate both artifact assemblages which is partially due to the absence of organic remains at either site. The total count of artifacts is not known from Esilao, but LeClair states that 6000 lithics were excavated from Maurer and approximately 1500 were defined as artifacts (LeClair 1976:38). While cores are mentioned for both sites (15% of the assemblage at Maurer), bipolar implements are also present at both sites although in smaller proportions (Maurer has at least two but Borden does not mention how many are present at Esilao). Unshaped chipped stone implements such as hammerstones and pebble tools are present at both sites. At Maurer 8% of the 1500 artifacts were cobble tools including; choppers (both unifacial and bifacial), cortex spalls and hammerstones. I assume there is a similar

proportion from Esilao due to the number of pebble tool types Borden describes as being present (choppers, scraper planes, rasps, discoidal cortex spalls and small ulu-like cortex spalls to name a few [Borden 1975:72,73]).

Unshaped Chipped Stone Flake Tools

Expedient flake tools are common. At Maurer, LeClair states (1976:38) that 72% of the implements were expedient made unifaces such as utilized flakes, narrow and steep-angled retouch flakes. Borden does not discuss expedient chipped stone tools to the same extent as LeClair. Borden does not mention utilized flakes or narrow-angled retouch flake implements, but he does describe several different kinds of 'scrapers' or steep-angled retouch flakes (1975:72-74). While bipolar implements are present at both sites, only Esilao has definite evidence for a bipolar quartz microlith technology. LeClair (1976:41) states, "Some of the blades ... are the result of using piece esquilles of which there are at least two examples". This hints at a possible bipolar quartz technology, but Leclair does not include quartz as a raw material type in his paper. LeClair also states that he has microblades derived from a prepared core. I assume these blades are obsidian, although he does not say. This is the first appearance of a microblade industry including prepared cores. Unfortunately, no diagrams or pictures are published.

Shaped Chipped Stone Tools

Shaped chipped stone tools are not as common as unshaped at either site. LeClair states that 5% of the assemblage was comprised of bifaces (1976:38). It is probable that some shaped chipped stone tools are included in the uniface category. Biface styles from Maurer include leaf-shaped, contracting stem with shoulders and side-notched. At Esilao biface styles include leaf-shaped (Borden calls them laurel-leaf-shaped), contracting stem

with shoulders, corner notched with square shoulders and parallel-sided stem (which may be related to some of the parallel-sided stem ground stone points recovered at Locarno). In general, the biface styles are similar. Without personally examining the two artifact assemblages, I cannot say whether or not narrow-angled formed unifaces are present during the Eayem phase. I would hypothesise that they are present, but that is just an educated guess.

Ground Stone Implements

According to Borden (1975), the first evidence for ground stone technology occurs at 5000 BP, and the earliest part of the Eayem component has no evidence of a ground stone technology (1975). This date of 5000 BP assumes that his earliest radiocarbon date of 5500 BP is accurate. If this early radiocarbon date is too old, the introduction of ground stone in the canyon could be more recent (and closer to the time of introduction of ground stone technology farther down the river). If his date of 5500 BP is correct, the introduction of ground stone technology during the middle of the Eayem component suggests that the pre-5000 BP assemblage is not Eayem in nature, but more similar to the older Mazama phase. It may also be that ground stone technology is adopted during the middle of the Eayem phase, and not at the beginning.

Borden states that several fragments of well made ground stone knives are present. He does not say where within the assemblage these objects were recovered, how many fragments were found, nor whether the objects were recovered <u>in situ</u>. If he is correct, these are the earliest examples of ground stone knives from B.C. and they are not an artifact type found in the St. Mungo phase. Borden does not directly state that there was disturbance at Esilao (Borden 1968:23), but it is possible that the ground stone knife

fragments were mixed into older deposits. Suffice it to say there is more than one potential explanation for the early appearance of these objects. Until there is more information, the occurrence of ground stone knives in the Eayem phase must be questioned.

Chipped and ground stone objects are present at Esilao for the first time during the Eayem phase and include leaf-shaped projectile point-like objects made from slate (1975:75). Besides the chipped and ground stone projectile point-like objects and the ground stone knives, there are only two other objects Borden describes as ground stone objects. There is a single example of the incised decorated plaque objects made from a metamorphosed sedimentary rock first discussed in the introduction to the St. Mungo phase. There are two examples of grub effigies made from a metamorphosed sedimentary rock. One example was recovered in situ from Esilao, but one was surface collected from Milliken (Borden 1975:76). These effigies are the same as those of bone found downstream at Glenrose and St. Mungo.

Except for the occurrence of ground stone knives, the other ground stone artifact types are present in other Charles components downstream. Glenrose has ground stone leaf-shaped projectile points, incised decorated plaques and bone grubs. St. Mungo has both incised decorated plaques and bone grub effigies.

To me, there is minimal evidence for the presence of a ground stone technology at Esilao that could be responsible for well made ground stone knives. There is very little diversity in the objects described and besides the ground stone knives, there is no other artifact type made from slate and completely ground on all surfaces.

Borden (1975:75) states, "A series of small and large abrasive slabs of slate, sandstones and mica schist was recovered from the same levels that yielded the ground slate artifacts". This is the first time I have seen it suggested that slate and schist objects could operate as successful abrasive stones. I would like to examine these objects to determine their definition as abraders. Unfortunately, Borden does not say how many abraders were present at Eayem. While their presence can be an indirect indicator of a ground stone technology, they are not a single function object and they may also be indirect evidence of a developed bone and antler technology.

Borden's claim that the earliest ground stone knives during the Charles culture come from the Eayem component at Esilao needs to be critically re-examined in light of the absence of ground stone at the more fully reported and contemporaneous Maurer site. While ground stone is present in the St. Mungo components, as stated by Matson (1976), ground stone knives are not a part of the St. Mungo phase. This statement was supported by the research reported in Chapter Two which uncovered no ground stone knives from any of the three St. Mungo components examined.

There has as of yet been no discussion of the ground stone technology present at Maurer. There is a simple explanation for this oversight. Of the 6000 objects excavated from the Maurer site, none showed any evidence of grinding or abrading. Furthermore, no abraders were found. While ground stone objects are never common in the Charles culture assemblages so far examined for this thesis, there is always some present. The complete absence of ground stone at Maurer is unique. Ground stone should be present and its absence suggests either the component is earlier than the other Charles

components or that ground stone technology was not present during the Charles culture in the Fraser Valley.

Is it possible that ground stone is absent from Maurer due to its age? Two of its four dates are close to 4800 BP, a time which sees a non-Charles culture phase present on the Lower Mainland. Could it be that like Esilao, there is an older component present which is not part of the Eayem phase? The third date falls near 4300 BP which is the starting date for the Charles culture on the Lower Mainland. Therefore, of the four dates, only one is located well in the time range for the St. Mungo phase. From the preliminary report it is not obvious where the dates came from and how much of the deposit is younger than 4300 BP. If that question could be answered perhaps one could study the feasibility of an older non-Charles component.

Another probable explanation for the absence of ground stone technology revolves around the possibility of the presence of a different cultural group at the site. This could not be proven from the data in the preliminary reports at this time.

This lack of ground stone is reflected in a similar paucity from the Charles component at Crescent Beach (when compared to Glenrose and St. Mungo), but there are obvious differences. Crescent Beach had the highest proportion of abrasive stones, and while there were only two ground stone objects recovered, the hundreds of ground stone beads lay to rest any thoughts of ground stone technology being absent in the Charles component at Crescent Beach to the same extent it is absent at Maurer.

Bone and Antler Implements

Organic preservation was extremely poor at both sites and there was minimal recovery of organic remains. LeClair suggests that a bone and antler

technology was absent from Maurer (1976:42). He bases this argument on the lack of large calcined bone fragments recovered from deposits showing evidence of being burnt. There must be an environmental explanation for the absence of 'large' calcined bone fragments, because the complete or near absence of organic faunal remains also points to a poor preservation environment rather than the absence of a bone and antler technology.

Artifact Comparison: Conclusions

General conclusions about the artifact types present and absent from the two components comprising the Eayem phase point to both similarities as well as important differences. Chipped stone tools of an expedient nature dominate both artifact assemblages with minimal emphasis on single function artifact types. While a bipolar technology is present at both sites, evidence for a bipolar quartz microlith technology is present only at Esilao, but it may also be present at Maurer. At Maurer there is some evidence for a prepared blade technology, although there are no visual examples of what these objects look like, making comparisons difficult. The presence or absence of a prepared microblade technology has been a non-question until the introduction of the Maurer artifact assemblage for there has only been one possible microblade (from Glenrose) and one blade-like flake (from Crescent Beach) found in the artifact assemblages analyzed so far. For the first time there is a suggestion of a prepared blade technology pre-Locarno Beach. Examination of these microblades and cores would be a priority for the person who would wish to do further work on this question. The microblades from Maurer are not common, and I assume are made from obsidian. The only stylistic marker

present at both sites for the Eayem phase is corner notched (stemmed) bifaces.

Differences between the two sites besides the aforementioned quartz microliths and microblades also include the presence of two ground stone artifact types present at Esilao and not at Maurer. Grub effigies and decorated ground stone tablets are not present at Maurer, but they are both found at Glenrose, St. Mungo and a decorated ground stone tablet was discovered at Pitt River. A further similarity between Esilao and the St. Mungo phase is found in the leaf-shaped chipped and ground stone projectile point style.

Raw Materials

The dominant raw material at Maurer is basalt, while Borden (1975:74) states that argillite (also known as a cherty argillite) is the most common raw material at Esilao. Raw materials also include quartz crystal (which is not present at Maurer), various cryptocrystallines (I assume this implies quartzite and chert), and obsidian (which is not present at Esilao).

Faunal Remains

Borden believed Esilao to be occupied on a regular basis throughout the Eayem phase during the fishing season (Borden 1968:14). This is based on the location of the site (high on a narrow bank of the canyon), ethnographic evidence gathered by Duff which pointed to this section of the canyon as a good place to catch salmon (Duff 1952:62), and the carbonized remains of a type of cherry which ripened during the time of the major salmon runs (Borden 1968:13,14). This last piece of information was obtained from the

Milliken site, and he does not state whether carbonized cherry pits were also found at Esilao. There was no organic preservation reported for the Eayem component at Esilao, so it is only through the above mentioned evidence that one can hypothesise site function. Another indirect indication of site utilization is the presence of quartz microliths which are associated with fish remains. LeClair does not hypothesise a site function for the Maurer site. However, its location along a promontory directly above the Fraser River is suggestive of a procurement strategy which focused on utilizing the Fraser, but that is conjecture on my part.

Features

The most interesting aspect of the Maurer site was the presence of what was once the oldest house structure discovered in British Columbia. The following description is a synopsis of LeClair (1976:35,36). This feature was rectangular in nature and its outside measurements were 11 X 7 meters. There were 25 postmolds, and a comparison of their size with those from the other sites would be another important future task. In the feature a hearth 3 X .5 meters was discovered at the south end of the central living depression. There was also a raised bench located in the perimeter of the interior of the feature. The uniqueness of this feature is probably responsible for distinctiveness of this site. Based on the preliminary information, there is evidence for the earliest pithouse (but no longer the earliest bighouse) and a massive collection of objects associated in and around it. There are also four C14 dates associated in some way with the feature and the rest of the site. Some excavation took place in an area of the site not associated with the

feature, but the recovered objects have been determined to be from the same time period of the feature and all have been lumped together.

Conclusions Concerning the Eayem Phase

The first item on the agenda for future analysis of Maurer is a description of what dates are associated with what sections of the site. A stratigraphic profile of all areas of the site would also be helpful. A breakdown of artifact provenience and a splitting of artifacts into groups associated with, beside or away from the feature would provide information pertinent for the determination of how many components are present at Maurer. Such splitting of the artifactual data may help to determine the possibility of mixing of more than one component. Although LeClair does not say, a great deal of deposit was removed from this site including over a meter and a half of deposit laying directly over the floor. All the objects in this overburden have been lumped into the same component and the overburden has been attributed to wall slump. Part of the unusualness of the Maurer site stems from the lack of information present concerning the provenience of the recovered data. Before one can attribute what has been found at Maurer with the rest of the Charles components, one would need definite proof of a 'clean' component untainted by older or younger deposits (for further data on a possible Charles culture site with evidence of a house structure, see Mason, Andrew forthcoming on the Hatzic site).

At this point it is obvious how much more work needs to be done with the Eayem phase data to bring the data to the same level as that derived from the St. Mungo phase. There is need for a survey of all potential Charles culture components occurring in the area of the Fraser River from Yale to Pitt

River. Archaeologists cannot continue to acknowledge the existence of this phase without attempting to add more information to the original definition which has not changed since 1976. The first step in this change will come about with the publication of Borden's original work at Esilao and LeClair's work at Maurer. Once the typesite data has been published it will be easier for other archaeologists to decide the plausibility of the existence of the Eayem phase over such a wide area and such a long time frame. The components from Eayem and Maurer described in this analysis pre-date Locarno Beach, but their own particular characteristics and similarity with other phases incorporating the Charles culture, cannot be accurately determined at this time with the data so far presented. The Hatzic site at this point in time is our best hope for a well published and defined Eayem component.

Controversial Charles Culture Components

Marpole

Site Location

The Marpole site has been excavated several times over its long history of investigation. It is the typesite for the Marpole phase which follows Locarno Beach in Northwest Coast prehistory. In 1973 emergency salvage excavations were undertaken by James Baker (1974) at Marpole (DhRs 1). These excavations were later examined by David Burley and published as Appendix B in his dissertation which presented a discussion of the Marpole Culture Type (Burley 1979). There was some suggestion from the 1973 excavations that an earlier component was present. Previously, discussion of

the Marpole site assumed only a single component was present. The Marpole site is probably the most famous shell midden site in Vancouver. It is located at the North end of the Alex Fraser Bridge near the Fraser Arms Hotel.

Ethnographic Culture Area

The Marpole site is located in the ethnographic boundaries of the Halkomelem speaking Musqueam who belong in the larger Central Coast Salish culture area.

Excavation Procedures

This particular excavation at Marpole was conducted by arbitrary 10 cm levels in a highly disturbed portion of the original midden (historic artifacts were present throughout some of the units excavated and up to 60 cm in other units). The excavations took place in alternate 2X2 meter squares along a north/south baseline. Eventually, a major trench was dug which was intersected by another trench running east/west (Burley 1979:513). Deposits were dry screened through 1/4 inch mesh. Burley did not include in his analysis any excavations from which records were not kept. Unfortunately, like most projects that have been undertaken at Marpole, this project was a salvage project with limited time and money available.

Chronology

There are no early dates from this potential early component. Burley's hypothesis concerning this early component is based on the presence of certain artifact types and the vertical placement of certain artifact types in the components (Burley 1979:526).

Artifact Assemblage

Burley examined what he considered the most time sensitive artifact types and plotted their density per each 10 cm level. These artifact types include bifaces, thin ground stone knives, harpoon styles along with bone and antler point styles. He argues that thin ground stone knives are rarely found in pre-Marpole phase context, and they would therefore be the most sensitive to frequency variation (Burley 1979:526). Burley (1979:527) demonstrates that as one goes down through the deposits there is a decrease in the frequency of thin ground stone knives with a noticeable decrease at 80 cm, and an almost total absence of ground stone knives by 120 cm. This type of analysis should be subjected to a Mann-Whitney statistical test with the Null Hypothesis that the ground stone knives per arbitrary level are sample populations drawn from the same parent population. The Alternate hypothesis would be that the frequencies exhibited were different due to the fact some were sample populations drawn from two or more different parent populations. This type of test would help one to determine the statistical significance of the differences exhibited in Figure 3, Appendix B (Burley 1979:527). If there is little or no statistical difference, one can hardly argue for a cultural difference.

Based on the frequency of the previously mentioned diagnostic artifact types, Burley traced out a profile separating the two components (Burley 1979: Appendix B, Figure 4).

Burley placed 1041 artifacts into either Component 1 or 2 (with Component 1 being the Early Component and Component 2 being the Marpole component). There is a large difference in size between the two artifact assemblages (186 for Component 1 and 855 for Component 2), therefore, any

discussion and comparison of proportions should be judged critically. Due to the arbitrary nature of the delineation of the two components, I will not conduct a detailed analysis of the artifact breakdown vis-a-vis each artifact type. Rather, I will provide some general statements in some of the larger artifact type groupings.

Unshaped Chipped Stone Implements

There is no discussion of core variation or unshaped chipped stone tools, although Component 1 has slightly more cobble tools. Component 2 has quartz crystals which I assume are quartz microliths or some such similar artifact type, while Component 1 has none.

Shaped Chipped Stone Artifacts

Shaped stone tools exhibit a difference in variety and proportion of bifaces present in each component, with more variety present in Component 2. Both components have microblades present in minimal numbers. Chipped slate discs which I assume are the same artifact type as what I have called chipped slate narrow-angled biface objects show a large difference in proportions. The proportions for this artifact type are 22% for Component 1 and 0.3% for Component 2. This artifact type has only been seen in this analysis in Locarno Beach components (with a single exception from Crescent Beach's Charles component).

The overall proportions of chipped stone implements in Component 1 is 61.2% (114) versus 19.2% (164) in Component 2. This is a large difference on the same level as that exhibited in chipped stone proportions between the two Locarno Beach components previously discussed in Chapter Three. This high proportion of chipped stone for the early component is more similar to the Crescent Beach, Locarno Beach component, but this similarity is only on the

surface, as most of the chipped stone comprising Marpole's Component 1 is shaped chipped stone versus the high proportion of unshaped chipped stone in Crescent Beach's Component Two.

Ground Stone Objects

The number of abrasive stones in Component 1 is much lower than in Component 2. There is another sizeable difference in proportions between the number of thin ground stone knives in each component. Component 1 had 15 ground stone knives and all of them may be out of context. If they are taken at face value, they comprise 0.08% of the assemblage versus 45% for Component 2. This is a fairly substantial difference. What one would define as a thin ground stone knife is subjective, but in this case, almost all of the ground stone knife implements are defined as thin ground stone knives. Ground stone points are less common in Component 1, but according to Table 4 (Burley 1979:531-534) facetted ground stone points are present in neither assemblage. Celts are present in both assemblages, as are ground stone disc beads. There are slightly more ground stone artifact types present in Component 2. There are no Gulf Island complex objects present in either component.

The proportions of ground stone objects in the two components is very different with 26.3% in Component 1 versus 66.7% in Component 2. This difference is substantial. The Locarno Beach component from Locarno Beach shares a similar proportion of ground stone with Component 1 at Marpole. The ground stone proportions for the Charles components so far analyzed have all been less than 6% of the total artifact assemblage.

Bone and Antler Artifacts

There is a substantial decrease in the number of bone and antler objects present in Component 1, but the proportions for the two components

are similar (9.1% for Component 1's bone implements versus 9.8% for Component 2's bone implements, and 2.6% for Component 1's antler artifacts versus 3.3% for Component 2's). Bone objects are not as common as they are in the Charles components or the Locarno Beach component at Locarno Beach. The proportion of bone in Component 1 is almost half the proportion of the Locarno Beach component at Crescent Beach (9.1% for Marpole versus 16.7% for Component Two at Crescent Beach). The low proportion of antler is similar to Crescent Beach and higher than the proportion from Locarno Beach.

Faunal Remains and Features

There is no discussion of features, faunal remains, or skeletal remains recovered from the excavation Burley used for his analysis.

Conclusions

It is likely that a non-Marpole component is present at the Marpole site, although many non-cultural variables may be partially responsible for the artifact assemblage differences including; excavation strategy, sample size, a change in settlement pattern, a change in seasonal occupation, and/or a change in site function. Although Burley argued (1979:538-541) for Component 1's affinity to the Mayne phase, it is more likely to be affiliated with the Locarno Beach phase, at least according to the analysis I have completed. His argument for the component belonging to the Mayne phase is based on a similarity of projectile point styles, a single bilaterally barbed harpoon (a style also found in the St. Mungo phase), which while not usually considered the harpoon type for the Locarno Beach phase, is present, at least according to Mitchell (1971:57). Burley goes on to say that the relative absence of

ground slate points and knives, presence of cobble core tools, and a variety of flake implements of obsidian and quartz crystal are also characteristics of Component 1 and these characteristics are found in the Mayne phase (Burley 1979:539).

Burley argues that Component 1 lacks some distinctive characteristics of the Locarno Beach phase including large bone projectile heads, the more exotic forms of ground stone points (which I assume are the facetted styles) and Gulf Island complex objects. Similarity with Locarno Beach diagnostic includes the presence of microblades, chipped slate knives, cobble implements, an earspool and a one-piece toggling harpoon head similar to the one from Locarno Beach.

Based on the diagnostics, the cultural affinity of Component 1 is uncertain, but when one compares the artifacts present, keeps in mind the small sample size and examines the proportions of artifacts belonging to chipped stone, ground stone, pecked and ground stone, bone and antler, it is evident that Component 1 has a closer affinity to the Locarno Beach phase. Logically this affinity makes sense, because the Locarno Beach phase evolves into the Marpole phase, and there is no evidence for the existence of the Mayne phase in the Vancouver area. If one were to argue that this component belonged to the Charles culture, one would have to argue that it was St. Mungo in nature because the St. Mungo components are from a similar environment to the Mayne component.

At the time of Burley's analysis the artifacts from the Locarno Beach site were not well published (except for Mitchell's work at Montague Harbour), and there was little analysis done of either the Charles culture or the Locarno Beach phase. With the information now available, I would argue that there is

little evidence for a Mayne component at Marpole, but there is some evidence for a Locarno Beach component, although one would need further non-artifactual evidence to prove or disprove the presence of Component 1.

While this analysis points to provocative answers, one must remember the perils of defining a cultural phase based solely on the diagnostic artifact types present or absent. In this case, the diagnostics are not definitive of any cultural phase, but a comparison of artifact proportions shows more similarity than is first observed in the single artifact types alone. The absence of diagnostics do not mean much in this case due to the small number of artifacts present. Considering the small number, it is surprising how many diagnostics are present in Component 1 at Marpole (quartz microliths, microblades, chipped slate discs, celts, earspool and 1-piece toggling harpoon head). It is also dangerous to define a cultural phase based on diagnostics, because sometimes the diagnostics for two phases may overlap. In this case the harpoon style, projectile point styles, the presence of cobble core tools and a variety of flake implements of quartz crystal are all artifact types present in both the Mayne and Locarno Beach phase, but they are used to define the Mayne phase. The proportions of these artifact types undoubtedly vary in the two phases, but without access to the complete list of artifacts and their proportions, one cannot use a list of general diagnostics such as the one listed above without risking error. Eventually, as more and more information becomes available about the early periods on the Northwest Coast, our list of diagnostics will change with some being no longer considered diagnostic of a particular phase because their use is more widespread than originally defined.

Bliss Landing

Site Location

A small salvage excavation was undertaken by Owen Beattie in the summer of 1971 at the Bliss Landing site (EaSe 2) situated in Turner Bay, six miles north of Lund on the west coast of the Malaspina Peninsula (Beattie 1972). The site was located in a sheltered northeast corner of Turner Bay (Beattie 1972:23).

The cultural deposits are semi-circular in outline measuring roughly 50 meters along the beach front and 50 meters from the beach front to back. The site had been extensively disturbed throughout the historic period.

Ethnographic Culture Area

Ethnographically the Malaspina Peninsula falls within the territory of the Sliammon, a sub-division of the Coast Salish Mainland Comoxan dialect (Barnett 1955), and a member of the Northern Coast Salish cultural area (Kennedy and Bouchard 1990). The Northern Coast Salish language groups share their southern border with the Central Coast Salish.

Excavation Procedures

Excavations took place during a two week period, with six test pits dug throughout the midden deposit (Beattie 1972:Figure 14.). The deposits were excavated by either 10 cm or 20 cm arbitrary levels and there is no mention of any screening of the midden material.

Chronology

There were no carbon dates retrieved from this site. Based on the artifact assemblage Beattie delineated two different components defined as early and recent (Beattie 1972:26).

Artifact Assemblage

Unshaped Chipped Stone Implements

There were 100 classifiable artifacts recovered from this excavation with 81 artifacts comprising the Early Component. Beattie does not discuss the nature of the cores present, so one can assume that cores were not present in this component. Hammerstones and cobble chopping tools are present, as are flake tools of various stone materials including obsidian. There are 16 flake tools made from quartz and two made from obsidian.

Shaped Chipped Stone Tools

Bifaces are represented by five objects, one of which is made from quartz. This is only the second time in my analysis that I have encountered the use of quartz for objects other than microliths or microblades. The first time was at Locarno Beach where a steep-angled formed uniface was present (Pratt et al. 1991). Based on Figure 16 (Beattie 1972:35) the biface styles incorporate both leaf-shaped and contracting stem. There are three quartz microblade cores present. There is one basalt, one obsidian, and four quartz microblades also present.

Ground Stone

Ground stone technology is absent from this artifact assemblage. There is also no evidence for a chipped and ground stone technology.

Bone and Antler Objects

Bone preservation was adequate to preserve one bear canine pendant, three awls, one chisel, and six points.

Beattie asserts that although the assemblage was small, the Early Component best fit into the Mayne phase as defined by Carlson (1970). I would argue that based on the most recent information, the artifacts from the Early Component at Bliss Landing are more indicative of the Locarno Beach phase. The high proportion of quartz tools including the use of quartz for objects that are not microliths or microblades is not found in the Charles culture components so far analyzed. Furthermore, the three microblade cores are the first ones found in this analysis and they are traditionally associated with the cultural phases after the Charles culture. The microblade cores from the Maurer site could be an exception to this rule, but they have not yet been photographed and published. Another argument for this component to be placed in the Locarno Beach phase concerns the presence of six bone 'points'. Without examining these objects I cannot be sure, but one difference I found between Charles culture and Locarno Beach artifact assemblages, is that bone points are more common in Locarno Beach.

The strongest argument for this component belonging to the Mayne phase is the lack of ground stone technology, which is not very common in the Mayne phase, but is prevalent in the Locarno Beach phase. A non-cultural explanation for the lack of ground stone is that its absence is due to site function, or the small assemblage size. All of the artifact types present at the site suggest a Locarno Beach component.

Faunal Remains

A preliminary faunal analysis was done, but there is no discussion of how the faunal remains were collected, and sample bias is not known. Beattie states that a pronounced layer of shell, separated the two components in two of the Test Pits (Beattie 1972:32). Fish remains were more abundant in the most "Recent Component", while sea mammal bones were slightly more common in the "Early Component". Minimal amounts of bird bones were present in both components. Every level also contained ungulate bones.

One cannot say much about the cultural affiliation of the Early Component based on the faunal remains as reported in the preliminary report. The remains do not point to either the Mayne or Locarno Beach phase.

Features

Based on Beattie's Ph.D. (1980:314-315) and the preliminary report (1972:33-36) two burials from Bliss Landing were diagnosed as belonging to the Mayne phase. Burial 2 was lying on its right side in a flexed position. The skull's shape suggested moderate elongation with a bulge in the occipital region. Whether this bulge was intentional has been an ongoing debate. Originally it was determined in the field that the bulging was intentional although ... "a small rock wedged between an outcrop of bedrock and the bregma of the skull later proved responsible for the skull shape" (Beattie 1972:33). When the skull was reconstructed in the lab, the decision was made that it was not deformed. In Beattie's Ph.D., the decision has been made that the skull was intentionally deformed lamboidally, albeit moderately (1980:313). This is not the end of the story, for Cybulski (1991) suggests that this type of cranial deformation may be the unintentional by-product of cradling

practices in infancy. In other words the skull of burial 2 is moderately deformed but this deformation may or may not be intentional. The evidence is too equivocal to be used on its own as evidence for cranial deformation during the Charles culture.

Burial 3 was also unusual in that the cranium was missing from this otherwise perfectly preserved skeleton. A similar skeleton was recovered from Crescent Beach's Component Two. The skeleton was positioned on its right side in a less flexed position than burial 2. A large tabular slab of bedrock had been placed on the skeleton prior to internment. Beattie (1980:314) later discovered that there was evidence of labret wear on the mandible. Besides the two labrets recovered from Helen Point, all other labrets have come from Locarno Beach components. Unfortunately, the presence of labret wear on this burial does not clarify the cultural phase present at Bliss Landing, because it either confirms the use of labrets during the Mayne phase or is another example of labret wear from a Locarno Beach phase skeleton. While not earth shaking, it is thought provoking that two skeletons, one from a Locarno Beach component (Crescent Beach Component Two), the other from a probable Locarno Beach component (Bliss Landing) are both missing their cranium. There is a further similarity between these two skeletons in that both had evidence of labret wear on the mandible (Beattie 1980). There were no other features associated with the Early Component at Bliss Landing.

Conclusions

The place of Bliss Landing in the Northwest Coast prehistoric cultural sequence is tenuous at best. It may be an undated example of the Mayne phase or an undated example of the Locarno Beach phase. The two

components from Bliss Landing and Marpole would benefit the most from radiocarbon dates. I am more inclined to argue at this point that Bliss Landing is an undated Locarno Beach component based on the artifact assemblage, the equivocal evidence of the faunal remains, and the missing cranium and labret wear from burial 3 which are both associated at Crescent Beach with a Locarno Beach component. Furthermore, there is minimal evidence of cranial deformation on skeleton 2, making head deformation during the Charles culture yet to be proven beyond the shadow of a doubt.

Pitt River

Site Location

Pitt River (DhRq 21) is another site thought to belong to the St. Mungo phase. It was excavated during three field seasons from 1978 to 1980 under the direction of Valerie Patenaude (1985). Patenaude does not directly refer to the "Early component" at Pitt River as St. Mungo. Instead, she places the Pitt River Early component in the Charles culture. While not stated, the Early component at Pitt River is most likely representative of the St. Mungo phase. The Pitt River site is located at the confluence of the Pitt and Fraser Rivers on the north side of the Fraser River.

Ethnographic Culture Area

Ethnographically, Pitt River falls within the traditional territory of the Mainland Halkomelem speaking Katzie who lived on the Fraser River and were a sub-group of a larger society called the Stalo (Duff 1952). The Katzie are members of the Central Coast Salish.

Excavation Procedures

The excavation occurred over two field seasons and Valerie Patenaude (1985) wrote the results. Both trench and wide area excavation techniques were employed (Patenaude 1985:98-113). Excavation was by natural layers with arbitrary 5 cm levels in thicker layers. Soil samples and layer samples were taken throughout the excavation. All material was water screened through 1.64 mm (1/8 inch) screen.

Chronology

The C14 dates from Pitt River span the Charles culture and Locarno Beach phase. (Patenaude 1985:15). It is difficult to discern the boundary between the two components because Patenaude states that the boundary she has designated is arbitrary and, "... the collections from these two components were virtually identical in composition" (Patenaude 1985:200). Furthermore she states;

> It will be noted that there is some overlap between these ranges of dates. Both Charles and Locarno Cultures are part of a continuum referred to as Proto-Coast Salish, and as such, have no clear dividing lines between them (Patenaude 1985:189).

In other words, she, like Carlson and Mitchell with the Mayne and Locarno Beach phases, believes in lumping the St. Mungo phase with Locarno Beach. Yet, the degree of similarity between the two components could be the result of non-cultural processes such as excavation procedures that mixed the components. While there are many dates for Pitt River, the possibility of mixed components and the arbitrary nature of the component divisions, lead to my decision to omit this site from the St. Mungo phase discussion in Chapter Two. There is undoubtedly a Charles component at Pitt River, but its exact nature is yet to be discovered.

Artifact Assemblage

At Pitt River, there is a great deal of similarity on both a general and specific level with other St. Mungo component artifact assemblages. Chipped stone tools dominate the artifact assemblage. Both core and flake tools are present and common.

Unshaped Chipped Stone Objects

Unshaped chipped stone implements such as hammerstones and pebble tools are not as common as in earlier time periods, but they are present.

Unshaped Chipped Stone Flake Tools

Unshaped chipped stone flake tools are probably the largest and most common general category of chipped stone tools. Artifacts comprising this category include: utilized flakes, steep and narrow-angled retouched flakes, as well as bifacially retouched flakes.

Pitt River contains evidence of a bipolar quartz microlithic industry, which is not common in St. Mungo components. There were 41 'Crystal Blades' (Patenaude 1985:246-249) present in the early component. This artifact type is used as a stylistic marker for the later Locarno Beach phase, and because Locarno Beach is present at Pitt River, this may be another indication of mixing between the St. Mungo and Locarno Beach components at Pitt River.

Another possible explanation for this artifact type's abundance during the early component could be due to site function and artifact function. Patenaude (1985) postulates that site function was one of a fall fishing camp. At another early (Locarno Beach aged) fall fishing camp on the Hoko river, quartz microliths were discovered and through experimentation found to be useful for processing large quantities of fish (Flenniken 1981). Quartz microliths may not be present at other St. Mungo components because the

activities that took place at these sites were not as focused on procuring fish.

Another explanation for the appearance of these artifacts may be that vein quartz was a more abundant and accessible raw material facilitating its use at an earlier time period than that of most quartz usage.

The least likely explanation is that these artifacts are an indication of a different culture group than that found downstream at Glenrose or St. Mungo (where no quartz microliths were found). The debate over quartz microliths will continue for some time.

From Pitt River there is no evidence of a prepared blade core technology. The dominance of unshaped chipped stone tools (both core and flake types) suggests a technology of expediently produced tools.

Shaped Chipped Stone Tools

Shaped Chipped Stone Tools contains the categories formed unifaces and bifaces. Formed steep and narrow-angled unifaces are not as common as their unshaped cousins. Narrow-angled formed unifaces are present at Pitt River and based on illustrations are similar to those from Glenrose, St. Mungo and Crescent Beach. This artifact type may be a stylistic marker for the St. Mungo phase and its presence at Pitt River is well noted.

There are two categories of shaped bifaces present in the early component, leaf-shaped and contracting stem. Leaf-shaped bifaces are an older style, but the form is represented in the early component. Contracting stem bifaces (both with and without developed shoulders) are also present.

Ground Stone Implements

Patenaude (1985:189) lists two chipped stone knives, and four chipped slate knives present in the early component. This is the highest proportion of these objects from any of the Charles components. Twelve shaped abrasive

stones are present. This is the first time unshaped abrasive stones are absent while shaped abrasive stones are present. Perhaps their absence results from a difference in differentiating "shaped" versus "unshaped". Their presence does not necessarily indicate a ground stone technology, as Patenaude (1985) points out, abraders could also be used for the making of bone and antler tools (which due to poor preservation were not present at Pitt River). Fragments of ground stone points were found at Pitt River. Ground stone knives are not present. Ground stone disc beads are present, but not very common.

Two Gulf Island complex artifacts are found in the Charles component (Patenaude 1985:154-160). Like quartz microliths, Gulf Island complex objects are stylistic markers for the Locarno Beach phase. The two examples from Pitt River are the only ones on the Mainland not found in a Locarno Beach component. Therefore, there is some doubt concerning the validity of these two objects being present in the Charles component at Pitt River. They cannot be considered indicators for the St. Mungo phase until other similar objects appear in a site not having a Locarno Beach component present.

Pitt River has one fragment of decorated and incised groundstone similar in style to those from Glenrose, St. Mungo and Esilao. Pecked and ground stone implements are rare.

Bone/Antler/Shell Objects

Unfortunately, organic preservation was not ideal at Pitt River and there were very few non-lithic artifacts recovered.

In conclusion, the artifact assemblage at Pitt River is suggestive of a St. Mungo component, but there is a mixing of artifact types with Locarno

Beach. Until one can be certain that the two earliest components at Pitt River are separated based on an intensive comparison of both artifactual and non-artifactual data, it is not wise to make any definite statements.

Raw Materials

Basalt of varying quality is the dominant chipped stone raw material. Obsidian is also present in low numbers.

Faunal Remains

Faunal information from the Pitt River site is minimal due to the acidic nature of the soil. Pitt River may have been a limited activity site in which salmon and wapato (an edible plant species) were utilized (Patenaude 1985:286-287). Salmon remains are the most common faunal remain recovered from the site (Patenaude 1985:354-357). During St. Mungo times the Pitt River site was located in a slough/marshland environment not conducive to a permanent base camp (Patenaude 1985:287), but located in a good area for the taking of spawning salmon swimming the Fraser river. The presence of the Pitt River site as a specialized salmon procurement site in itself suggests the increasing importance of fish during the Charles culture.

Features

At Pitt River, the postmolds recovered are suggestive of the utilization of less permanent dwellings. Hearth features are not always well defined, nor is there any particular dominant style, but they are the most common feature. Pitt River had numerous pit features dug into the hardpan clay underlying the cultural deposits. Patenaude hypothesises that these pits were used to

steam wapato and possibly other locally available plant resources. This is the first time there has been an attempt to postulate that the evidence is suggestive of plant procurement during the Charles culture.

Conclusions

Pitt River is an important site because the data from it could be used to do an intensive survey and comparison of the St. Mungo and Locarno Beach phases. It would be fruitful to compare such an analysis with that I did with the Crescent Beach data. Based on what I have now discovered about the differences between the St. Mungo and Locarno Beach culture types, it would be appropriate to apply this knowledge to a site such as Pitt River. At this point I would argue that there is definitely a Charles component present, probably belonging to the St. Mungo phase, but the possibility of mixing with a Locarno Beach component makes it difficult for one to make specific statements about this site.

Pender Canal

Site Location

Work at Pender Canal (DeRt 1 and 2) on North Pender Island in 1984 and 1985, have revealed deposits defined as belonging to the Mayne phase (Carlson 1985 and 1986).

Ethnographic Culture Area

Pender Canal belongs within Straits speaking Saanich territory and can also be grouped into the Central Coast Salish culture area as defined by Suttles (1990).

Excavation Procedures

Throughout the excavations at Pender, 10 cm arbitrary levels were employed with artifacts tied in three dimensionally (Carlson 1985:10). Soil was dry screened through 1/4 inch mesh. Column samples were taken as were shell samples of each species found in each level (Carlson 1985:53-55). All excavations took place in 2X2 metre units.

Chronology

The dates from Pender Canal (Carlson 1985: 60, 1986:17) have been published, but there may be more to come. There are a total of 12 dates published covering a maximum time span of 5390 to 2900 BP. In the Pender report, the Mayne phase component comprises the time frame of 5000 to 4000 BP, while Locarno Beach ranges from 4000 to 2500 BP. There are five dates belonging to the Mayne phase as defined in the Pender report and they span 5390 to 4030 BP.

This difference in definition of cultural phases makes it difficult to compare the information from Pender to that of other sites with more traditional separations of cultural phases. This lumping of phases also makes it difficult to determine what does and does not belong to the definition of the Mayne phase as it was first defined at Helen Point.

The earliest date at Pender Canal is 5170±220 BP (RIDDL 100) which directly dates a burial that will be discussed in the Features section. In general the dates from Pender are old with five dates pre-4300 BP. All these dates would fall in the Mayne phase, but not in the St. Mungo. Included in these five dates are two of 4320 BP, leaving only three that are outside the time frame for the St. Mungo phase.

Artifact Assemblage

The artifact assemblage for Pender Canal has been divided in the literature between a pre-4000 component (the Mayne phase component) and a post-4000 component (the Locarno Beach component), making any direct comparisons between the artifact assemblage and other Mayne and St. Mungo artifact assemblages difficult due to the difference in the definition of the cultural phases. The final number of artifacts recovered from Pender Canal is not known, but after the first field season there were 525 of which Carlson (1985:60) states seven artifacts were recovered from the Mayne phase component. At this time the exact relationship between the very small Mayne component and the many published dates is not known.

The artifact assemblage from the Mayne component at Pender Canal is comprised of the following artifact types: one contracting stem biface, one flaked stone fragment, one abrader, one worked bone fragment, one bone bead and two bone point fragments (Carlson 1985:60).

The artifact assemblage is too small to allow for an informative discussion of raw material types. There is no information concerning faunal remains.

Features

Due to the small size of the early component from Pender Canal, there is little information concerning features. Based on the preliminary reports, there may or may not be postmolds present in the Mayne phase component (Carlson 1985:62). A single burial was obtained from the Mayne component at Pender Canal. This burial was directly dated to 5170±220 BP (RIDDL 100) (Cybulski 1991:Appendix A:7). This incomplete burial was disturbed and the original

position of interment is not discussed. Associated with the burial was red ochre and a large conglomerate rock (Carlson 1985:98). The mandible on this burial has the oldest known example of labret wear on the south coast of British Columbia (Cybulski 1991: Appendix A:8). This is an important finding and to date is the first definite example of early labret wear from a pre-Locarno Beach component. As we shall soon see, similar evidence was discovered from two burials excavated at the Tsawwassen site.

Conclusions

Based on the preliminary data, Pender Canal can be considered an important site that has already brought to light questions concerning previously accepted ideas about Northwest Coast prehistory. The discovery of a burial dated to 5170 BP with evidence of labret wear forces archaeologists to reconsider the placement of the use of labrets in just the Locarno Beach Culture Type. Some may argue that one burial is not enough evidence.

Once this research has been more fully reported it will be vital to compare the artifactual and non-artifactual data to that from Helen Point in order to determine similarities and differences with the hopes of delineating a Mayne phase for the Gulf Islands. There is still a great deal of work to be done with the information from this site and it will be pivotal in future analyses that focus on the Charles culture.

Birch Bay and Semiahmoo Spit

Site Locations

Located at Birch Bay in Whatcom County, two miles north at Semiahmoo Spit, Washington, are several sites. Some of these sites have tentative Charles

culture components. The Marsh site (45-WH-24-L) occupies a sheltered position in Birch Bay. Preliminary results of this excavation are described in Larsen (1971). Along with the Marsh site one other site excavated in the Semiahmoo Spit area has been tentatively defined as either Locarno Beach or Mayne phase (Grabert and Larsen 1975:246). Grabert and Larsen (1975:243) also mention that there are a number of undated inland sites which are similar to early Fraser Delta and Gulf Islands sites. They discuss a site seven miles upstream from the mouth of the Nooksack River called the Smith Garden site (45-WH-34).

Ethnographic Culture Area

Ethnographically the sites lying in Birch Bay and the surrounding area are in the territory of the Semiahmoo people (Suttles 1951) who are Straits Salish speakers. Like the other previously mentioned Salish groups, the Semiahmoo belong in the Central Coast Salish culture area.

Excavation Procedures

There is no discussion of excavation techniques in either Larsen (1971) or Grabert and Larsen (1975). Therefore, there is no knowledge concerning how much bias was introduced into the data presented. All of the sites are reported as having minimal shell present in the soil, although shell is present in the younger deposits directly overlying the non-shell deposits. Without visual clarification it is difficult to say, but the location of these sites on waterfront suggests to me that the lack of shell in the older deposits is the product of geological activity and not cultural activity (which is what Grabert and Larsen suggest). Julie Stein at the University of Washington (see for

example Stein 1989) has studied older coastal deposits lacking in shell and has proposed that natural processes involving tides and soil chemistry are responsible for the absence of shell.

Chronology

There are no dates for the Marsh site. The site from Semiahmoo Spit (45-WH-17) has a basal date of 4100±500 BP (Grabert and Larsen 1975:240). The Smith Garden site (45-WH-34) has a single date of 4180±120 BP from one of the deeper occupation strata (Grabert and Larsen 1975:245).

Artifact Assemblage

Artifact assemblages for these sites are small. 88 artifacts were found at the Marsh site and there is no mention of non-lithic objects so one can assume that organic preservation was poor. Of the 88 objects, cobble tools of various types were discovered along with 22 flake tools. Basalt is the most common raw material. There is mention of four rectangular blades (Larsen 1971:66) which have been removed from cores using the punch method. There is one biface. One thin slate object is point-shaped with a tapered ground edge. There is no discussion of the early artifact assemblage from the dated deposit 45-WH-17. The inland sites which are briefly mentioned as being possible Mayne phase components are judged so on the following criteria; "... the limited number of ground slate, serpentine, and smaller chipped stone objects" (Grabert and Larsen 1975:244). The Smith Garden site lower deposit contained a few pebble implements, flake tools, and 30 chipped stone bifaces.

Features

Features include hearths, and a small pile of rounded beach pebbles at the Marsh site (Larsen 1971:65).

Conclusions

There is insufficient evidence to place these components into the Charles culture, because the dates are few and far between, the assemblages are too small. There is little non-artifactual evidence to help clarify site function, age or occupation. Nevertheless, I decided to include these components with this analysis as potential dated Charles culture components that must be further published before they can be considered members of the Charles culture.

Denman Island

Site Location

The Denman Island site (DiSe 10) is located on the southwest shore of Denman Island, a short distance north of Repulse Point. It consists of a series of small, shallow pockets of shell midden, a rockshelter and a blufftop lithic scatter. For this analysis the blufftop excavated material is discussed.

Ethnographic Culture Area

Ethnographically this area was occupied by the Pentlatch who are an extinct linguistic sub-group of the Northern Coast Salish.

Excavation Procedures

This site was excavated as a salvage project by a crew under the direction of Morley Eldridge (1987). Twenty 1X1 meter squares were excavated

in 10 cm levels by 4, 50 cm square quadrants. All material was dry screened through 1/4 inch mesh.

Chronology

A section of butchered bone was radiocarbon accelerated dated to 3500±100 BP RIDDL 576 (Eldridge 1987:5-16). This date came from the lower part of the deposit, so the uppermost deposit of the blufftop may be younger than the Charles culture, although Eldridge argues that based on stratigraphy and artifacts, there is no evidence for two different cultural components.

Artifact Assemblage

There was poor organic preservation. Two hundred and six artifacts were recovered from the various sections of the site. The artifact tabulation includes the artifacts from different sections, so the following artifact description may include some objects not belonging to the Blufftop component. I have delineated and separated the artifacts from each of the separate site sections as much as possible but with some of the less diagnostic objects (such as the cores and unshaped chipped stone implements), it was difficult to discern what belonged where. Therefore, this discussion focuses on presence and absence data rather than actual counts. Cores and a single bipolar quartz core are present.

Unshaped Chipped Stone Artifacts

Unshaped chipped stone objects include both utilized and retouched flakes as well as at least one quartz microlith. Other unshaped implements such as hammerstones and cobble tools are absent, although there are two anvilstones present. Doubtless this is partially due to the low sample size.

Shaped Chipped Stone Implements

The shaped chipped stone category focuses on bifaces. There are two objects Eldridge defines as crescents and they are suggestive of some type of special function chipped stone implement. Biface styles are dominated by leaf-shaped forms. There is one example of a stemmed biface which had been modified from a broken leaf-shaped biface (Eldridge 1987).

Ground Stone Tools

There are no examples of chipped and ground stone objects. Ground stone is not common and is represented in the blufftop artifact assemblage by abraders (four unshaped, one shaped). Eldridge mentions the difficulty in discerning abraders because the bedrock of the site is sandstone and there was difficulty in the field distinguishing objects made from sandstone. If one is to assume a multi-function for ground stone abraders, their presence on the blufftop could be the result of bone/antler artifact manufacture as well as ground stone tool manufacture.

The most unusual artifact type present at this site has been previously unencountered. Eldridge defines these objects as incised sandstone and siltstone pebbles. The incised pebbles, like the abraders, were difficult to distinguish because the incising was usually very shallow. These pebbles have a variety of designs etched onto their surface and their size is usually no larger than the average palm. Eldridge (1987:5-19) suggests these interesting objects may have some affinity with the incised stone plaques found during the St. Mungo phase and refers to Matson (1976:Figure 8-11:Y). Further similarity between Eldridge's objects and the St. Mungo phase can be found in information obtained by Al Mackie during a two month salvage excavation at the St. Mungo site in 1981 (Mackie 1982). Mackie uncovered a

fragment of a shaped and incised sandstone object. From the description and the picture, this object has close affinity to Eldridge's objects (Mackie 1982:26,51). These objects are unusual and Eldridge suggests they represent a ceremonial function at the site.

Raw Materials

Basalt is the most common raw material at the site. Approximately 62% of all the artifacts excavated were made from basalt. Chert is also present although in much lower proportions. Obsidian is also present as well as quartz and sandstone.

Faunal Remains

The faunal analysis is inconclusive due to poor preservation on the blufftop. The faunal analysis discusses the rockshelter remains in more detail because this was where the best organic preservation existed. Deer (26 pieces), Dog (2 pieces) and harbour seal (1 piece) were found at the blufftop. The deer bone are mainly from the lower leg. Rebecca Wigen (who did the faunal analysis) states this is probably due to their durability. Their presence could also be due to their being brought into the site for tool raw material. Wigen does not give a season of occupation for the blufftop, but Eldridge (1987:5-68) proposes a summer occupation for the blufftop based on the bird species present. There were two pieces of identifiable bird bone, one was gull, the other was eagle. These two birds could be present any time of the year, making his theory of summer occupation very unlikely. Furthermore, this theory is based on only two pieces of identifiable remains, leading to questions of representativeness.

Features

There was a single feature present on the blufftop. It consisted of a cluster of natural and fire cracked rock. Associated with the feature were two areas of concentrated lithics. One area was determined to be where bipolar technology had taken place while the other area was associated with bifacial retouch and manufacture.

Conclusions

The sample size for this site is small, preservation is poor and there is only one date. There is little evidence from the data compiled so far for the blufftop area to be other than some kind of limited activity site. The physical location of the blufftop makes it a poor base camp local. Eldridge argues that the blufftop section of the site is a specialized male-only area where men practised hunting magic using the incised pebbles, and they also did some manufacture and resharpening of hunting weapons. The major argument for the maleness of the blufftop relates to the absence of traditional women's activities (there is a lack of textile and hide working objects) and the relatively high proportion of men's hunting weapons (Eldridge 1987:5-49). To counter this argument one would need information on how many steep-angled retouch flakes were present. Many organic artifacts are associated with traditional women functions and their absence at the blufftop could be due to the non-cultural explanation of poor preservation. Determining the maleness and femaleness of particular activities in the archaeological record is not clear cut and is based on archaeologist's preconceived notions of what is and is not male activities which are based on ethnographic analogies that were gathered by predominately male anthropologists. As Conkey and Spector point out

(1984), archaeological data often provides substantiation for a particular gender mythology. They go on to say:

> In spite of the absence of serious methodological or theoretical discourse on the subject, the archaeological record is not silent on the subject of gender. Rather, it is permeated with assumptions, assertions and statements of "fact" about gender (Conkey and Spector 1984:2).

In conclusion, arguments concerning site function aside, the blufftop portion of the Denman Island site is a contender for the Charles culture. A detailed analysis of the artifacts may or may not yield a younger component. This component, like the Maurer site, lacks ground stone objects although abraders and sandstone incised pebbles are present. This lack of ground stone may be due to the specialized nature of this site, or the small sample size, for ground stone is never plentiful in the Charles culture. There are no microblades or evidence of a blade technology, but there is evidence of a bipolar technology present on the blufftop.

Tsawwassen

The report for the Tsawwassen site is compiled in many volumes of which only volume one and three are available at the time of analysis. Therefore, the following description is preliminary. Unless otherwise mentioned, all the following information was retrieved from Arcas 1991a and b.

Site Location

The Tsawwassen site (DgRs 2) is located on the Tsawwassen Indian Reserve 22 km south of Vancouver and 7 km south of Ladner. The boundaries of the site at the time of the report were extensive. From the north/south axis the site was 425 meters and from the east/west axis the site was 630

meters. These measurements do not include various sections of the site which were recently lost to modern development. There are three main areas of midden and Arcas consulting estimates that approximately 87% of the total site consists of midden deposits.

Ethnographic Culture Area

Ethnographically the site is located in the Halkomelem speaking Tsawwassen culture area which belongs to the larger grouping of the Stalo Nation (Suttles 1990). The Tsawwassen also belong to the Central Coast Salish culture area.

Excavation Procedures

The salvage nature of the excavation required a great deal of work to be done in a minimum amount of time. Therefore, the site was not excavated using a single procedure. There were three general excavation methods: 1) backhoe excavation, 2) hand trenching and 3) controlled hand excavation. Excavation procedure one and two did not involve controlled unit excavations or screening due to the time limits and massive nature of the deposit excavated in particularly threatened portions of the site. Excavation procedure three involved controlled 1X1 meter units divided into 50 cm by 50 cm quadrants. Units were excavated stratigraphically with layers more than 5 cm thick excavated in arbitrary 5 cm thick levels. All excavated material was water screened through 1/4 inch mesh. To recover a sample of the material lost through the screens, bulk matrix samples were collected for lab analysis.

Artifact Assemblage

The pre-Locarno Beach component artifact assemblage was not very large and will be discussed in Geordie Howe's MA Thesis sometime in 1992. Howe has used a similar artifact typology as the one composed for this thesis. Therefore, the data will be easily compared to mine.

Features

The information for the following section is compiled from Arcas (1991b). The Tsawwassen site in the future will be remembered for the large proportion of burials recovered from the site. These burials were examined by Joanne Curtain. There were five burials with radiocarbon dates that fell in the St. Mungo phase (the time span of the St. Mungo phase was defined as 4500 to 3300 BP). These burials were the following: D-14, D-16, D-48, F-4a and F-4b. Based on stratigraphic provenience four additional burials were also attributed to the St. Mungo phase, F-4d, F-4e, D-51a and D-51b. The first two were excavated but D-51a and 51b were left in situ and were not part of the sample on which the osteological analysis was conducted.

For a detailed description of the burials recovered from Tsawwassen see the description supplied in Archaeological Investigations at Tsawwassen, B.C. Volume III: Human Osteology (Arcas 1991b). Burial practises for the St. Mungo burials are variable with both single and multiple primary inhumation recorded. Five radiocarbon dates were retrieved from the sample. The oldest date comes from burial F-4b [4120±120 BP (Beta-38357)]. Both D-16 and D-14 date to the same time period of 3800 BP. F-4a was dated at 3680±80 BP (Beta 38356) while D-48 was the youngest dating to 3500±60 BP (Beta 39228).

Grave goods were associated with at least three of the burials. Both D-14 and D-16 were covered with a thick layer of ground stone and shell beads. D-14 was a juvenile of 11-14 years while D-16 was a middle-aged male (which provides evidence negating Ham's hypothesis [1986:158] that beads are prehistorically indicative of females). D-51a and b were not excavated, but they were buried together in a pit and associated with them was a partial dog skeleton along with a pecten shell gorget collected from the right wrist of D-51a. Burial goods other than beads are very sparse. One may ask of the significance of a juvenile buried with such a large number of beads. Perhaps this is an indication of the beginning of a ranked society. Until this point, there has been no evidence of social differentiation in burials.

D-16 and D-48 are both middle-aged adults, with D-16 defined as male and D-48 defined as a possible male. Both mandibles exhibited wear attributed to labrets. These are the second and third example of St. Mungo aged skeletons exhibiting labret wear (Pender yielded the first example). The most important difference between these two burials and the Pender burial is that these two are dated to the end of the St. Mungo phase [D-16 3800±60 BP (Beta-38354) and D-48 3500±60 BP (Beta-39228)] while the Pender burial with labret wear was dated almost 1500 years earlier. Both examples of labret wear from Tsawwassen are associated with middle-aged adults which does not imply a non-egalitarian society. The evidence for burial D-16 is not as conclusive as D-48, as labret wear is only present on one of the teeth, while the maxilla and part of the mandible is missing (Arcas 1991b:219). This burial is the oldest from Tsawwassen with labret wear, and it is unfortunate that there is not more evidence than a single tooth (the lower premolar) with a labret facet. According to Cybulski (1991:6) the incisors and canines are the clearest

markers for labret wear. Burial D-48 has labret wear on more than one tooth (Arcas 1991b:269). This burial (D-48) is very close to the end of the Charles culture and the beginning of the Locarno Beach phase, and I see little reason to question the validity of the labret wear. If the juvenile burial (D-14) covered in beads had also exhibited evidence of labret wear I would argue for indications of a ranked society; but I am not yet ready to make such an argument with the data presented.

There was no cranial deformation manifested on any of the St. Mungo burials. Those burials dated to the Marpole/Stselax overwhelmingly showed evidence of cranial deformation in varying degrees (Arcas 1991b:117).

Conclusions

It is too early to make conclusions concerning the Charles component, but the preliminary data looks solid including the carbon dates. The extensive deposit left at this site ensures future opportunity for study of pre-Locarno Beach deposits. At this point the exact number of Charles component artifacts is not known. The skeletal evidence indicates the importance of ground stone and shell beads. Two adult burials have some evidence of labret wear, although one skeleton has minimal evidence. While no labrets were recovered from the Charles component deposits, the association of labrets with only the Locarno Beach phases must be re-examined in light of the evidence from Pender and Tsawwassen.

Duke Point

Site Location

The Duke Point Area is situated in the eastern city limit boundary of Nanaimo on Vancouver Island. The area itself is located on two peninsulas called Duke Point and Jack Point. Due to the threat of modern development, an emergency salvage excavation was undertaken in 1978 under the direction of Prof. Donald H. Mitchell and Neal Crozier. Rebecca Murray (1982) based her Masters Thesis on the data retrieved from this excavation. Unless otherwise stated, all information is taken from her analysis. Several sites were excavated in the Duke Point Area, but only one site, DgRx 5 is of importance to this study. DgRx 5 was located on Jack Point.

Ethnographic Culture Area

Ethnographically the site falls within the traditional territory of the Halkomelem speaking Nanaimo people (Barnett 1955) who can be placed in the Central Coast Salish culture area.

Excavation Procedures

The actual size of the site at the time of excavation was estimated to be 900 meters long and 35-45 meters wide. The site was segregated into three areas: A, B and C. Most of the site excavations for the 1978 field season were in area B. Forty two 2X2 meter units were excavated in the site along with two large backhoe trenches approximately 480 meters long and 2 meters wide which were dug to aid in the delineation of site stratigraphy. The 2X2 units were excavated in 10 cm arbitrary and natural levels. All material was either wet or dry screened through 1/8 inch screen mesh.

Chronology

The time frame covered for Component 1 roughly falls in the Charles culture as well as the Locarno Beach phase. There was one date retrieved from the earliest component (Component 1). The wood charcoal date 4130±100 BP [(WSU 2234) Murray 1982:128] falls within the Charles culture. The termination date is estimated by Murray to be sometime prior to 2600 BP (Murray 1982:133). She states that the date from Component 1 falls within the Locarno Beach Culture Type as defined by Mitchell (1971:65). Figure 18 (Mitchell 1971:65) suggests Locarno Beach begins sometime prior to 2000 B.C. (or 4000 BP). I would surmise (I cannot prove it) that this early starting date for Locarno Beach is based on a lumping of dated Charles culture (most specifically Mayne phase) artifact assemblages with Locarno Beach artifact assemblages. This tentative conclusion is confirmed by Mitchell (1971:57). From Figure 17 (Mitchell 1971:64), one can see that no Locarno Beach artifact assemblages pre-date 3200 BP. This suggests to me that Carlson, by delineating the Locarno Beach Culture Type as post-4000 BP for Pender Canal, was following Mitchell in lumping the Mayne and Locarno Beach phase together (Carlson 1985:60).

Artifact Assemblage

The Duke Point date, if the Charles and Locarno Beach Culture Types are separated, can be placed in the Charles culture. Unfortunately, the artifact tabulation is not useable here due to this mixing of two phases. In a general comment about Component 1, chipped stone implements dominate the overall assemblage (82.2%), with ground stone the next highest proportion (7.3%), and bone implements third highest (5.1 %). These proportions are

similar to other Charles components, although poor organic preservation skews the data.

Chipped Stone (Unshaped and Shaped)

The chipped stone implements demonstrate evidence of a bipolar technology, microblades and quartz microliths. Over half of the chipped stone implements have been classified as miscellaneous chipped stone (123 of 226) which does not help with artifact classification and cultural designation. There is a relatively high proportion of unshaped stone implements. Biface styles include both leaf-shaped and stemmed.

Ground Stone

All ground stone objects could be considered representative of the Charles culture except for the presence of a labret and celt. There are two types of ground stone beads, one made from slate, the other from sandstone. Compared to Component 2 (which is a Marpole component) there is a large difference in the proportion of ground stone (7.3 % versus 39.6%).

Bone and Antler Artifacts

Organic objects are not common. Miscellaneous worked bone is the largest artifact class in the bone implement categories, with only one worked antler fragment present. Nine shell disc beads are present, but compared to Component 2 (363) their presence is minimal.

This concludes my discussion of the artifact assemblage from Duke Point because there is little to be gained by doing a direct comparison between Component 1 and the other Charles components at this time. It would be profitable to re-examine Component 1 at DgRx 5 and determine the similarities and differences present between the early and later sections of Component 1. In this way one could begin to accumulate the information necessary to

determine the feasibility of lumping the Charles culture with Locarno Beach on Vancouver Island and the Gulf Islands. Until a detailed side by side comparison of Vancouver and Gulf Island Charles and Locarno Beach sites has been accomplished, one must question the feasibility of creating a single time period spanning 4000 to 2500 BP. Based on the evidence from the Mainland, there is a great deal of diversity present in this time period, too much to be covered by a single cultural form.

Faunal Remains

The faunal remains for Component 1 are not discussed in detail due to poor organic preservation. Shell was almost entirely absent from the component. In one unit portions of articulated deer and sea mammal skeletons were uncovered. In this same unit at an unknown depth a sandstone feature in association with redeposited fire-cracked rock enclosed an almost complete articulated dog skeleton (Murray 1982:319). Possible postmolds were uncovered in some of the units although they were not discussed in detail. At least one well defined hearth feature was also present. There were no burials encountered in this component.

Conclusions

In conclusion, there seems little doubt that there is a Charles component at Duke Point, but until there is further splitting of the earliest component, one cannot say how extensive the deposit is, nor how similar this Vancouver Island deposit is to Mainland counterparts from the same time period.

Deep Bay

Site Location

The Deep Bay site (DiSe 7) is situated on the east coast of Vancouver Island approximately 5 miles north of the Big Qualicum River. The excavated section of the site was located on a spit in a sheltered body of water called Deep Bay. The subdivision of the spit in the mid-seventies lead to an emergency salvage excavation in the summer of 1975 directed by Greg Monks who used the data retrieved from the site for his Ph.D. dissertation. Unless otherwise noted, the following information is based on his work (Monks 1977).

There are no exact measurements given for the extent of the site, but Monks states that most of the spit was prehistorically inhabited as well as the shore of Deep Bay.

Ethnographic Culture Area

Ethnographically the site lies in the Pentlatch-speaking territory of the S:uckan (Barnett 1955:23). The Pentlatch culture area is located directly beside what Suttles defined as Central Coast Salish, but is not located in the actual Central Coast Salish culture area.

Excavation Procedures

The major excavation occurred on lot 73 located about half way up the spit. Five, 2X2 meter units formed a 2X10 meter trench. A trench style excavation was pursued because it was easier in a trench to gain control of difficult stratigraphy such as that presented in the typical Northwest Coast shell midden. All material was dry screened through 1/8 inch screen mesh.

Excavation proceeded through a combination of 10 cm arbitrary levels and natural strata.

Chronology

The stratigraphy was difficult to understand resulting in later confusion concerning the stratigraphic position of the two oldest carbon dates. Monks (1977:Figure 6) provides the stratigraphic profile for the excavation as well as the carbon samples obtained from the site. The oldest carbon date was retrieved from the bottom of natural layer P-1 which was the last layer containing cultural remains. This date was retrieved from scattered charcoal embedded in a possible clay living floor. The date was 4860±180 BP (GaK 6039). It is important to note that this date came from a feature and not from Burial 7 as had been previously thought (see for example Beattie 1980:308, Ham 1982:81, and Ham et al. 1986:40). The second date associated with the earliest component (Component 1) at Deep Bay comes from natural layer T which lies above layer P-1. This second date is 2630±100 BP (GaK 6038). Monks thinks that Component 1 terminates sometime after 2630 and sometime before 1910±110 BP (GaK 6037) which is the oldest date for Component 2.

Artifact Assemblage

There are 88 artifacts found in Component 1. Preservation was poor, with one fragment of worked bone present. The most important aspect of the artifact assemblage from Component 1 is its stratigraphic relationship to the two very different dates retrieved from the component. All but one of the artifacts recovered from Component 1 are stratigraphically above the 2630 BP date. Most of the artifacts were recovered in layer P which lies above layer

T and the 2630 BP date. In other words, the artifact assemblage lies within the traditional time boundary of the Locarno Beach phase. The one possible artifact older than 2630 BP is a piece of quartz crystal debitage (there was no evidence of working or utilization along any of the edges) found in the clay floor dated to 4860 BP.

Once the stratigraphic position of the artifacts is clarified it is logical that the assemblage dates to Locarno Beach. Of the 87 artifacts, 25 implements are either utilized flakes or retouch flakes, 20 are quartz microliths (technically they do not belong in this category because Monks says there was no evidence of utilization, but nevertheless their presence in such large quantities is important and I decided to include them in the artifact count) and 11 are obsidian flakes (which like the microliths show no evidence of utilization or retouch). Thirty five percent of the total artifact assemblage belongs to quartz microliths and obsidian flakes. None of the Charles culture components come close to having such a high proportion. There is an obsidian microblade medial fragment also present and this would be expected in a Locarno Beach component. Two abraders and one ground stone disc bead are also present. Besides the high proportion of quartz and obsidian there is little of stylistic significance in this component. Without the dates, one might argue that the component is older (if one believed that quartz microliths and obsidian implements were common during the Charles culture).

A brief comparison between Bliss Landing and Deep Bay demonstrates the similarity between the artifact assemblages. For example, although both assemblages are small, there is a relatively high proportion of quartz implements, while obsidian is also a common raw material. Both sites contain evidence of a microblade technology including cores from Bliss Landing. Each

site has a single example of an obsidian microblade. Another similarity between the two components is the near absence of ground stone objects. Besides the two abraders and ground stone disc bead from Deep Bay there is no ground stone. The reason for this is not clear. Bone preservation was slightly better at Bliss Landing, but organic artifacts are minimally represented.

Faunal Remains

The faunal remains are negligible with unidentified land mammal, deer, seal, unidentified duck and unidentified bird present in minute quantities. Shell was virtually absent from this component.

The faunal remains for Deep Bay and Bliss Landing are somewhat similar in that there was minimal remains at either site. Bird bones are present in both components. Fish remains are present at Bliss Landing but there is no mention of them at Deep Bay. One similarity is that both sites contained evidence for sea mammal remains and land mammal remains.

Features

As previously mentioned, one important feature was uncovered in Component 1. This feature was located directly above all but sterile beach deposits. The clay 'floor' was two or three centimetres thick. It was embedded with scattered chunks of charcoal from which the carbon date was obtained. It could be a living floor although the only artifact discovered was the previously mentioned piece of quartz debitage. There was no evidence of postmolds or other features and Monks states that the feature may be natural in origin although he felt a non-cultural explanation was unlikely.

The second and even more important feature discovered in Component 1 was Burial 7. This burial was important because it was used as part of Owen Beattie's Ph.D. dissertation and at the time of Beattie's work was thought to pre-date Locarno Beach. When first analyzed it was determined that there was no evidence of head deformation, but Beattie (1980:308) reports lambdoidal head deformation present. This was another potentially old example of head deformation. The burial was discovered in a cairn burial as well (a feature that would possibly make it similar to Beattie's Burial 3 at Bliss Landing). This skeleton, along with the two from Bliss Landing, have been the major argument for head deformation during pre-Locarno Beach times. But, burial 7 at Deep Bay is located in natural layer P which lies above the 2630 BP date. This is a Locarno Beach aged burial! Why this disparity has not been previously noted is unknown, but I think it was due to the complex stratigraphy resulting in layer P lying above T rather than vice versa. Burial 7 can now take its rightful place in the Locarno Beach phase.

Conclusions

Besides the arguments already used concerning the placement of Bliss Landing into the Locarno Beach Culture Type, I think that the similarities between Deep Bay and Bliss Landing put further pressure on placing Bliss Landing into the Locarno Beach phase.

Deep Bay could be thought of as a specialized limited activity site dating to the Locarno Beach phase which is what Monks concluded. The absence of a Charles culture artifact assemblage, although there is a date, is an uncommon circumstance. More often, one has a component in need of a date rather than a date in need of a component. The oldest date at Deep Bay

should be kept in mind, and perhaps a new set of radio carbon dates could be run to see if this old date still stands or whether the Locarno Beach date is older than thought. Based on the information gathered concerning Component 1, there is no Charles component present at Deep Bay.

Discussion

This concludes my discussion of potential candidates for membership to the Charles culture. The compiled evidence does not add many new components to the Charles culture. Component 1 at Marpole shows closest affinity to the Locarno Beach Culture Type as does the Early Component at Bliss Landing. The Pitt River site has a Charles component but there are questions concerning the degree of mixing between the adjacent Charles and Locarno Beach components. There is a Charles component with a dated burial from Pender Canal, but the artifact assemblage is small. The preliminary results from south of the border in the State of Washington suggest some components date to the Charles culture, but there is too little information to make definite statements. The Blufftop component from Denman Island dates to the late Charles culture. An early Locarno Beach component may also be present and mixing with the Charles component, although Eldridge argues against this possibility. The Tsawwassen site did not have extensive Charles culture deposits, but the dates are secure. The Duke Point site probably has a pre-Locarno Beach component, but the lumping of the pre-Locarno with the Locarno Beach artifacts into one all inclusive assemblage makes it difficult to determine the similarity of the Charles component to the other Charles components (this is a situation similar to the one at Pitt River, although

Patenaude did separate the two culture types, she did so reluctantly, arguing that there was little difference between the two). Component 1 from Deep Bay can be placed in the Locarno Beach phase.

There may be other Charles components waiting to be discovered, for example Smith (1903) describes a component that may belong to the Charles culture.

In other words, of the nine components analyzed, one (Birch Bay) is a questionable Charles component; four (Pitt River, Pender Canal, Denman Island and Duke Point) have Charles components, but in the case of Duke Point and Pitt River there is also a Locarno Beach component that may be mixing with the earlier component. It may also be the case at Denman Island that there is some mixing of components; three sites (Marpole, Bliss Landing and Deep Bay) show closer affinity to, and I would argue, are representative of the Locarno Beach Culture Type. Of the nine components, only Pitt River, Pender Canal and Tsawwassen have relatively trouble free Charles component.

The Charles Culture

Now that all three sub-phases of the Charles culture have been discussed, the next step in answering my third research question is to synthesis the relevant data and address the question concerning the feasibility of the Charles culture on a regional level.

The Charles components included in this discussion are the following: Crescent Beach, Denman Island, Esilao, Glenrose, Helen Point, Maurer, Pender Canal, Pitt River, St. Mungo and Tsawwassen. These sites were selected due

to the completeness of their published data and the previous discussion which supports the presence of Charles components in these sites.

Location

Based on the data, the area covered by the Charles culture components includes the Fraser Canyon, through the Fraser Valley, the Lower Mainland, the Gulf Islands and Denman Island. This is a huge area in terms of distance. How much similarity can one anticipate on this regional scale?

Ethnographic Affiliation

Although not previously mentioned, all the sites with Charles components are located in Coast Salish territory and all but two sites are located within the Central Coast Culture Salish region. The Denman Island blufftop component is located in the Pentlatch culture area which, according to Kennedy and Bouchard (1990:441-452), belongs to the Northern Coast Salish region. The Bliss Landing site is also located in the Northern Coast Salish region (Kennedy and Bouchard 1990:441-452), which shared its southern border with the Central Coast Salish language groups. Linguistic evidence such as presented by Suttles (1987) and Kinkade (1989) suggests a coastal origin for the Salishan speakers who then moved into the Interior. Based on this argument, there would be a great deal of similarity between the Northern Coast Salish and Central Coast Salish regions during the Charles culture, more similarity than that between either of the coastal groups and the Interior Salish group. There are several different Coast Salish languages represented in the data. There is diversity on the individual level, but on the general level, all the sites are in an area of historic cultural similarity.

Excavation Procedures

All the sites represented in this group were excavated under controlled situations but that is where the similarity ends. A diversity of excavation techniques were pursued based on different theoretical perspectives and research questions.

Chronology

TABLE 4.1 Charles Components Radio Carbon Dates Summarized

Site Name	Uncorrected Dates (Before Present)	
Crescent Beach	4440±80 (SFU 795)	4270±80 (GaK 4925)
	3710±80(WSU 4244)	3590±85 (WSU 4245)
Denman Island	3500±100 (RIDDL 576) BP	
Esilao	5490±500 (M 1547)	4880±180 (M 1546)
	4420±160 (M 1544)	3790±130 (GSC 456)
Glenrose	4240±110 (GaK 4648)	4185±105 (S 788)
	3280±105 (GaK 4863)	
Helen Point	5420±230 (GaK 4938)	3980±130 (GaK 3201)
	3950±260 (WSU 1191)	
Maurer	4780±340 (GaK 4927)	4720±380 (GaK 4923)
	4240±110 (GaK 4922)	3860±110 (GaK 4926)
Pender Canal	5170±220 (RIDDL 100)	4580±550
	4430±170	4320±220 (RIDDL 96)
	4320±150 (RIDDL 105)	
Pitt River	4390±110 (WSU 2468) is the oldest date with two dates to 3300	
St. Mungo	Unit A:4000-4300	B:4090-4400
	D:4480 (WSU 2857) (See also Table 2.1)	
Tsawwassen	4120±120 (Beta-38357)	3880±50 (Beta-38353)
	3800±60 (Beta-38354)	3680±80 (Beta-38356)
	3500±60 (Beta-39228)	

The Charles culture encompasses the overall time period of 5500 to 3300 BP. This time span is based on uncorrected dates and does not take into account the degree of uncertainty associated with the dates. With the carbon dates gathered together, I am struck by the oldest date from Esilao (5490 BP). Compared to the other dates, I would argue that this date should be abandoned due to the high degree of uncertainty. Ignoring that date does little to change the beginning date of the Charles culture.

The ending of the Charles culture and the beginning of the Locarno Beach phase is sometime around 3500 to 3300 BP.

Comparing and contrasting the three sub-groups leaves one wondering where the Charles culture first originated. The oldest dates are in the Fraser Canyon or the Gulf Islands. The Mainland is surrounded by older Charles culture dates yet shows no evidence of the Charles culture until approximately 4500 BP, at least 500 years later than in the Fraser Canyon and the Gulf Islands. A puzzling situation that cannot be explained with the current data, but future research will reconcile this quandary.

Artifact Assemblage

Artifacts have been the focal point of this thesis. The three sub-phases (St. Mungo, Mayne and Eayem) of the Charles culture have been discussed separately in Chapters Two and Four. More specific differences between the phases have been presented; this discussion focuses on similarities that may or may not indicate a regional cultural phase.

Cores and Bipolar Implements

Cores are common objects in the Charles culture. More importantly, bipolar technology is also present, although in varying proportions, throughout the region.

Unshaped Chipped Stone Implements

This general category is common at most sites. Pebble tools comprise the largest portion of this category. While there are various sub-types, the overall proportions of pebble tools decreases from the earlier periods.

Unshaped Chipped Stone Flake Tools

In most cases this group of objects is the most common general artifact type present throughout the region during the Charles culture. Within the sub-category of Retouched Flake Tools, quartz microliths are a contentious artifact type in the Charles culture. Two St. Mungo components, Crescent Beach and Pitt River, contained quartz microliths, but only Pitt River had a noticeable number of quartz microliths (41). A partial explanation for this high number of quartz microliths may be the mixing of the Charles component with the Locarno Beach component also present at Pitt River. Quartz microliths are present in the Mayne phase component at Helen Point. The Eayem component at Esilao, also has quartz microliths although concrete numbers are not given. In general, quartz microliths may or may not be present in a Charles component, but they are not present in the high proportions found during the Locarno Beach phase.

Shaped Chipped Stone Tools

Shaped chipped stone tools are not as common as unshaped chipped stone implements implying an emphasis on the expedient manufacture of tools. There is minimal evidence of a prepared blade technology. Only the Maurer

site mentions prepared blade cores (although there are no diagrams or photographs of these cores). There is minimal evidence of blades from any of the Charles components. As with quartz microliths, a prepared blade technology is more commonly associated with the Locarno Beach phase. Shaped bifaces in the region share styles such as leaf-shaped and shouldered. Without examining all of the bifaces together, it is difficult to say whether there are stylistic differences in each of the three sub-phases. Bifaces are somewhat large in comparison to bifaces from Locarno Beach and later components.

Ground Stone Implements

Ground stone (including chipped and ground stone) are not common artifacts during the Charles culture. These implements are altogether absent at the Maurer site. All other Charles culture components have some evidence of ground stone artifacts present. According to the data gathered so far, ground stone objects do not make up more than 10% of the total artifact assemblage for a Charles culture component. This proportion increases dramatically during the Locarno Beach phase. Pecked and ground stone implements are all but absent during the Charles culture. There is some debate concerning the presence of Gulf Island complex objects (including labrets) during the Charles culture. They are defined as being part of the Charles components at Helen Point and Pitt River. At both sites Locarno Beach phase components are present so there may be some mixing of components. Non-artifactual data from Pender Canal and Tsawwassen may indicate the presence of labrets in the Charles culture. This evidence will be further discussed in the features section.

Bone and Antler Implements

Organic implements have varying preservation success in Charles components. There is great diversity in the types of implements manufactured from bone and antler, but as with the stone objects, there is an emphasis on expedient objects. Non-utilitarian objects are uncommon and minimally decorated although there are exceptions such as the Glenrose "little man" antler haft. Of those stylistic implements present little can be said about regional similarities due to the lack of organic preservation in the Canyon.

Shell Implements

Shell objects are never common but they are present with the appropriate preservation.

Raw Materials

Basalt is the most important raw material for non-organic artifacts. Such exotic materials as obsidian are occasionally present, but never common. Quartzite and chert are fairly common raw materials, but never as plentiful as basalt. In organic materials mammal bone is by far the most common raw material, with antler a distant second.

Faunal Remains

Throughout the region encompassing the Charles culture, faunal remains point to a mixed economy with both land and sea resources utilized. Specialization in salmon has not yet begun, but it is a resource exploited to some extent. Large land mammals are still an important food source (and source of raw material for artifacts), but sea mammals increase in importance throughout the Charles culture. Specialized procurement activities are present

in the faunal remains from sites such as Crescent Beach, Denman Island and St. Mungo.

Features

There are intriguing features present including clay-lined features (at Crescent Beach, St. Mungo and Helen Point), possible root roasting pits (at Pitt River) and rock slab features (at Helen Point). The most important features present are the house features found at Maurer and Hatzic. It will be interesting to see how these two features compare to one another. Although none of the other sites yielded similar features, many sites yielded 'living floors' with evidence of extensive occupation. Hearths are present at all sites and postmolds are almost as common. Large-scale features (except for Maurer and Hatzic) are absent indicating a lack of the large plank houses associated with the ethnographic Central Coast Salish.

Well preserved and complete skeletal remains are not common, but are present in five of 10 sites (Crescent Beach, Glenrose, Helen Point, Pender Canal and Tsawwassen). From Pender comes a skeleton dated at 5170±220 BP (RIDDL 100). This is the oldest dated Charles culture burial and more importantly, there is evidence of labret wear on the mandible. This indirect evidence of labret wear, along with the labrets from Helen Point indicate that labrets were not necessarily first used during the Locarno Beach phase. Further support of this hypothesis is provided by the two skeletons from Tsawwassen with some labret wear indicated on both (although one burial has minimal evidence and the other burial is very close to the Charles/Locarno Beach transitional period). Grave goods are usually absent from burials with the exception of the two Tsawwassen burials literally buried in ground stone

and shell beads. There is no evidence of head deformation. The skeletal evidence suggests that Charles culture society was organized along egalitarian principles. Labret wear on three burials is an interesting occurrence, but is not yet unequivocal proof of a ranked society especially when considering two of the three burials are middle-aged adults and occur on only three out of a possible 23 dated Charles culture burials.

Conclusions

The evidence gathered from the 10 sites show general similarities on a regional scale. From what is so far known, there are indications that on a regional level, many sites share similarities in artifactual and non-artifactual data. There are also many dissimilarities between sites in the same sub-phases (for example Glenrose, St. Mungo and Crescent Beach) and between the sub-phases (St. Mungo, Mayne and Eayem). At this point in the analysis the placing of Crescent Beach with St. Mungo and Glenrose in the St. Mungo phase cannot be properly answered, but it shares more similarities with them compared to the other Charles components discussed in Chapter Four. To expect no dissimilarity at the regional level is unrealistic. Considering the area covered and the number of sites involved, the number of similarities present is encouraging and requires further study.

There is little suggestion on the regional scale for the existence of a ranked, non-egalitarian society. The earliest evidence for such a society manifests itself during the Locarno Beach phase.

As part of the ongoing comparison of the Charles culture and the Locarno Beach Culture Types, I amassed the data presented in Table 4.2.

Table 4.2 Charles and Locarno Beach Artifact Frequencies

ARTIFACT TYPES	SITES A	B	C	D	E	F	G	H	I	J	K	L
PCHU	16	40	16	16	12	1	16	8	4	0	0	2
CSP	11	5	3	14	8	2	0	13	1	0	0	2
QCML	0	0	0	1	11	28	11	0	4	1	1	0
MCBL	1	0	0	0	0	4	4	2	30	0	1	3
CGSO	0	0	0	1	2	10	13	17	10	8	0	41
GSK	0	7	0	0	0	3	0	1	2	14	1	16
NFGP	2	0	1	0	0	3	6	6	12	15	6	5
FGSP	0	0	0	0	0	0	0	5	4	12	6	0
ADZE	0	1	0	0	1	7	0	2	1	1	3	3
GIC	0	0	0	0	3	1	0	12	12	3	2	0
LAB	0	0	0	0	4	9	2	1	2	2	0	0
NS	0	0	0	0	0	0	1	8	16	0	2	0
PBP	13	11	13	1	0	0	2	1	0	0	1	0
TPEND	8	6	8	2	0	2	0	1	2	3	2	1
BBD	0	7	2	4	0	2	0	1	0	0	0	0
WHST	0	0	1	0	0	0	0	1	0	1	2	0
MAWL	0	0	1	0	1	0	0	0	0	2	0	1
NDL	0	1	0	0	0	0	0	0	1	3	1	0
BWED	1	15	1	0	0	0	4	2	0	1	0	0
UBFPH	3	1	4	2	0	1	13	1	0	4	0	0
BBFPH	1	1	2	0	0	0	9	0	0	1	0	1
PUN	7	17	4	1	0	2	0	8	0	0	0	0
WEDG	32	102	27	1	4	5	8	8	0	0	1	0
SAB	0	8	2	1	0	0	0	0	0	0	10	0

Site Names Key and References for Data

A. Glenrose St. Mungo Component (Matson 1976)
B. St. Mungo St. Mungo Component (Boehm 1973, Calvert 1970)
C. St. Mungo St. Mungo Component (Ham et al. 1986)
D. Crescent Beach Charles Component (Percy 1974, Matson et al. 1990, 1991 and Pratt et al. 1991)
E. Crescent Beach Locarno Beach Component (See Above)
F. Crescent Beach Locarno Beach Component (Trace 1981)
G. Helen Point Mayne Component (Carlson 1970, 1975)
H. Montague Harbour Locarno Beach Component (Mitchell 1968, 1971)
I. Georgeson Bay Locarno Beach Component (Haggerty and Sendey 1976)
J. Locarno Beach Locarno Beach Component (Pratt et al. 1991)
K. Whalen Farm Locarno Beach Component (Matson et al. 1991, Thom 1992)
L. Marpole Locarno Beach? Component (Burley 1979)

Table 4.2 (continued) Charles and Locarno Beach Artifact Frequencies

Artifact Types

CHIPPED STONE
BP=Bipolar Implement
PCHU=Cobble Tools
CSP=Cortex Spall
QCML=Quartz Microlith
MCBL=Microblade
CGSO=Chipped and Ground Stone Object

GROUND STONE
GSK=Ground Stone Knife
NFGP=Non-Facetted Ground Stone Point
FGSP=Facetted Ground Stone Point
GSDB=Ground Stone Disc Bead
ADZE=Adze
GIC=Gulf Island complex
LAB=Labret

PECKED AND GROUND STONE
NS=Net Sinker

BONE AND ANTLER
PBP=Perforated Bone Pendant
TPND=Tooth Pendant
BBD=Bone Bead
WHST=Whistle
MAWL=Mawl
NDL=Needle
BWED=Bone Wedge
UBFPH=Unilaterally Barbed Fixed Point or Harpoon
BBFPH=Bilaterally Barbed Fixed Point or Harpoon
PUN=Punch
WEDG=Wedge

SHELL
SHB=Shell Bead
SAB=Shell Adze Blade

The data was calculated for 24 artifact types and 12 components from both Charles and Locarno Beach Culture Types artifact assemblages.

With this information selected and sorted, I clustered the data using the SYSTAT statistical package (Wilkinson 1991). This type of application tells one whether or not there are similarities in the data based on mathematical techniques (for more information see Shennen 1988 or Matson and True 1974). The cluster diagram visually presents the similarity between the data based on the information supplied. This cluster diagram is presented in Figure 4.1. I did a similar exercise in a paper (Pratt 1989b) in which I did a cluster analysis of Charles and Locarno Beach components based on presence/absence data. This time I used counting data in order to achieve more accurate results. Unfortunately, I was not able to use data from any of the Eayem components due to the lack of preservation. I used data from components with organic and inorganic artifacts. This cluster was compiled using a city block data matrix, euclidean distance and farthest neighbour.

The St. Mungo components cluster together well with the Charles component from Crescent Beach the last component to link up. Interestingly, the Glenrose and St. Mungo component excavated by Ham are more closely linked than the two components from St. Mungo. This can be explained. For this thesis, both Glenrose and Ham's St. Mungo component were re-analyzed and were done so using a typology different from the one used by Boehm to analyze her St. Mungo component. This Cluster One has certain characteristics. These four components have the most chipped stone artifacts, little ground stone and some variation in the types of bone and antler artifacts present. Crescent Beach has the lowest number of bone and antler

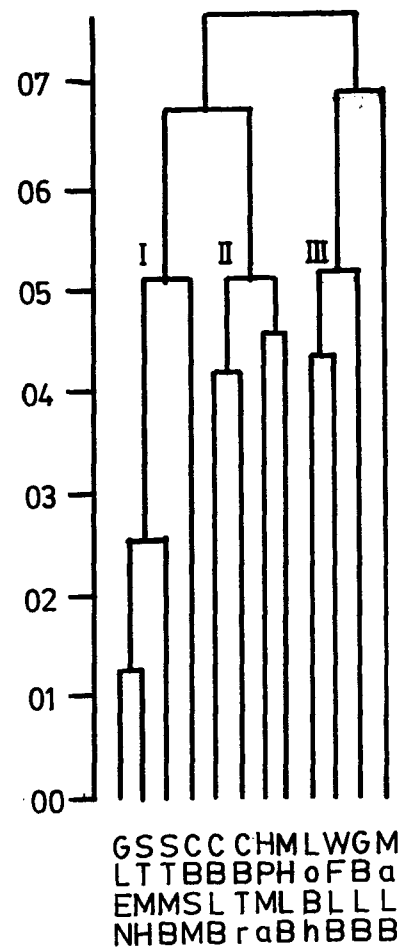


Figure 4.1 Cluster Diagram

implements. Cluster One implies that the early component at Crescent Beach belongs with the other St. Mungo components.

Cluster Two is characterized by a lesser number of chipped stone artifacts (compared to Cluster One), a higher number of quartz crystal microliths (except for Montague Harbour which has none), more chipped and ground stone objects, more groundstone, as well as more pecked and ground stone implements. Helen Point has the highest number of unilateral and bilaterally barbed fixed points/harpoons while the other three components in this Cluster Two have either zero or one (in Cluster One, all components have a minimum number of two present). Helen Point and Montague Harbour have slightly more antler artifacts than the Crescent Beach components, but in general, Cluster Two has less bone and antler artifacts than Cluster One. Based on the information from this cluster diagram, Helen Point has more in common with Locarno Beach components than it does with St. Mungo components. This supports the notion that the originally defined Mayne phase includes a large mixture of Locarno Beach material.

Cluster Three has the lowest number of chipped stone artifacts, a high number of chipped and ground stone objects, quartz crystal microliths less common than Cluster Two and the most ground stone artifacts. Georgeson Bay has several pecked and ground stone implements, but the other three components have a lower number. Cluster Three has the lowest number of unilateral and bilateral points/harpoons. Antler artifacts are almost completely gone! Note that the two Locarno Beach components excavated by Borden link together in Cluster Three. Is it possible that the clustering of the two Locarno Beach components excavated by Borden results from a difference in excavation procedures? Both components were excavated prior to the sixties

when there was a focus on obtaining artifacts rather than other data. Perhaps. Further support for this idea can be found in Thom (1992) and his work with the Whalen Farm artifact assemblage. The artifact assemblage that is the most different is the one from Marpole and there is little doubt that this is due to the high degree of uncertainty concerning the actual existence of this early component, nevertheless, it does share more similarities with the other Locarno Beach components than it does with the Charles components.

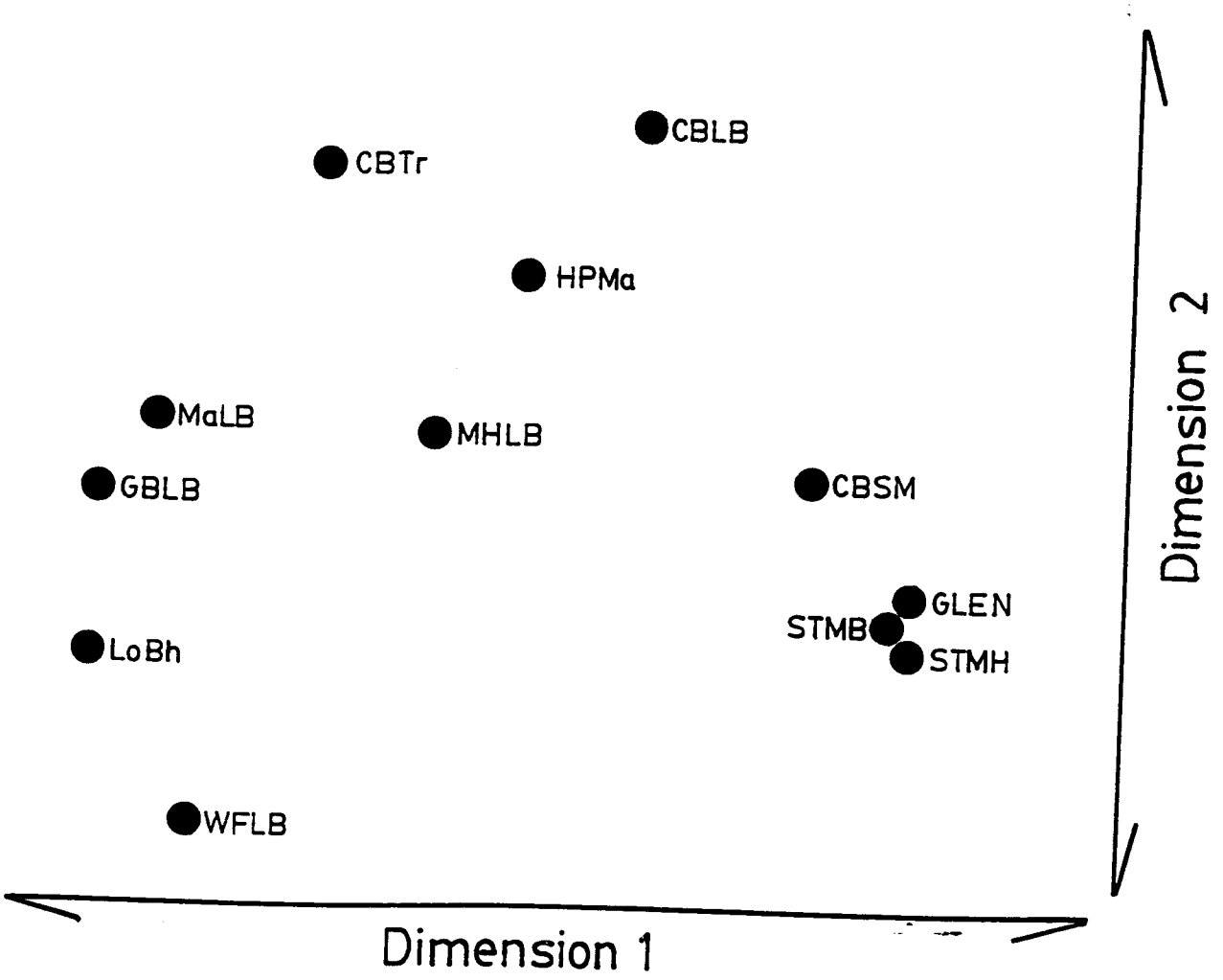
When I first clustered Charles and Locarno Beach data in my 1989 paper, there had been some suggestion in the data that there was some variation represented due to a Mainland/Island differentiation. This is not the case in this analysis.

The next stage of the regional analysis took the information used for the clustering diagram and applied another statistical technique known as MDS (Multi Dimensional Scaling). Figure 4.2 displays the results. These results are in basic agreement with the cluster analysis.

M.D.S. shows the similarities or differences amongst artifact assemblages. This scaling was calculated using a city-block distance matrix (which sums the absolute differences rather than the squared differences between the points for each variable, making the results more robust [Shennen 1988:201]).

The four St. Mungo components and the Charles component from Crescent Beach are very close to each other with a noticeable gap between themselves and the other components. Once again, Helen Point is more closely related to the Locarno Beach components than the Charles components.

Dimension One and Two explain 58.4% of the variance present in the data and I would suggest that time is represented by Dimension One with the older



12 H Sites
24 Charecters
City Block
TSCALE

Dim 1 = 41.3%
Dim 2 = 17.1%

Figure 4.2 Multi Dimensional Scaling

St. Mungo components at the top and the younger Locarno Beach components at the bottom. Dimension Two could be reflecting the increase in the presence of ground stone implements as well as the decrease of chipped stone and organic artifacts from the Charles to the Locarno Beach phase.

In closing, the cluster analysis and M.D.S. did not negate the inclusion of the Charles component at Crescent Beach with the St. Mungo components at Glenrose and St. Mungo. In fact, these four components were the most tightly clustered of all 12 components present. Furthermore, the separation of the St. Mungo components from the Helen Point Mayne Component and other Locarno Beach components is not disputed. Eventually, Eayem phase components will have to be added to allow for a fuller analysis of the Charles Culture on a regional level. This final comparison of Charles and Locarno Beach artifact assemblages points to the high degree of similarity found in the Helen Point Mayne phase assemblage compared to other Locarno Beach components. This similarity has now been shown by both artifactual and statistical means.

This analysis supports the distinctiveness of the Charles components from Glenrose, St. Mungo and Crescent Beach. It also supports the questions raised concerning the uncertain nature of the Mayne phase, as currently known.

CHAPTER FIVE

SUMMARY AND CONCLUSIONS

This thesis posed three research questions that were separately examined in Chapters Two, Three and Four. There were varying degrees of success in answering the research questions.

Research Question One focused on the degree of cultural variability present in three artifact assemblages belonging to the regional Charles culture. These three artifacts assemblages were recovered from the Glenrose Cannery, St. Mungo Cannery and Crescent Beach sites. It was established that site function and other non-cultural variables were relatively constant, therefore allowing a detailed analysis of the three artifact assemblages vis-a-vis each other.

A hypothesis was proposed that the degree of variability was minimal amongst the artifact assemblages from Glenrose, St. Mungo and Crescent Beach. This implied that a similar cultural tradition was present at all three sites at approximately the same time in prehistory. In order to either accept or reject this hypothesis it was necessary to discuss the St. Mungo and Mayne phases because it had been previously suggested that the three components used to address this hypothesis were from two different cultural traditions. Two components (Glenrose and St. Mungo) are the typesites of the St. Mungo phase, while the Crescent Beach component was stated by Percy (1974) as belonging to the Mayne phase. Important differences (and similarities) between the St. Mungo and Mayne phases were discussed.

The second aspect of my first research question focused on a detailed analysis of artifactual data from the three sites. This analysis was successful in several ways. Firstly, it proved that one could take artifactual data from several sites and use the information to conduct a thorough comparison. Secondly, it was possible to construct an artifact typology capable of separating artifact technology from function.

The data supports the Hypothesis Number One. There is minimal indication of cultural differences between the three artifact assemblages. While there is minimal variation between the artifact assemblages, the largest differences appeared between Glenrose and St. Mungo compared to Crescent Beach.

Artifactual data shows a high degree of similarity between the three artifact assemblages, but Crescent Beach has a less diverse artifact assemblage and a higher proportion of expedient chipped stone tools when compared to Glenrose and St. Mungo. Crescent Beach also lacks some of the stylistic artifact types commonly associated with St. Mungo components (decorated and incised ground stone tablets and grub effigies). The high proportion of ground stone disc beads and split rib awls present at Crescent Beach is also unique amongst the three site components.

While there are some differences between Glenrose, St. Mungo and Crescent Beach, there are also previously undiscovered differences between Glenrose and St. Mungo. The biggest difference is in the high proportion of bone artifacts present at St. Mungo, versus the high proportion of chipped stone artifacts present at Glenrose. One solution to this disparity is differential preservation which was suggested to me by R.G. Matson who stated

that poor organic preservation was present in some of the St. Mungo aged excavation deposit from Glenrose (R.G. Matson personal communication 1991).

While this thesis focused on artifactual data, non-artifactual data was also included to provide information that either supported or negated the findings from the artifactual data. Faunal remains revealed a high degree of similarity between the three sites in that marine resources were more important than land resources. Feature data pointed to a lack of permanent structural remains and a variety of hearth shapes.

An alternative answer to my first research question would point to the differences present between Crescent Beach and Glenrose/St. Mungo arguing that these differences are too great to allow Crescent Beach admittance to the St. Mungo phase. I do not think that this alternative explanation could be used to to argue that Crescent Beach is a member of the Mayne phase because there is little similarity between Crescent Beach and the Mayne component from the Helen Point site. Instead, one might be able to argue that Crescent Beach is an example of a previously undiscovered cultural phase. I argue that for this alternative answer to be true, one would need more information than is currently available.

Research Question Two explored the relationship between the Charles culture and the following Locarno Beach cultural phase. This was done through examination of Components One and Two from the Crescent Beach site. Non-artifactual data was introduced and discussed in order to determine the similarity of site function during the two cultural phases.

Hypothesis Number Two stated that there was minimal indication of change between the Charles and Locarno Beach culture types represented by the two components from Crescent Beach. This implied that there was gradual

in situ evolution in the Fraser Delta culminating in the ethnographic pattern of the Central Coast Salish.

The data supports Hypothesis Number Two. There are minimal differences indicated between the two components and their respective cultural traditions. The high degree of similarity was somewhat disconcerting for it was thought there would be greater variance between two cultural traditions defined as different based on the presence of artifactual and non-artifactual dissimilarity.

To further clarify matters, the Locarno Beach components from the Crescent Beach and Locarno Beach sites were compared. This did not elucidate the problems encountered between the Charles and Locarno Beach components at Crescent Beach. Similarity was demonstrated between the two Locarno Beach component artifact assemblages, but it was much less than that demonstrated for the three Charles components. Again, this result was not expected. In this case, I argued that a partial explanation for the dissimilarity could be the result of very different field techniques at the Locarno Beach site which was excavated 43 years ago and never fully published. The non-artifactual information available was minimal and variable differences such as site function could not be explored but are assumed to have some effect on the perceived differences apparent in the artifact assemblages. For example, Steifel's faunal analysis of the Locarno Beach site suggests a similarity in resource utilization, but a seasonal occupation that lasted from late winter through to summer. Seasonal occupation of the Locarno Beach component from Crescent Beach suggested late fall through to early spring.

Although differences were apparent, there were general similarities between the two Locarno Beach artifact assemblages. For example, in comparison to the Charles components, ground stone technology is more important and developed. There is a decrease in the presence of bone tools as well as a sharp decrease in antler implements.

This second research question was not answered as securely as was the first research question. Perhaps future archaeologists will be better able to interpret the information found here and use it for further exploration and discussion.

An alternative explanation of the data would argue that Component One and Two from Crescent Beach are too similar to each other to be truly representative of different cultural phases. In order to test this hypothesis one would have to demonstrate that component mixing was not responsible for the apparent cultural similarity. Until the Locarno Beach data is completely published, it will be difficult to prove or disprove the differences discovered between Component Two from Crescent Beach and the Locarno Beach site.

The final research question of my thesis focused on providing general information concerning the Charles culture and the feasibility of a regional culture present from approximately 5500 to 3300 years ago encompassing the Fraser Canyon, Fraser River Delta and the Gulf Islands. This section of my thesis gathered together as much information as possible concerning sites thought to belong to the Charles culture.

Hypothesis Number Three stated that during the time period between approximately 5000 and 3500 years ago, there was a cultural similarity between groups of prehistoric people living in the Gulf Islands, the Lower Mainland

and the Fraser Canyon. This hypothesis was evaluated by data gathered from 10 sites. The evidence did not totally support this final hypothesis.

The hypothesis could not by fully tested due to the lack of published data available to provide conclusive evidence for the presence or absence of a regional Culture. There is a missing link in the Fraser Canyon due to a lack of information concerning the Eayem phase. Until this is remedied, there is little hope of assessing a regional culture in quantitative terms. At this point one could argue (as did Borden in the seventies) that based on the general artifact assemblage (the high proportion of chipped stone versus the low proportion of ground stone, the similarity in artifact types such as projectile point styles, decorated and incised ground stone objects, as well as grub effigies) there is enough similarity to warrant designation of a regional culture. However, better published data would clarify the distinctions.

The information so far gathered does support Hypothesis Number Three and this is encouraging. Three of the 10 sites analyzed belong to the Eayem phase while the other seven were placed into either the Charles culture or one of its subsidiary phases. A detailed examination of these sites revealed that many of the Charles components were indeed similar in the Charles culture including components from Pitt River, Pender Canal, Denman Island, Tsawwassen and Duke Point. Several of these components may be mixed with a Locarno Beach component making a comparative analysis tenuous. After closer examination, some of the sites thought to have Charles components were not considered representative of the culture type (for example Marpole, Bliss Landing and Deep Bay). Clearly, more work must be done in order to better define this regional culture. Based on the present evidence, there are some general similarities between sites belonging to the Charles culture: sites tend

to be located in areas ethnographically inhabited by the Central Coast Salish; a chipped stone industry dominates, with ground stone technology present but not exploited to its fullest potential; both land and sea food sources are important; large permanent village sites are lacking (although base camps are present); sites are multi-functional in nature with possible specialized activity areas; and there is no evidence of status differentiation.

From this study there have been several key points raised, with broader implications. In light of the fact that most of the data was obtained from other archaeologist's reports and excavated material, this thesis has shown that it is possible to obtain useful information pertinent to one's own research questions from previously excavated sites and not those originally postulated when the research was first carried out. At the same time, the results of the last chapter with the Locarno Beach and Whalen Farm sites indicates that this is not always possible. The degree of similarity encountered amongst the various components supports the theory of in situ evolution in the Gulf of Georgia as postulated by archaeologists such as Matson (1976 and 1989) and this theory of in situ evolution will continue to be a relevant research topic on the Northwest Coast.

Further research must focus on obtaining more information about the sites used in this analysis as there are still many gaps in our knowledge concerning what is or is not present at specific sites. This would necessitate going back and working with the original data much like I did with the Locarno Beach site. It is most urgent that the Mayne and Eayem phases be better clarified in order to allow for more conclusive testing of the proposed idea of a regional Charles culture.

I would also recommend that future work on the Charles culture not concentrate on just the artifact assemblage but that debitage and faunal information be more fully explored in order to allow for a more complete comparison.

In terms of future artifact classification schemes and typologies I would strongly recommend that archaeologists strictly define and substantiate their artifact typologies. Although Northwest Coast archaeologists have been working in the area for many decades, there is still difficulty in comparing data from different excavations. In order for any general conclusions to be drawn concerning Northwest Coast prehistory, it is essential that Northwest Coast archaeologists work cooperatively in order to make the data more interchangeable.

The specific research questions investigated here may not be conclusively resolved, but the general research question concerning the cultural evolution of the Northwest Coast ethnographic pattern in the Gulf of Georgia, and ultimately, the shift from egalitarian to non-egalitarian social organization is an important theory with universal applications. The earlier time periods on the Northwest Coast are just beginning to be thoroughly examined, and this analysis will add to the discourse among archaeologists concerning Northwest Coast prehistory.

In the archaeology of this decade, archaeologists are constantly exploring and breaking new ground all in the name of understanding prehistoric culture. The general theoretical perspective of this thesis has been that of traditional culture history, although it has also borrowed from the processualists. It has also tried to subtly give some acknowledgement to the perspective of the post-processual archaeologists who are vocal in their

assertions that we must be aware of our own cultural biases when examining the archaeological record (See for example; Hodder 1986: Chapter Eight, Shanks and Tilley 1987 and Trigger 1989: Chapter Ten). My own concept of what is and is not culture has changed through time and it will probably change again. Today I think of culture in the way Clifford Geertz described it:

> .... man is an animal suspended in webs of significance he himself has spun, I take culture to be those webs, and the analysis of it to be therefore not an experimental science in search of law but an interpretive one in search of meaning. It is explication I am after, construing social expressions on their surface enigmatical (Geertz 1973:5).

The only change I would make to such a statement is the substitution of the term 'people' for the term 'man', but that is my own bias.

Regardless of the terms in use today, the data from this thesis provides an opportunity for future archaeologists to explore the concept of cultural evolution on the Northwest Coast and the discourse on such a topic will continue.

CHAPTER SIX

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APPENDICES

APPENDIX A.

ARTIFACT CODING FORMAT

ST MUNGO PROJECT 1989/91

VARIABLES

SITE:
Ex DgRr 1

EXCAVATION UNIT:
Only applicable in some cases.

LAYER:
Should be available for all artifacts (although it may only be a 1 or a 2), I am focusing on the gross layers.

LEVEL:
Level 1= Charles phase
Level 2= Locarno Beach phase

ARTIFACT NUMBER:
The original catalogue number given to the artifact.

ARTIFACT TYPE:
See attached sheets for the Artifact Types.

RAW MATERIAL:
The first digit refers to general raw material category, the second digit refers to a more specific raw material category when the information is available.

MINERAL
10. UNKNOWN MINERAL
11. QUARTZ CRYSTAL
12. CHALCEDONY
13. NEPHRITE
14. VEIN QUARTZ

IGNEOUS
20. UNKNOWN IGNEOUS
21. GRANITE
22. RHYOLITE
23. ANDESITE
24. BASALT
25. OBSIDIAN

SEDIMENTARY
30. UNKNOWN SEDIMENTARY
31. SANDSTONE
32. SILTSTONE
33. MUDSTONE
34. BRECCIA
35. CHERT

METAMORPHIC
40. UNKNOWN METAMORPHIC
41. GREENSTONE
42. QUARTZITE
43. SLATE
44. SCHIST
45. GNEISS
46. STEATITE

BONE
50. UNKNOWN BONE
51. MAMMAL
52. BIRD
53. BURNED BONE
54. BURNED MAMMAL
55. TURTLE BONE

TOOTH
60. UNKNOWN TOOTH
61. RODENT INCISOR
62. MAMMAL TOOTH
63. SEA MAMMAL TOOTH
64. DOG CANINE

ANTLER
70. UNKNOWN ANTLER

SHELL
80. UNKNOWN SHELL
81. CLAM
82. CALIFORNIA MUSSEL

CORTEX COVER:

For all chipped stone lithic artifacts.
0. NONE
1. < 50%
2. > 50%
3. INDETERMINATE

WEIGHT:

All artifacts weighed to the 10th of a gram.

LENGTH:

All artifacts measured to the 10th of a cm using callipers, and their length shall be defined as the maximum dimension.

QUALITY OF MEASUREMENT OF LENGTH:

1. COMPLETE
2. OBTAINABLE

WIDTH:

All artifacts to the 10th of a cm using callipers, with width measurement taken at the greatest dimension perpendicular to the length.

QUALITY OF MEASUREMENT OF WIDTH:

1. COMPLETE
2. OBTAINABLE

THICKNESS:

All artifacts to the 10th of a cm using callipers, with thickness measurement taken at right angles to the length and width.

QUALITY OF MEASUREMENT OF THICKNESS:

1. COMPLETE
2. OBTAINABLE

ARTIFACT TYPOLOGY

CHIPPED STONE

CORE;CORE

BP:BIPOLAR IMPLEMENT

UNSHAPED CHIPPED STONE IMPLEMENTS

PEBBLE CORE TOOLS

MODIFIED COBBLES
HAM:HAMMERSTONE
ANV:ANVILSTONE
HA:HAMMERSTONE/ANVILSTONE

FLAKED PEBBLE CORE TOOLS
PCHU:PEBBLE TOOL UNIFACE
PCHB:PEBBLE TOOL BIFACE

UNSHAPED CHIPPED STONE FLAKE TOOLS

PEBBLE FLAKE TOOLS
CSP:CORTEX SPALL

NON-RETOUCHED FLAKE TOOLS
BF:BATTERED FLAKE
UF:UTILIZED FLAKE

RETOUCHED FLAKE TOOLS
QCML:QUARTZ MICROLITH

UNIFACIALLY RETOUCHED FLAKES
SRF:UNIFACIALLY STEEP-ANGLED RETOUCHED FLAKE
NSRF:NOTCHED STEEP-ANGLED UNIFACIALLY RETOUCHED FLAKE
NRF:UNIFACIALLY NARROW-ANGLED RETOUCHED FLAKE

BIFACIALLY RETOUCHED FLAKES
BRF:BIFACIALLY RETOUCHED FLAKE

BLADE-LIKE TOOLS
MCLF:MICROBLADE-LIKE FLAKE
BLFK:MACROBLADE-LIKE FLAKE

SHAPED CHIPPED STONE TOOLS

BLADE TOOLS
MCBL:MICROBLADE

GRAV:GRAVER

DRL:DRILL

FORMED CHIPPED STONE UNIFACES
SFU:STEEP-ANGLED FORMED UNIFACE
NFU:NARROW-ANGLED FORMED UNIFACE

FORMED CHIPPED STONE BIFACES
LBF:LEAF-SHAPED BIFACE
STBF:SQUARE-TANG STEMMED BIFACE
CSTB:CONTRACTING STEM BIFACE NO SHOULDERS
CSBS:CONTRACTING STEM BIFACE WITH SHOULDERS

INCOMPLETE FORMED BIFACES
BPF:BIFACE PROXIMAL FRAGMENT
BMF:BIFACE MEDIAL FRAGMENT
BDF:BIFACE DISTAL FRAGMENT
UNBF:UNIDENTIFIABLE BIFACE FRAGMENT

SHAPED CHIPPED AND GROUND STONE IMPLEMENTS

CSSB:CHIPPED STONE NARROW-ANGLED BIFACE OBJECT

CTBO:CHIPPED SLATE NARROW-ANGLED TABULAR BIFACE OBJECT

CGSP:CHIPPED AND GROUND STONE POINT

CHIPPED AND GROUND STONE POINT FRAGMENTS
CGMF:CHIPPED/GROUND STONE POINT MEDIAL FRAGMENT
CGDF:CHIPPED/GROUND STONE POINT DISTAL FRAGMENT

CGSF:CHIPPED AND GROUND STONE FRAGMENT

GROUND STONE IMPLEMENTS

SHAPED GROUND STONE IMPLEMENTS

ABRASIVE STONES
SAW:SAW
AS:ABRASIVE STONE
FAS:FORMED ABRASIVE STONE

FORMED GROUND STONE BIFACES
LSGP:LEAF-SHAPED GROUND STONE POINT

FORMED GROUND STONE FRAGMENTS
GPPF:GROUND STONE POINT PROXIMAL FRAGMENT

GSDB:GROUND STONE DISC BEAD

GRIN:GROUND STONE RING OBJECT

ADZ:ADZE

GULF ISLAND COMPLEX IMPLEMENTS
GIC:GULF ISLAND COMPLEX
LAB:LABRET

DGS:DECORATED GROUND STONE

MGS:MISCELLANEOUS GROUND STONE

PECKED AND GROUND STONE IMPLEMENTS

MORT:MORTAR

PIPE:PIPE

BONE IMPLEMENTS

SHAPED BONE TOOLS

MINIMALLY WORKED BONE
WBMF:WORKED BONE MEDIAL FRAGMENT
WBEF:WORKED BONE END FRAGMENT

RI:RODENT INCISOR

NMS:NET MESH SPACER

PEG:PEG

BHKO:BONE HOOK OBJECT

BONE PENDANTS
PBP:PERFORATED BONE PENDANT
GM:GROUND MOLAR
TPND:TOOTH PENDANT

ROUND BONE OBJECTS
BEAD:BONE BEAD
RING:RING
TUBE:TUBE
WHST:WHISTLE

AWLS
SRA:SPLIT RIB AWL
SAWL:SPLINTER AWL
FAWL:FORMED SPLIT BONE AWL
MAWL:METAPODIAL AWL

BAWL:BIRDBONE AWL
ULNA:ULNA AWL

ULTL:ULNA TOOL

BPIN:BLANKET PIN

BDRL:BONE DRILL

SMALL POINTED BONE OBJECTS
UNPT:UNIPOINT
BIPT: BIPOINT
PBOF:POINTED BONE OBJECT FRAGMENT

BONE CHISELS, WEDGES, AND POINTS

BONE CHISELS
BCUT:BONE CHISEL WITH UNILATERALLY TAPERED DISTAL END
BWED:BONE WEDGE

BONE POINTS
NFPT:NON-FACETTED BONE POINT LANCEOLATE SHAPED
NFPN:NON-FACETTED BONE POINT WITH NO CENTRAL CAVITY
NFPM:NON-FACETTED BONE POINT WITH CENTRAL CAVITY
NFPF:NON-FACETTED BONE POINT FRAGMENT

UWCF:UNIDENTIFIED BONE WEDGE, CHISEL, POINT FRAGMENT

BARBED BONE POINTS
UBFP:UNILATERALLY BARBED FIXED POINT
FUB:FRAGMENT UNILAT BARBED HARPOON/POINT
BBFP:BILATERALLY BARBED FIXED POINT

BBRB:BONE BARB

FHS:FISH HOOK SHANK

DECORATED BONE
DBON:DECORATED BONE OBJECT
GRUB:GRUB

BLAB:BONE LABRET

ANTLER IMPLEMENTS

SHAPED ANTLER TOOLS

MINIMALLY WORKED ANTLER
WAMF:WORKED ANTLER MEDIAL FRAGMENT
WAEF:WORKED ANTLER END FRAGMENT

PUN:PUNCH

SMALL POINTED ANTLER OBJECTS
AUNP:ANTLER UNIPOINT
ABIP:ANTLER BIPOINT

WEDG:ANTLER WEDGE

BARBED ANTLER POINTS
UBFA:UNILATERALLY BARBED FIXED POINT
FUBA:FRAG UNILATERALLY BARBED FIXED POINT/HARPOON
BBFA:BILATERALLY BARBED FIXED POINT

HFTA: ANTLER HAFT

DECORATED ANTLER
ANTA:ANTHROPOMORPHIC OBJECT

COMB:COMB

SHELL ARTIFACTS

SHAPED SHELL ARTIFACTS

SPND:SHELL PENDANT

SHB:SHELL BEAD

SLAB:SHELL LABRET

SAB:SHELL ADZE BLADE

MGSF:MISCELLANEOUS GROUND SHELL FRAGMENTS

APPENDIX B

ARTIFACT CLASSIFICATION FOR THE CHARLES COMPONENTS FROM GLENROSE, ST. MUNGO AND CRESCENT BEACH

Appendix B Organization

The appendix is set up in the following way. Each artifact category is introduced by a single line of information containing a capitalized four letter or less abbreviation along with the full name of the artifact class. The acronyms are shorthand codes recorded on artifact coding sheets and entered into PCFILE for analysis.

The first paragraph in each artifact category defines the artifact class. The second paragraph of each description proposes possible functions for the artifact category. Thus, the physical appearance and the function of each artifact class are separated from each other.

Following the second paragraph a table presents summary statistics for each artifact type: Number of artifacts, Median, Range and Interquartile Range. The type of data used in this thesis is not normally distributed, therefore the mean is not an appropriate statistic, because it is highly sensitive to skewed distributions. Therefore, I have decided to use the median which is much more tolerant of outlying values and gives, like the mean, some sense of central tendency. The standard deviation is usually calculated along with the mean, but it, like the mean, is highly sensitive to outliers and is not an accurate indicator of dispersion if the data is not normally distributed. In place of the standard deviation, I have included the range (which shows the lowest and highest value present for each measurement) as well as the interquartile range which gives the measurements in which 50 percent of the data lies. The interquartile range is much more tolerant of outliers and skewed data (See Shennen 1988:35-44). This information is provided for the variables: Length, Width, Thickness and Weight.

Artifact Types with 5 or less artifacts do not include the interquartile range. Artifact Types with less than 2 artifacts do not include the median or the interquartile range. Artifact Types with only one artifact present include the

variable Msmt. (Measurement) which gives the measurements of the artifact. It is indicated whether or not the artifact is complete or incomplete.

the total number of artifacts are given for each component as well as the number of complete artifacts present for the variables weight, length, width and thickness. If no complete artifacts are present, this is also stated. With many artifact types it can be difficult determining the 'completeness' of the objects. In these cases all measurements are included in the summary table and it is stated as such.

LITHIC ARTIFACTS

CHIPPED STONE

Certain kinds of rocks due to their atomic structure and chemical composition share a special property. When these rocks are struck with a direct blow they fracture conchoidally, leaving behind a relatively smooth surface (Mottana 1978) and a sharp edge. Prehistoric cultures exploited these inherent properties and created tools that were so successful at what they did, they dominated artifact assemblages for hundreds of thousands of years. During the fracturing process (called flaking or chipping), small pieces of rock (called flakes) are removed from the original parent piece (called a core) either of which are easily modified into a tool. Archaeologists separate flake tools from core tools because they are naturally separated through the process of stone tool making (another way to think of this division is to realize that core and flake tools are different results created through the same process of flintknapping. I have adhered to this tradition by firstly discussing core tools and by secondly discussing flake tools.

CORE:CORE:

These objects can be described as a mass of parent material from which smaller pieces of material can be detached through application of force to some portion of the larger "parent" piece. To be defined as a core, flakes must be systematically removed from two or more different surfaces. Sometimes, the parent material may exhibit a natural flat surface which will form a striking platform from which force can be directed in order to remove flakes. These types of cores have a characteristic flat and rounded appearance. Some cores require a prepared striking platform before flake removal can occur.

It is likely cores had multiple functions. Some could have been used as cobble tools after their function as a core was exhausted.

References for this definition include an amalgamation of the following: Chapman (1977), Crabtree (1972), Matson (1976), and Pokotylo (1978).

Table B.1 **Cores**

	Number	Median	Range	Interquartile Range
Glenrose Total=54 All artifacts are included.				
Weight	54	33.5	1.3 - 1400.0	18.9 - 65.3
Length	54	4.9	1.9 - 14.2	3.7 - 6.0
Width	54	3.6	1.0 - 10.2	2.7 - 4.3
Thickness	54	2.0	.7 - 6.5	1.5 - 2.6
St. Mungo Total=49 All artifacts are included.				
Weight	49	61.3	1.8 - 1597.1	15.4 - 174.0
Length	49	6.2	1.7 - 13.0	4.0 - 8.2
Width	49	4.3	1.4 - 11.6	3.3 - 6.1
Thickness	49	2.7	.7 - 8.5	1.8 - 3.5
Crescent Bch Total=55 All artifacts are included.				
Weight	55	38.9	4.8 - 2049.4	20.4 - 70.7
Length	55	5.1	2.4 - 15.3	4.2 - 6.6
Width	55	3.5	1.5 - 12.9	2.8 - 4.4
Thickness	55	2.1	.9 - 9.8	1.6 - 2.7

BP:BIPOLAR IMPLEMENT:

These artifacts have been given many names including bipolar cores, piece esquilles and stone wedges. There is a great debate concerning the morphological differences present or absent (see for example Hayden 1980). These implements have two opposed edges that exhibit crushing and battering (Pokotylo 1978:226). This kind of tool is produced when the parent material is rested on a hard surface, such as an anvilstone, and struck (Crabtree 1972:42). These artifacts are all derived from a bipolar technology, and it is applicable to call them bipolar implements.

There is great discussion about the function of these implements. For this analysis their primary function is seen as being one of a core created in order to create flake tools (Shott 1989). It has been argued that some of these implements (those that are not bipolar cores) were used as wedges on soft material such as bone or antler (Flenniken 1986:56). There is a great deal of debate amongst archaeologist over differentiating bipolar cores and stone wedges from one another and this debate will continue for sometime.

Table B.2 Bipolar Implements

	Number	Median	Range	Interquartile Range
Glenrose Total=4 All artifacts are included.				
Weight	4	6.2	5.8 - 14.1	n/a
Length	4	2.8	2.8 - 4.1	n/a
Width	4	2.4	1.5 - 2.6	n/a
Thickness	4	1.0	.7 - 1.3	n/a
St. Mungo Total=26 All artifacts are included.				
Weight	26	12.0	1.0 - 136.8	3.9 - 32.7
Length	26	3.5	1.6 - 7.3	2.6 - 5.1
Width	26	2.8	1.2 - 7.4	2.1 - 3.3
Thickness	26	1.1	.4 - 2.9	.7 - 1.7
Crescent Bch Total=49 All artifacts are included.				
Weight	49	17.1	2.9 - 100.0	8.4 - 29.4
Length	49	4.3	2.6 - 9.1	3.5 - 5.3
Width	49	3.1	1.8 - 6.3	2.5 - 4.0
Thickness	49	1.2	.4 - 3.0	.9 - 1.6

UNSHAPED CHIPPED STONE IMPLEMENTS

In this large category a division can be made between unshaped chipped stone implements that are cobble core tools and those derived from unshaped by-products or flakes.

COBBLE CORE TOOLS

Cobble tools (including possible cores) are made on large cobbles and are discussed first. These artifacts can be further separated depending on the degree of modification. The two categories are modified cobbles and flaked cobble core tools.

MODIFIED COBBLES

Modification of these implements may be minimal and only the wear pattern indicates that these tools were used in human activities.

HAM:HAMMERSTONE:

These implements are pebbles that have evidence of battering on any part of their surface including end or edge battering (Ham et al. 1986:32).

Hammerstones are present throughout Northwest Coast prehistory. Their function is assumed to be one of hammering (Matson 1976:137).

Table B.3 **Hammerstones**

	Number	Median	Range	Interquartile Range
Glenrose Total=13				
Weight	10	311.4	82.7 - 690.0	178.5 - 462.0
Length	10	8.1	6.3 - 12.0	6.4 - 8.6
Width	12	6.1	4.5 - 9.4	5.5 - 6.7
Thickness	13	3.5	2.1 - 6.2	2.7 - 4.2

St. Mungo Total=14				
Weight	9	470.1	184.4 - 831.6	258.8 - 790.7
Length	9	9.6	7.1 - 12.2	7.2 - 11.3
Width	10	7.9	5.4 - 9.4	5.8 - 8.7
Thickness	10	4.8	3.4 - 7.5	3.9 - 5.5
Crescent Bch Total=4				
Weight	3	178.5	109.1 - 890.0	n/a
Length	3	8.5	6.3 - 12.5	n/a
Width	3	4.0	4.0 - 9.9	n/a
Thickness	3	3.7	2.9 - 4.6	n/a

ANV:ANVILSTONE:

Anvilstones show evidence of battering and pecking on at least one flat surface away from the edge of the tool (Matson 1976:141).

One important function of these objects was to provide a flat surface for bipolar percussion. Anvilstones probably had many other uses as well (Ham et al. 1986:32).

Table B.4 Anvilstones

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose Total=1 incomplete					
Weight	1	90.0	n/a	n/a	n/a
Length	1	13.4	n/a	n/a	n/a
Width	1	10.4	n/a	n/a	n/a
Thickness	1	5.0	n/a	n/a	n/a
St. Mungo Total=1 complete					
Weight	1	607.8	n/a	n/a	n/a
Length	1	10.9	n/a	n/a	n/a
Width	1	8.7	n/a	n/a	n/a
Thickness	1	4.5	n/a	n/a	n/a
Crescent Bch Total=4					
Weight	0	n/a	n/a	n/a	n/a
Length	0	n/a	n/a	n/a	n/a
Width	0	n/a	n/a	n/a	n/a
Thickness	1	4.9	n/a	n/a	n/a

HA:HAMMER ANVILSTONE:

Like anvilstones, these objects show evidence of battering and pecking on at least one flat surface, away from the tool's edge, but

these objects also have wear on either end indicating a hammering motion was also employed (Ham et al. 198:36).

These multi-functional tools could be used as a flat surface for bipolar percussion or could be used to hammer.

Table B.5 Hammerstone/Anvilstones

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose	No artifacts are present.				
St. Mungo	No artifacts are present.				
Crescent Bch	**Total=1 complete**				
Weight	1	110.0	n/a	n/a	n/a
Length	1	18.6	n/a	n/a	n/a
Width	1	11.9	n/a	n/a	n/a
Thickness	1	8.1	n/a	n/a	n/a

FLAKED COBBLE CORE TOOLS

The next technological stage after minimally modified cobble implements are cobble tools created through the removal of flakes. These tools can be classified further according to flake removal. Traditionally these tools are defined as pebble tools, although a better term would probably be cobble as most of these tools are much larger than the average pebble. Nevertheless, I will use the traditional term of Pebble for the names of the two specific artifact types, in order to avoid confusion.

PCHU:PEBBLE TOOL UNIFACE:

These implements have been modified by flaking on one face of the pebble. The working edge created is usually quite steep, but narrow-angled edges also occur (Matson 1976:142). Retouch is minimal and flake scars are large.

Some of these implements may have originally been used as cores, but deemed unsatisfactory and abandoned, or perhaps used

for other activities (Matson 1976:142). Ham et al. (1986:43) suggests the edge wear on some of the tools is consistent with heavy duty chopping activities. Actual functions of these artifacts are difficult to discern because they do not require a sophisticated technology and the resulting tool can be used for a number of activities including scraping, or chopping. Furthermore, original function is difficult to determine because the raw materials comprising these artifacts are coarse grained, making analysis of use-wear difficult.

Table B.6 Pebble Tool Unifaces

	Number	Median	Range	Interquartile Range
Glenrose Total=16 All artifacts are included.				
Weight	16	367.0	94.7 - 1045.0	205.1 - 638.5
Length	16	9.8	6.7 - 13.7	8.0 - 12.3
Width	16	7.7	4.5 - 12.0	6.0 - 8.6
Thickness	16	3.7	2.4 - 5.1	3.1 - 4.7
St. Mungo Total=16 All artifacts are included.				
Weight	16	328.0	13.4 - 1268.6	179.1 - 697.8
Length	16	9.5	3.0 - 13.6	6.5 - 11.3
Width	16	7.5	2.6 - 10.9	5.6 - 9.3
Thickness	16	4.0	1.4 - 6.6	3.2 - 5.0
Crescent Bch Total=16 All artifacts are included.				
Weight	16	657.7	63.0 - 1178.4	251.0 - 802.7
Length	16	10.8	5.7 - 13.3	8.7 - 12.4
Width	16	9.1	4.5 - 11.4	7.7 - 10.4
Thickness	16	4.6	1.9 - 7.8	3.2 - 6.2

PCHB:PEBBLE TOOL BIFACE:

These tools are of the same nature as unifacial pebble tools except that flakes have been removed from both faces of the original pebble. The flake scars are large and irregular with no discernible retouch (Patenaude 1985:110).

These implements may also be tools first chosen because of their potential for becoming a core, but abandoned, or used for

other functions (Matson 1976:141). Their functions may have overlapped with unifacial pebble tools.

Table B.7 Pebble Tool Bifaces

	Number	Median	Range	Interquartile Range
Glenrose Total=7 All artifacts are included.				
Weight	7	162.8	31.1 - 690.0	93.8 - 328.2
Length	7	7.3	5.1 - 12.5	7.0 - 8.6
Width	7	5.9	2.7 - 8.2	5.5 - 7.1
Thickness	7	2.9	1.5 - 4.4	2.6 - 3.6
St. Mungo Total=3 All artifacts are included.				
Weight	3	485.7	407.6 - 771.6	n/a
Length	3	10.4	9.6 - 10.4	n/a
Width	3	9.2	8.6 - 9.6	n/a
Thickness	3	5.1	3.6 - 5.2	n/a
Crescent Bch Total=3 All artifacts are included.				
Weight	3	430.0	350.0 - 910.0	n/a
Length	3	10.5	8.1 - 12.5	n/a
Width	3	8.0	6.9 - 8.5	n/a
Thickness	3	4.9	4.7 - 6.1	n/a

UNSHAPED CHIPPED STONE FLAKE TOOLS

Debitage and unshaped flakes are differentiated by edge treatment. The outer margins of debitage have not been extensively utilized or retouched, while those of unshaped flakes exhibit either utilization or retouch.

COBBLE FLAKE TOOLS

These tools may be by-products from the production of the above mentioned flaked cobble core tools. The flakes removed in the process of making these artifacts are large, requiring little modification in order to be useful in a variety of activities.

CSP:CORTEX SPALL:

This implement is created when a primary flake is struck from river pebbles or cobbles of metamorphic and igneous material by a hammerstone or anvilstone percussion technique. The dorsal face of the tool is completely cortex covered (Hanson 1973:180).

Ham et al. (1986:60) state that cortex spall tools were used for scraping hides, but Hanson (1973:182) points out that experiments made with these tools showed they could be used to cut open fish, and to prepare poles, shafts, or stakes of wood for fishing and hunting. There is a distinctive edge polish on cortex spalls that have been used for hide scraping and this polish is easily recognizable from other types of usewear (Matson et al. 1981).

Table B.8 **Cortex Spalls**

	Number	Median	Range	Interquartile Range
Glenrose **Total=11** All artifacts are included.				
Weight	11	40.1	13.9 - 138.4	30.4 - 83.1
Length	11	6.3	3.9 - 9.4	5.5 - 7.2
Width	11	4.6	3.4 - 7.0	4.1 - 5.7
Thickness	11	1.3	.8 - 2.3	1.1 - 1.6
St. Mungo **Total=3** All artifacts are included.				
Weight	3	44.8	36.3 - 109.4	n/a
Length	3	8.0	6.1 - 8.2	n/a
Width	3	4.4	4.1 - 7.1	n/a
Thickness	3	1.5	1.0 - 2.6	n/a
Crescent Bch **Total=14** All artifacts are included.				
Weight	14	36.6	9.0 - 74.8	24.1 - 51.2
Length	14	5.4	4.0 - 7.6	4.7 - 6.4
Width	14	4.3	3.5 - 5.8	4.0 - 4.7
Thickness	14	1.5	.9 - 2.2	1.0 - 1.6

UTILIZED FLAKE TOOLS

These flake tools comprise a large category in most early Northwest Coast artifact assemblages. Flake tools not exhibiting deliberate or regular edge retouch are classified as utilized flakes.

UF:UTILIZED FLAKE:

This flake type exhibits signs of wear along its edge but no methodical evidence of retouch (Kornbacher 1989:117). Wear patterns include abrasion, irregular nicks or small flake scars (Matson 1976:131). There is a gradient between utilized and retouched flakes. Utilized flakes are defined as those implements having less than three sequential flake scars appear along the utilized edge. This is an arbitrary boundary and in the future it will probably change as archaeologists experiment more with stone tools and learn how to better differentiate between utilized and retouch edges.

Utilized flakes are a large category in early Northwest Coast tool assemblages reflecting the many activities and tasks these objects were engaged in.

Table B.9 **Utilized Flakes**

	Number	Median	Range	Interquartile Range
Glenrose Total=82 All artifacts are included.				
Weight	82	11.4	1.1 - 291.0	3.9 - 30.9
Length	82	4.6	1.7 - 12.9	3.7 - 6.2
Width	82	3.2	1.3 - 7.5	2.2 - 4.1
Thickness	82	.9	.2 - 2.9	.6 - 1.3
St. Mungo Total=44 All artifacts are included.				
Weight	44	8.9	.2 - 199.6	3.3 - 37.5
Length	44	4.1	1.3 - 9.9	3.0 - 6.1
Width	44	2.9	1.0 - 7.7	2.1 - 4.3
Thickness	44	.9	.1 - 2.7	.6 - 1.6

Crescent Bch	Total=118	All artifacts are included.		
Weight	118	13.1	1.3 - 160.3	5.6 - 28.5
Length	118	4.6	1.9 - 11.3	3.5 - 5.8
Width	118	3.1	1.4 - 7.9	2.4 - 3.9
Thickness	118	1.1	.3 - 3.6	.7 - 1.3

RETOUCHED FLAKE TOOLS

These tools, unlike utilized flake tools, show deliberate edge modification. The degree and angle of edge modification are the attributes used to place the flake tool into the subcategories discussed below, starting with quartz crystal microliths which are a unique category not placed into the other retouched flake categories. Another attribute important in categorizing this large group of tools is the amount of work exhibited on the edge, with those worked on one face (unifacial retouch) separated from those worked on both faces (bifacial retouch). This separation is useful in helping to determine the amount of time spent on making flake tools, the idea being that unifaces are more expedient than bifaces.

QCML:QUARTZ MICROLITH:

This is a special subcategory of unshaped tools based on the use of a special kind of raw material which is the mineral quartz in any of its forms. Due to the most common nature of the raw material, small pebbles, bipolar percussion is the most common way in which these implements are manufactured (Flenniken 1981). These tools are usually little more than small unshaped flakes that have retouched edges, although sometimes, they are only heavily utilized.

They are common during the Locarno Beach phase but they then disappear from use which is intriguing. They are also thought to be indicative of a blade tool technology because quartz was a raw material used in the making of microblades. People often confuse

quartz microliths with quartz microblades, but they are different. Quartz microliths are easy to make, take little time or skill, while microblades require much more effort, time, and skill to make. At the Hoko River Site in the state of Washington, quartz microliths were discovered in small wooden slotted hafts.

Quartz microliths may have had several functions. At Hoko, experiments with hafted quartz microliths concluded they were good for cutting salmon and halibut (Flenniken 1981:76 - 90).

Table B.10 **Quartz Microliths**

	Number	Msmt	Median	Range	Interquartile Range
Glenrose	No artifacts are present.				
St. Mungo	No artifacts are present.				
Crescent Bch	Total=1 incomplete				
Weight	1	1.0	n/a	n/a	n/a
Length	1	1.7	n/a	n/a	n/a
Width	1	1.4	n/a	n/a	n/a
Thickness	1	.4	n/a	n/a	n/a

UNIFACIALLY RETOUCHED FLAKES

These flake tools are sub-divided according to the angle of the worked edge. Implements with edge angles greater than forty five degrees are called steep-angled retouched flakes, while implements with edge angles less than forty five degrees are called narrow-angled retouched flakes. Edge retouch for these tools must involve three or more consecutive flake scars. The last attribute requirement for this artifact class is that the tools be unifacially worked.

SRF:UNIFACIALLY STEEP-ANGLED RETOUCHED FLAKE:

These artifacts have one or more margins exhibiting contiguous retouch scars that are confined to the margins and do not extend over the rest of the flake's surface. Steep-edge angles of the

retouched edges are defined, for this analysis, as being equal to or greater than 45 degrees (Pokotylo 1978:220).

The steep edge-angle is not conducive to cutting, but is conducive to activities such as skinning, hide scraping, sinew and fibre shredding, and also the heavy cutting of wood, bone or horn (Wilmsen 1970:50).

Table B.11 Unifacially Steep-Angled Retouched Flakes

	Number	Median	Range	Interquartile Range
Glenrose Total=45 All artifacts are included.				
Weight	45	35.2	.9 - 370.0	19.4 - 69.7
Length	45	5.9	2.2 - 9.6	4.6 - 7.4
Width	45	4.4	1.0 - 7.4	3.0 - 5.2
Thickness	45	1.6	.5 - 4.4	1.2 - 1.8
St. Mungo Total=17 All artifacts are included.				
Weight	17	25.5	1.7 - 120.0	4.3 - 50.4
Length	17	4.6	1.9 - 9.1	3.6 - 6.0
Width	17	3.9	1.4 - 8.2	1.8 - 4.5
Thickness	17	1.3	.6 - 2.8	.9 - 1.9
Crescent Bch Total=28 All artifacts are included.				
Weight	28	24.6	2.3 - 134.6	16.1 - 50.6
Length	28	5.7	2.7 - 7.9	4.4 - 6.5
Width	28	3.9	1.5 - 6.7	3.1 - 4.6
Thickness	28	1.3	.4 - 2.7	1.1 - 1.9

NSRF:NOTCHED STEEP-ANGLED UNIFACIALLY RETOUCHED FLAKE:

This is a specialized category of steep-angled retouch flakes. These objects are small, with at least one or more large well-made shallow notches on one or more margins. The notch is comprised of several small flake scars rather than one large flake scar. Another name for this implement is 'spokeshave' (Matson 1976:123).

As the name spokeshave implies, these tools are thought to have been used to possibly 'shave' the outer surface of soft materials such as bone or wood.

Table B.12 Notched Steep-Angled Unifacially Retouched Flakes

	Number	Median	Range	Interquartile Range
Glenrose Total=2 All artifacts are included.				
Weight	2	n/a	2.9 - 11.9	n/a
Length	2	n/a	2.8 - 4.0	n/a
Width	2	n/a	2.1 - 3.4	n/a
Thickness	2	n/a	.4 - .1	n/a

St. Mungo No artifacts are present.

Crescent Bch No artifacts are present.

NRF:UNIFACIALLY NARROW-ANGLED RETOUCHED FLAKE:

The most diagnostic attribute for these tools is that one or more margins exhibits contiguous retouch scars confined to the object's margin. The narrow-edged angles of the retouched edges are defined as being equal to or less than 45 degrees.

Acute angles are suitable for activities such as cutting (Pokotylo 1978:220).

Table B.13 Unifacially Narrow-Angled Retouched Flakes

	Number	Median	Range	Interquartile Range
Glenrose Total=86 All artifacts are included.				
Weight	86	11.5	.5 - 169.4	4.7 - 29.0
Length	86	4.2	1.4 - 9.8	3.4 - 5.8
Width	86	3.1	1.0 - 8.1	2.4 - 4.6
Thickness	86	.9	.2 - 3.0	.5 - 1.1
St. Mungo Total=57 All artifacts are included.				
Weight	57	3.8	.5 - 118.2	2.0 - 11.0
Length	57	3.5	1.7 - 10.3	2.6 - 4.5
Width	57	2.3	.9 - 5.7	1.7 - 2.8
Thickness	57	.5	.3 - 1.7	.4 - 1.0
Crescent Bch Total=19 All artifacts are included.				
Weight	19	15.2	4.5 - 595.5	8.1 - 22.8
Length	19	4.4	2.9 - 14.8	3.4 - 5.6
Width	19	3.3	2.2 - 11.6	2.8 - 3.9
Thickness	19	.9	.5 - 2.4	.7 - 1.3

BIFACIALLY RETOUCHED FLAKES

The defining attribute for this artifact type concerns the modification of both faces of the implement (also known as bifacially worked). Most Northwest Coast archaeologists do not subgroup this artifact class into steep and narrow angled artifacts because they are not as common as the unifacially worked tools, and most tools in this class are narrow angled.

BRF:BIFACIALLY RETOUCHED FLAKE:

Exhibits retouch on one or more edge. The retouch is on both adjacent surfaces but does not extend over more than one third of either face from the margin (Pokotylo 1978:223). Artifacts of this type may be called preforms because the analyst assumes that the implement was abandoned before the final shape was formed.

While these tools are less expedient than unifacially worked flakes, archaeologists believe they were a multi-functional tool.

Table B.14 Bifacially Retouched Flakes

	Number	Median	Range	Interquartile Range
Glenrose Total=12 All artifacts are included.				
Weight	12	10.5	.8 - 113.2	3.3 - 67.0
Length	12	4.5	1.9 - 8.0	3.2 - 7.0
Width	12	3.5	.9 - 5.8	1.9 - 4.6
Thickness	12	.8	.2 - 2.5	.6 - 1.9
St. Mungo Total=14 All artifacts are included.				
Weight	14	5.2	1.7 - 218.0	2.5 - 12.9
Length	14	3.4	2.0 - 10.3	2.6 - 4.8
Width	14	2.4	1.3 - 9.2	1.7 - 3.4
Thickness	14	.8	.3 - 3.0	.5 - 1.1
Crescent Bch Total=2 All artifacts are included.				
Weight	2	n/a	12.0 - 13.9	n/a
Length	2	n/a	4.6 - 4.7	n/a
Width	2	n/a	2.8 - 3.1	n/a
Thickness	2	n/a	1.0 - 1.1	n/a

BLADE-LIKE TOOLS

This category of tools cannot be classified easily. While some of these implement's attributes are suggestive of a true blade technology, these implements lack some important feature that does not allow them to be placed into the true blade category. As mentioned in previous discussion in this analysis, there is much debate on the Northwest Coast about a prepared core and blade tradition. Part of this uncertainty is due to the fact that during regular core reduction or tool manufacture it is not uncommon for a flake to be removed that looks blade-like. Thus, before archaeologists declare the presence of a true blade technology in an artifact assemblage, it is important to have ample evidence, preferably a prepared core or large numbers of blades.

MCLF:MICROBLADE-LIKE FLAKE:

These flakes are usually small and broken. They have some features in common with microblades but not all attributes are present on each artifact, so they are not designated as typical microblades (Matson 1976:126). Microblade-like flakes are not necessarily indicative of a microblade technology.

Table B.15 Microblade-Like Flakes

	Number	Median	Range	Interquartile Range
Glenrose Total=3 All artifacts are included.				
Weight	3	2.0	1.4 - 4.5	n/a
Length	3	2.9	1.7 - 4.4	n/a
Width	3	1.9	1.3 - 2.2	n/a
Thickness	3	.4	.3 - .6	n/a

St. Mungo No artifacts are present.

Crescent Bch No artifacts are present.

BLFK:MACROBLADE-LIKE FLAKE:

These tools are larger than micro-blade like flakes. Raw materials vary, but basalt is not uncommon. They are suggestive of

true blades, but not all the required attributes are present. Therefore, they are not considered indicators of a blade technology.

Table B.16 Macroblade-Like Flakes

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose	No artifacts are present.				
St. Mungo	No artifacts are present.				
Crescent Bch	Total=1 complete				
Weight	1	4.1	n/a	n/a	n/a
Length	1	4.2	n/a	n/a	n/a
Width	1	1.5	n/a	n/a	n/a
Thickness	1	.5	n/a	n/a	n/a

SHAPED CHIPPED STONE TOOLS

A general definition of shaped implements versus unshaped implements can be found in the introduction at the beginning of this artifact classification. With shaped chipped stone tools, modification of the artifact extends over most of its surface and significantly alters the original mass of material (Kornbacher 1989:105). Chipped stone shaped implements are often symmetrical in plane view. These shaped objects are often produced differently from unshaped tools. As Sullivan and Rozen (1985) point out, core reduction and shaped tool manufacture are different reduction strategies. Many unshaped chipped stone artifacts are produced from the byproducts of core reduction, while many shaped chipped stone tools are the desired end product of many steps of specialized and careful shaped tool manufacture. There is more thought and planning required in the production of shaped chipped stone tools.

BLADE TOOLS

In this collection of objects diagnostic attributes includes the following: triangular or prismatic cross-section; length twice or three times greater than width; and guiding line running down the middle of the blade. Blade tools are also grouped according to size with larger blades called macroblades and smaller blades called microblades. Blade tools are considered shaped implements because considerable forethought and preparation are required for their creation. A microblade core displays significant modification.

MCBL:MICROBLADE:

Microblades are smaller versions (less than 2.5 cm in length) of blades. Their cross-sections can be triangular or prismatic, as with larger blades (Matson 1976:125). On the Northwest Coast the most common raw material for microblades is obsidian or quartz crystal. The striking platform may or may not be present. With both microblades and blades it is not uncommon for the proximal and distal ends to be snapped off in order to create a straighter edge suitable for delicate cutting. One of the margins may be retouched and blunted to facilitate easier handling or hafting.

Blades are the ultimate cutting tools because they provide maximum cutting edge but, they require an unparallel skill in the creation of the shaped cores from which the blades are struck off.

Table B.17 **Microblades**

	Number	Msmt	Median	Range	Interquartile Range
Glenrose Total=1 incomplete					
Weight	1	.1	n/a	n/a	n/a
Length	1	1.5	n/a	n/a	n/a
Width	1	.6	n/a	n/a	n/a
Thickness	1	.1	n/a	n/a	n/a

St. Mungo No artifacts are present.

Crescent Bch No artifacts are present.

GRAV:GRAVER:

This tool type varies a great deal, but diagnostic characteristics include a unifacially retouched point or spur. The retouch may be marginal or extend onto the face of the tool. The projection edge-angle is usually steep (Pokotylo 1978:223). To be classified as a graver, evidence of wear should also be present (Matson 1976:123).

Gravers were used to engrave on soft material such as bone or wood.

Table B.18 Gravers

Glenrose **Total=2** No complete measurements were obtained.

St. Mungo No artifacts are present.

Crescent Bch No artifacts are present.

DRL:DRILL:

This tool is similar to a graver in that drills are usually unifacially worked, but they can also be bifacially worked. A drill is more symmetric than a graver and the tip is usually well worn (Matson 1976:125).

Table B.19 Drills

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose Total=1 complete					
Weight	1	4.6	n/a	n/a	n/a
Length	1	4.1	n/a	n/a	n/a
Width	1	1.9	n/a	n/a	n/a
Thickness	1	.7	n/a	n/a	n/a

St. Mungo No artifacts are present.

Crescent Bch No artifacts are present.

FORMED CHIPPED STONE UNIFACES

This category of formed (also called shaped) tools exhibit extensive working on one face of the implement. The degree of edge angle determines the subgroup. As with retouched flakes, the dividing angle between narrow and steep is forty five degrees.

SFU:STEEP-ANGLED FORMED UNIFACE:

In this category implements exhibit extensive facial retouch extending minimally over one third of the flake surface from at least one margin. Retouch is located on one face only and edge-angles are equal to or greater than 45 degrees (Pokotylo 1978:220). There may be evidence for hafting at the base

These tools are suitable for scraping activities.

Table B.20 Steep-Angled Formed Unifaces

	Number	Median	Range	Interquartile Range
Glenrose	Total=10	All artifacts are included.		
Weight	10	25.6	1.2 - 96.8	2.4 - 62.0
Length	10	4.9	1.9 - 7.0	2.9 - 6.5
Width	10	3.1	1.2 - 5.5	1.8 - 5.1
Thickness	10	1.5	.3 - 2.3	.5 - 2.0
St. Mungo	Total=2	All artifacts are included.		
Weight	2	n/a	64.5 - 136.8	n/a
Length	2	n/a	6.4 - 7.3	n/a
Width	2	n/a	4.7 - 6.6	n/a
Thickness	2	n/a	2.3 - 2.5	n/a

Crescent Bch No artifacts are present.

NFU:NARROW-ANGLED FORMED UNIFACE:

This is a subcategory of narrow-angled retouched flakes. The major difference is in the kind of raw material which is a very good vitreous basalt. The retouch is very regular and the objects are made on thin flakes (Matson 1976:118). The outer margins of the

implement are all retouched. Sometimes the margins exhibit alternate working, but in all cases this working is unifacial and never bifacial.

Their edge angle suggests that these implements were a more carefully worked cutting implement.

Table B.21 Narrow-Angled Formed Uniface

	Number	Median	Range	Interquartile Range
Glenrose Total=30 All artifacts are included.				
Weight	30	4.7	.8 - 11.2	2.5 - 6.4
Length	30	3.5	1.8 - 5.1	3.1 - 4.5
Width	30	2.5	1.3 - 3.8	1.9 - 3.1
Thickness	30	.5	.3 - 1.1	.4 - .7
St. Mungo Total=18 All artifacts are included.				
Weight	18	5.9	.3 - 48.9	3.7 - 11.1
Length	18	4.0	1.4 - 8.0	3.2 - 4.9
Width	18	2.4	1.1 - 4.4	2.1 - 3.3
Thickness	18	.6	.2 - 1.7	.4 - .8
Crescent Bch Total=3 All artifacts are included.				
Weight	3	8.7	2.4 - 66.1	n/a
Length	3	5.4	3.2 - 7.4	n/a
Width	3	2.3	1.8 - 5.7	n/a
Thickness	3	1.0	.5 - 1.5	n/a

FORMED CHIPPED STONE BIFACES

In general, bifaces as a category can be defined as, "well-made artifacts formed by bifacially removing flakes from the complete periphery of the object so that both ventral and dorsal sides show extensive flake scars" (Matson 1976:106). Bifaces are usually symmetrical with a sharply pointed end along with acute-angled blade margins (Pokotylo 1978:216). Bifaces are categorized according to their overall finished shape. Determining whether formed bifaces were used as projectile points or knives is difficult and best avoided by placing all formed bifaces into the same category. The most common way of determining the difference between knives and projectile points focuses on the treatment of the base of the object.

> "Projectile points exhibit discrete evidence of modification of their proximal ends. In most cases, this 'basal' modification has been undertaken through manufacture of corner or laterally situated notches. It is assumed that such basal modification has been undertaken for hafting purposes" (Chapman 1977:413).

Biface size has also been used to determine the difference between projectile points and knives assuming that smaller objects are projectile points because there is a maximum size of biface that one can successfully hurl through the air.

LBF:LEAF-SHAPED BIFACE:

Leaf-shaped bifaces are a very common artifact type in early Northwest Coast prehistory. The overall leaf-shape (which in itself can vary from very thin to very thick) of these artifacts is the chief diagnostic attribute.

Table B.22 Leaf-Shaped Bifaces

	Number	Median	Range	Interquartile Range
Glenrose Total=19				
Weight	16	8.8	2.7 - 40.5	4.6 - 15.2
Length	16	5.0	3.2 - 9.5	4.5 - 7.0
Width	19	2.1	1.4 - 3.8	1.8 - 2.5
Thickness	19	.8	.4 - 1.5	.6 - 1.0
St. Mungo Total=7				
Weight	3	10.3	5.2 - 11.9	n/a
Length	3	6.1	5.1 - 6.3	n/a
Width	6	2.0	1.6 - 2.2	1.8 - 2.0
Thickness	7	.7	.5 - .8	.6 - .7
Crescent Bch Total=7				
Weight	4	10.5	3.5 - 12.4	n/a
Length	6	5.4	3.5 - 6.5	5.0 - 5.7
Width	6	2.2	1.6 - 2.5	2.0 - 2.4
Thickness	6	.9	.6 - 1.0	.7 - .9

STBF:SQUARE-TANG STEMMED BIFACE:

These bifaces are stemmed and therefore, theoretically, were hafted. The stems do not contract like the contracting stem bifaces. The stem is also parallel sided with a square base (Matson 1976:112). The distal shoulders are flared.

Table B.23 Square-Tang Stemmed Bifaces

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose Total=1 complete					
Weight	1	8.5	n/a	n/a	n/a
Length	1	4.4	n/a	n/a	n/a
Width	1	2.3	n/a	n/a	n/a
Thickness	1	.8	n/a	n/a	n/a

St. Mungo No artifacts are present.

Crescent Bch No artifacts are present.

CSTB:CONTRACTING STEM BIFACE NO SHOULDERS:

This type of biface has a leaf-shaped form, but they also have a contracting stem which is more distinguishable and less gradual than the leaf-shaped biface's stem. There are no weakly developed shoulders. These bifaces may have been hafted.

Table B.24 Contracting Stem Bifaces No Shoulders

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose Total=1 complete					
Weight	1	6.3	n/a	n/a	n/a
Length	1	3.9	n/a	n/a	n/a
Width	1	2.4	n/a	n/a	n/a
Thickness	1	.7	n/a	n/a	n/a
St. Mungo Total=5					
Weight	4	n/a	10.0	5.8 - 16.5	n/a
Length	4	n/a	5.5	4.1 - 6.9	n/a
Width	5	n/a	2.2	2.0 - 2.8	n/a
Thickness	5	n/a	.9	.8 - 1.1	n/a
Crescent Bch Total=2					
Weight	2	n/a	n/a	11.4 - 18.4	n/a
Length	2	n/a	n/a	6.6 - 7.8	n/a
Width	2	n/a	n/a	1.9 - 2.6	n/a
Thickness	2	n/a	n/a	.9 - .9	n/a

CSBS:CONTRACTING STEM BIFACE WITH SHOULDERS:

This type of biface has a leaf-shaped form, and a contracting stem that is more distinguishable and less gradual than the leaf-shaped biface's stem. The differences between bifaces of this type

and contracting stem bifaces without shoulders is that this group of artifacts do have evidence of shoulders, although there is a gradient falling from weak to strongly developed shoulders. These bifaces are assumed to have been hafted.

Table B.25 Contracting Stem Bifaces With Shoulders

	Number	Median	Range	Interquartile Range
Glenrose Total=2				
Weight	2	n/a	4.6 - 6.0	n/a
Length	2	n/a	4.3 - 4.4	n/a
Width	2	n/a	1.8 - 1.9	n/a
Thickness	2	n/a	.6 - .6	n/a
St. Mungo Total=8				
Weight	5	5.1	3.3 - 14.9	n/a
Length	5	3.8	3.2 - 6.3	n/a
Width	8	2.3	1.9 - 2.8	2.1 - 2.6
Thickness	8	.7	.5 - 1.1	.6 - .8
Crescent Bch Total=4				
Weight	2	n/a	8.8 - 25.1	n/a
Length	2	n/a	6.6 - 7.8	n/a
Width	2	n/a	2.2 - 3.6	n/a
Thickness	2	n/a	.8 - .9	n/a

INCOMPLETE FORMED BIFACES

When a biface was not complete, it was placed into one of the following categories depending on its completeness. If it was not possible to determine between the different types of fragments, the artifact was placed into the unidentifiable biface fragment category.

BPF:BIFACE PROXIMAL FRAGMENT:

In this group of bifaces, no base or midsection is present, but the tip can be ascertained.

Table B.26 Biface Proximal Fragments

	Number	Median	Range	Interquartile Range
Glenrose Total=7 All artifacts are included.				
Weight	7	13.2	6.2 - 22.9	10.1 - 16.8
Length	7	4.9	3.5 - 6.2	4.1 - 5.8
Width	7	2.9	2.1 - 4.7	2.8 - 3.3
Thickness	7	.9	.7 - 1.2	.8 - 1.1
St. Mungo Total=3 All artifacts are included.				
Weight	3	2.5	1.5 - 6.5	n/a
Length	3	2.5	2.4 - 4.2	n/a
Width	3	1.9	1.3 - 2.0	n/a
Thickness	3	.6	.5 - .9	n/a
Crescent Bch Total=3 All artifacts are included.				
Weight	3	3.5	1.1 - 11.0	n/a
Length	3	3.2	2.6 - 5.2	n/a
Width	3	1.8	1.5 - 2.2	n/a
Thickness	3	.7	.3 - 1.3	n/a

BMF:BIFACE MEDIAL FRAGMENT:

In this group of bifaces, no tip or base is present, but the midsection can be ascertained.

Table B.27 Biface Medial Fragments

	Number	Median	Range	Interquartile Range
Glenrose Total=5 All artifacts are included.				
Weight	5	5.8	3.4 - 46.4	n/a
Length	5	2.9	2.1 - 7.0	n/a
Width	5	2.7	1.5 - 3.8	n/a
Thickness	5	.8	.6 - 1.8	n/a
St. Mungo Total=7 All artifacts are included.				
Weight	7	8.4	1.0 - 25.0	3.5 - 20.3
Length	7	3.7	1.6 - 5.6	2.5 - 5.0
Width	7	2.2	.9 - 3.1	1.7 - 2.6
Thickness	7	1.0	.6 - 1.4	.7 - 1.3
Crescent Bch Total=3 All artifacts are included.				
Weight	3	11.4	10.2 - 25.4	n/a
Length	3	4.0	3.6 - 5.9	n/a
Width	3	2.7	2.6 - 3.4	n/a
Thickness	3	1.1	1.0 - 1.3	n/a

BDF:BIFACE DISTAL FRAGMENT:

In this group of bifaces a discernible base is present.

Table B.28 Biface Distal Fragments

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose Total=4 All artifacts are included.					
Weight	4	n/a	27.1	16.2 - 56.9	n/a
Length	4	n/a	6.5	4.1 - 7.0	n/a
Width	4	n/a	3.3	2.5 - 4.9	n/a
Thickness	4	n/a	1.4	1.1 - 2.7	n/a
St. Mungo Total=1 All artifacts are included.					
Weight	1	.4	n/a	n/a	n/a
Length	1	1.0	n/a	n/a	n/a
Width	1	.9	n/a	n/a	n/a
Thickness	1	.4	n/a	n/a	n/a

Crescent Bch No artifacts are present.

UNBF:UNIDENTIFIABLE BIFACE FRAGMENT:

This is a leftover category in which an object exhibits bifacial working but is too fragmentary in nature to be placed into a more definitive biface category.

Table B.29 Unidentifiable Biface Fragments

	Number	Median	Range	Interquartile Range
Glenrose Total=13 All artifacts are included.				
Weight	13	10.1	1.3 - 35.9	6.7 - 12.4
Length	13	3.7	1.3 - 4.7	2.9 - 4.1
Width	13	2.5	1.8 - 5.1	2.3 - 3.2
Thickness	13	.9	.4 - 1.7	.8 - 1.2
St. Mungo Total=16 All artifacts are included.				
Weight	16	2.5	.1 - 22.2	.7 - 5.1
Length	16	2.7	.7 - 6.8	1.4 - 3.6
Width	16	1.8	.6 - 4.2	1.0 - 2.0
Thickness	16	.6	.3 - 1.5	.5 - .8
Crescent Bch Total=8 All artifacts are included.				
Weight	8	4.4	3.5 - 10.6	4.0 - 10.1
Length	8	3.3	2.5 - 4.6	2.8 - 4.3
Width	8	2.3	1.7 - 3.0	2.1 - 2.7
Thickness	8	.8	.6 - 1.0	.8 - .9



Figure B.1 Chipped Stone Artifacts - Glenrose
Top Row: Leaf-Shaped Biface, Bipolar Implement, Narrow-Angled Formed Uniface
Middle Row: 2 Leaf-Shaped Bifaces, Narrow-Angled Formed Uniface
Bottom Row: Square-Tang Stemmed Biface, Bipolar Implement, Narrow-Angled Formed Uniface



Figure B.2 Chipped Stone Bifaces - St. Mungo
Top Row: 3 Contracting Stem Bifaces No Shoulders
Middle Row: 3 Contracting Stem Bifaces With Shoulders
Bottom Row: 3 Leaf-Shaped Bifaces

SHAPED CHIPPED AND GROUND STONE IMPLEMENTS

These implements are placed into their own special categories because they are perceived to be an evolutionary step between chipped stone tools and the more labour intensive yet longer lasting ground stone tools. Chipped and ground stone tools are not common on the Northwest Coast and they appear only during the St. Mungo and Locarno Beach phases.

CTBO:CHIPPED SLATE NARROW-ANGLED TABULAR BIFACE OBJECT:

These implements are not common. They are part of a more general category of chipped and ground stone implements that are made from slate, but there is no evidence of grinding or abrasion. Sometimes these implements are called preforms because it is possible they were blanks that would eventually be used to make other objects such as ground stone knives. Unfortunately, proving these objects are preforms would require looking into the mind of the manufacturer, and that is not possible. This particular subgroup has marginal retouch (either bifacial or unifacial), and the shape is square. The angle of retouch is narrow.

It is possible these implements were used for cutting soft material such as flesh, but this has not been proven through experiments (yet).

Table B.30 Chipped Slate Narrow-Angled Tabular Biface Objects

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose	No artifacts are present.				
St. Mungo	No artifacts are present.				
Crescent Bch	**Total=1**	**incomplete**			
Weight	1	116.7	n/a	n/a	n/a
Length	1	9.0	n/a	n/a	n/a
Width	1	8.2	n/a	n/a	n/a
Thickness	1	1.6	n/a	n/a	n/a

CGSP:CHIPPED AND GROUND STONE BIFACE LEAF-SHAPED:

Chipped and ground stone bifaces (also known traditionally as points) are not common, and they are only found during the earliest periods of Northwest Coast prehistory (mostly in the St. Mungo or other Charles phases. Both faces are worked, although the amount of abrasion and grinding is minimal when compared to the ground stone bifaces of the Locarno Beach phase. The shape mimics chipped stone leaf-shaped bifaces, and there is no evidence of a stem.

Table B.31 Chipped and Ground Stone Bifaces Leaf-Shaped

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose Total=1 complete					
Weight	1	14.6	n/a	n/a	n/a
Length	1	6.0	n/a	n/a	n/a
Width	1	2.2	n/a	n/a	n/a
Thickness	1	.9	n/a	n/a	n/a

St. Mungo No artifacts are present.

Crescent Bch No artifacts are present.

CHIPPED AND GROUND STONE BIFACE FRAGMENTS

In this artifact class can be placed the fragments of chipped and ground stone points not complete enough for further classification.

CGMF:CHIPPED AND GROUND STONE BIFACE MEDIAL FRAGMENT:

Neither a proximal or distal end is discernible, but the midsection is present.

Table B.32 Chipped and Ground Stone Biface Medial Fragments

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose No artifacts are present.					
St. Mungo Total=1 incomplete					
Weight	1	14.1	n/a	n/a	n/a
Length	1	5.3	n/a	n/a	n/a
Width	1	2.6	n/a	n/a	n/a
Thickness	1	1.1	n/a	n/a	n/a

Crescent Bch No artifacts are present.

CGDF:CHIPPED AND GROUND STONE BIFACE DISTAL FRAGMENT:

The proximal and midsection are not present.

Table B.33 Chipped and Ground Stone Biface Distal Fragments

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose	No artifacts are present.				
St. Mungo	Total=1 incomplete				
Weight	1	16.2	n/a	n/a	n/a
Length	1	5.6	n/a	n/a	n/a
Width	1	3.8	n/a	n/a	n/a
Thickness	1	.7	n/a	n/a	n/a
Crescent Bch	No artifacts are present.				

CGSF:CHIPPED AND GROUND STONE FRAGMENT:

This category contains those chipped and ground stone tool fragments too fragmentary to be placed into other categories.

Table B.34 Chipped and Ground Stone Fragments

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose	No artifacts are present.				
St. Mungo	Total=1 incomplete				
Weight	1	4.2	n/a	n/a	n/a
Length	1	3.5	n/a	n/a	n/a
Width	1	2.1	n/a	n/a	n/a
Thickness	1	.6	n/a	n/a	n/a
Crescent Bch	No artifacts are present.				

GROUND STONE IMPLEMENTS

Grinding is a technique which can strengthen a rounded surface and help smooth the surface of an artifact (Crabtree 1972:68). The grinding process may result in extensive and intentional modification (Kornbacher 1989:105). The grinding process requires that more time and energy be invested in the

manufacture of the article compared to unshaped more expedient chipped stone tools. Because the grinding process does change the original shape of the raw material, all ground stone implements are considered to be shaped rather than unshaped. During Northwest Coast prehistory slate is the preferred raw material for many ground stone tools, and this is reflected in the traditional descriptive names such as ground slate knife. Slate has one strong cleavage plane and because it can be broken into relatively thin tabular pieces, it was a compatible choice for grinding and abrading.

ABRASIVE STONES

Like anvilstones, these tools have somewhat flat surfaces, but unlike anvilstones, these surfaces are smooth, rather than pitted. Sandstone is the favourite raw material for abrasive stones because of its naturally occurring abrasive surface. Abraders can be considered shaped objects because the surface has a smoothness that is inconsistent with the natural surface of the original raw material (Kornbacher 1989:110). Abraders can be placed into one of two subcategories depending on the degree of edge shaping present.

AS:ABRASIVE STONE:

In this category is placed those abraders that have been modified through usewear, and not purposely formed. Often archaeologists recover only fragments of the original artifact and the overall finished shape is not discernible, so fragments of formed abraders may be inadvertently included in this category. Usewear can range from negligible to highly worn. Sandstone availability near the three sites may be one reason for differential use.

The flat surfaces of these objects are used to smooth and grind the surfaces of other implements such as ground stone knives (Mitchell 1971:125), or for smoothing bone and antler implements (Patenaude 1985:55). Like the presence of blade-like flakes without prepared cores, the presence of abraders without ground stone tools is not positive evidence for a ground stone technology. They were a multi-functional tool that could abrade materials other than stone, something archaeologists occasionally forget.

Table B.35 Abrasive Stones

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose Total=16					
Weight	0	n/a	n/a	n/a	n/a
Length	0	n/a	n/a	n/a	n/a
Width	0	n/a	n/a	n/a	n/a
Thickness	10	n/a	1.7	.7 - 3.8	1.5 - 2.7
St. Mungo Total=10					
Weight	1	215.9	n/a	n/a	n/a
Length	1	7.1	n/a	n/a	n/a
Width	1	6.7	n/a	n/a	n/a
Thickness	4	n/a	1.7	1.6 - 2.9	n/a

Crescent Bch Total=13 No complete artifacts are present.

FAS:FORMED ABRASIVE STONE:

In this artifact class is placed a special subcategory of objects. These implements have the smooth modified surface of other abrasive stones, but they have also been purposely modified into tear-dropped, bar, or other shaped forms. Incision and other kinds of decoration may also occur.

Through time, formed abrasive stone become more common in archaeological deposits, and archaeologists have hypothesized that this is due to the increasing importance of ground stone in the Northwest Coast tool kit.

Table B.36 Formed Abrasive Stones

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose Total=2 No complete artifacts are present.					
St. Mungo Total=2 No complete artifacts are present.					
Crescent Bch Total=5					
Weight	1	241.4	n/a	n/a	n/a
Length	2	n/a	n/a	6.4 - 7.5	n/a
Width	0	n/a	n/a	n/a	n/a
Thickness	2	n/a	n/a	.8 - 2.8	n/a

FORMED GROUND STONE BIFACES

Like their chipped stone counterparts ground stone bifaces have been extensively modified over most of their faces. While the following definition is referring to chipped stone bifaces, it can also be used to defined ground stone bifaces, "... usually symmetrical with a sharply pointed end, and acute-angled blade margins (Pokotylo 1978:216). Ground stone bifaces are categorized according to their overall finished shapes which are matched to descriptions of chipped stone bifaces (for example leaf-shaped ground stone biface). Nomenclature for ground stone bifaces has traditionally substituted the term point for biface. Both terms are referring to the same artifacts, one name implies a function, while the other implies the method of production. For this thesis I have decided to use names that are less focused on function. In this way, a leaf-shaped ground stone point becomes a leaf-shaped ground stone biface. Ideally, all bifaces regardless of raw material, should be called bifaces.

LSGP:LEAF-SHAPED GROUND STONE BIFACE:

Like their chipped stone leaf-shaped cousins, the actual form of these tools varies in the general leaf-shaped class (Matson 1976:150). The size can vary a great deal and there is no evidence

of a stem. Both faces of the tool have been abraded with no evidence of bevelled edges or facets on either the margins or faces.

Table B.37 Leaf-Shaped Ground Stone Bifaces

	Number	Median	Range	Interquartile Range
Glenrose Total=2				
Weight	2	n/a	7.6 - 31.8	n/a
Length	2	n/a	6.3 - 12.7	n/a
Width	2	n/a	1.9 - 2.3	n/a
Thickness	2	n/a	.5 - .9	n/a

St. Mungo No artifacts are present.

Crescent Bch No artifacts are present.

GROUND STONE BIFACE FRAGMENTS

Placed into this category are those ground stone biface fragments that due to their incompleteness could not be placed into a more specific ground stone biface category.

GPPF:GROUND STONE BIFACE PROXIMAL FRAGMENT:

Unfacetted proximal fragment of a ground stone biface.

Table B.38 Ground Stone Biface Proximal Fragments

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose Total=1 incomplete					
Weight	1	2.7	n/a	n/a	n/a
Length	1	3.3	n/a	n/a	n/a
Width	1	1.6	n/a	n/a	n/a
Thickness	1	.4	n/a	n/a	n/a
St. Mungo Total=1 incomplete					
Weight	1	12.2	n/a	n/a	n/a
Length	1	5.3	n/a	n/a	n/a
Width	1	2.9	n/a	n/a	n/a
Thickness	1	.6	n/a	n/a	n/a

Crescent Bch No artifacts are present.

GSDB:GROUND STONE DISC BEAD:

These objects are small, biconically drilled and usually made from ground mudstone, shale or slate. The perforations are created by drilling half way through the bead on both sides, which is known as biconically drilled. Size can vary as can thickness and quality of manufacture. Marginal edges of some beads are well ground while some have squared corners.

They are assumed to have been worn as personal adornment. Ham et al. (1986:75) suggest prehistoric women may be associated with the presence of ground stone disc beads. They base this on ethnographic evidence, but ground stone disc beads are found associated with male, female, juvenile and adult burials through time.

Table B.39 Ground Stone Disc Beads

	Number	Median	Range	Interquartile Range
Glenrose Total=5				
Weight	5	.1	.1 - .1	n/a
Length	5	.5	.5 - .7	n/a
Width	5	.5	.4 - .7	n/a
Thickness	5	.2	.1 - .2	n/a
St. Mungo Total=4				
Weight	4	.3	.2 - .3	n/a
Length	4	.8	.6 - 1.1	n/a
Width	4	.8	.6 - 1.1	n/a
Thickness	4	.3	.2 - .5	n/a
Crescent Bch Total=508				
Weight	381	.1	.1 - .4	.1 - .1
Length	461	.6	.3 - 1.1	.5 - .6
Width	383	.5	.3 - 1.0	.5 - .6
Thickness	461	.2	.1 - .4	.2 - .2

DGS:DECORATED GROUND STONE:

One particularly interesting subcategory of this artifact class is a group of objects found in the St. Mungo components at Glenrose, Pitt River and St. Mungo. These artifacts are made from schist which is metamorphosed slate.

Schist has a characteristic sheen due to its mica content. Like slate, schist has perfect cleavage in one direction (Mottana et al. 1978:353). These pieces of decorated schist are flat with incised lines on the peripheral edges, and with either small incised pits or lines drawn around the circumference inside the border (Matson 1976:153). The single piece of decorated ground stone from Crescent Beach is a fragment of ground slate with several incised lines.

In this specialized subclass of decorated ground stone, due to the nature of the raw material, these implements are easily broken with any amount of regular use, which implies that their function was not one of every day use. Kornbacher (1989:114) points out that objects included in a decorated artifact class (be it decorated ground stone, bone, antler, or shell) should demonstrate a dominant decorative element, which in my judgement implies that these objects were not strictly utilitarian in nature, but served some aesthetic function.

Table B.40 Decorated Ground Stones

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose Total=6					
Weight	0	n/a	n/a	n/a	n/a
Length	0	n/a	n/a	n/a	n/a
Width	0	n/a	n/a	n/a	n/a
Thickness	3	n/a	.6	.5 - .7	.6 - .7
St. Mungo Total=4					
Weight	0	n/a	n/a	n/a	n/a
Length	0	n/a	n/a	n/a	n/a
Width	0	n/a	n/a	n/a	n/a
Thickness	2	n/a	n/a	.5 - .6	n/a
Crescent Bch Total=1 incomplete					
Weight	1	60.1	n/a	n/a	n/a
Length	1	5.9	n/a	n/a	n/a
Width	1	4.6	n/a	n/a	n/a
Thickness	1	2.3	n/a	n/a	n/a

MGS:MISCELLANEOUS GROUND STONE:

These artifacts show evidence of surface grinding and abrading but their incomplete nature does not make specific identification possible. Some are unique and their exact nomenclature is uncertain.

Table B.41 Miscellaneous Ground Stones

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose Total=8 All artifacts are included.					
Weight	8	n/a	2.9	.7 - 121.0	1.6 - 24.4
Length	8	n/a	3.7	1.4 - 16.2	2.7 - 6.7
Width	8	n/a	2.4	.8 - 5.5	1.7 - 2.8
Thickness	8	n/a	.4	.2 - 1.9	.3 - .7
St. Mungo Total=5 All artifacts are included.					
Weight	5	n/a	3.9	2.6 - 6.5	n/a
Length	5	n/a	4.7	3.1 - 5.6	n/a
Width	5	n/a	2.2	1.9 - 5.0	n/a
Thickness	5	n/a	.4	.2 - 2.5	n/a
Crescent Bch Total=1 incomplete					
Weight	1	154.9	n/a	n/a	n/a
Length	1	10.6	n/a	n/a	n/a
Width	1	6.8	n/a	n/a	n/a
Thickness	1	1.5	n/a	n/a	n/a



Figure B.5 Abrasive Stones - Crescent Beach

PECKED AND GROUND STONE IMPLEMENTS

The combination of pecked and ground stone processes results in an artifact with irregularly pitted or crushed areas on its surface due to a special type of percussion flaking called 'pecking'. Pecking the surface of stone involves delivering repeated blows with such intensity that the surface of the object is pulverized (Kornbacher 1989:103). Pecking is used to achieve the preliminary desired shape, an abrader is then used to ground the roughened surface to a smoother finish (Stewart 1973:41). The pecking and grinding process completely alters the original shape of the raw material, therefore, all pecked and ground stone is considered to be shaped, rather than unshaped.

MORT:MORTAR:

Names for artifacts in this category include cobble mortar (Mitchell 1971:123), or bowl (Ham et al. 1986:78). They are usually well-made from granite or other similar igneous raw material. The amount of pecking used to create the inner depression and the degree of shaping on the outer surface can vary.

It is possible that the smaller implements with shallower depressions served exclusively as mortars in which pigments could be ground, but there is no clear division between mortars and bowls.

Table B.42 **Mortars**

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose	No artifacts are present.				
St. Mungo	Total=1 incomplete				
Weight	1	902.6	n/a	n/a	n/a
Length	1	13.5	n/a	n/a	n/a
Width	1	9.2	n/a	n/a	n/a
Thickness	1	5.7	n/a	n/a	n/a
Crescent Bch	No artifacts are present.				

PIPE:PIPE:

These implements are tubular in shape and are well made. They have been drilled biconically. These pipes are larger than those present at contact.

This is an early example of an implement created for the purpose of smoking various aromatic herbs or possibly native tobacco.

Table B.43 Pipes

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose Total=1 complete					
Weight	1	204.7	n/a	n/a	n/a
Length	1	6.0	n/a	n/a	n/a
Width	1	5.0	n/a	n/a	n/a
Thickness	1	4.8	n/a	n/a	n/a

St. Mungo No artifacts are present.

Crescent Bch No artifacts are present.

BONE IMPLEMENTS

Bone, an organic raw material, is more fragile than inorganic stone. Artifacts made from bone bear evidence of manufacture on their surface most often created by grinding and/or abrasion processes. Unshaped bone artifacts may be difficult to distinguish from faunal remains because, the only evidence for working may be an unnatural wear pattern on the artifact's surface. Often, only an experienced faunal analyst can tell the difference between slightly modified artifacts and faunal remains. Bone artifacts are usually split/sectioned or splintered fragments removed from the parent material.

This classification of bone artifacts (as well as the antler artifacts that follow) assigns functional names to the objects that have an ethnographic analogy. Function-free names for bone and antler objects have not yet been created on the Northwest Coast. More lab experimentation in bone and antler tool manufacture is required before such a step can be implemented.

This classification focuses on classifying bone and antler tools, therefore, by-products of bone and antler tool manufacturer are not included.

SHAPED BONE TOOLS

Like all other shaped tools, the original shape and texture of the bone's resource material has been altered significantly. In comparison to inorganic stone, bone is more pliable, and can be shaped through many different processes including cutting, chopping, grinding, engraving and drilling (Stewart 1973:110).

MINIMALLY WORKED BONE

These objects have been minimally shaped or modified. They are placed into subcategories depending on whether they are end or medial fragments. Dividing these objects into these types of categories allows archaeologists to do comparisons of artifact breakage patterns.

WBMF:WORKED BONE MEDIAL FRAGMENT:

In this category, broken shaped bone tool medial fragments have been included. They have been placed in this category because there is not enough information provided from the fragment to place it into a more specific artifact class, but there is definite evidence of shaping.

Table B.44 Worked Bone Medial Fragments

	Number	Median	Range	Interquartile Range
Glenrose Total=72 All artifacts are included.				
Weight	72	2.1	.1 - 16.9	1.2 - 3.9
Length	72	3.7	.5 - 11.9	2.4 - 5.7
Width	72	1.1	.4 - 5.0	.9 - 1.5
Thickness	72	.5	.1 - 2.5	.3 - .6

St. Mungo **Total=118** All artifacts are included.				
Weight	118	.9	.1 - 33.2	.3 - 2.0
Length	118	2.8	.9 - 9.3	2.0 - 4.1
Width	118	.9	.3 - 4.7	.6 - 1.2
Thickness	118	.4	.1 - 1.3	.3 - .6
Crescent Bch **Total=80** All artifacts are included.				
Weight	80	2.2	.1 - 29.1	1.1 - 3.9
Length	80	4.6	1.3 - 13.0	3.3 - 5.8
Width	80	1.1	.2 - 6.2	.8 - 1.5
Thickness	80	.5	.2 - 1.6	.5 - .7

Stem and Leaf Plots for Worked Bone Medial Fragments for Weight

Glenrose:
Minimum: .1
Lower Hinge: 1.2
Median: 2.1
Upper Hinge: 3.9
Maximum: 16.9

0	14
0	55556677788
1H	00222222334
1	5666899999
2M	011
2	55577899
3	0012344
3H	68
4	011124
4	59
5	
5	67
6	0
6	58
7	1
OUTSIDE VALUES	
8	7
13	17
16	9

St. Mungo:
Minimum: .1
Lower Hinge: .3
Median: .9
Upper Hinge: 2.0
Maximum: 33.2

0H	1111111112222222222333333333344444444
0M	55555555666677777889999
1	0111122233334444444
1	5578889
2H	001122
2	67899
3	0013
3	778
4	01334
OUTSIDE VALUES	
5	16
6	3
7	05
10	35
33	2

Crescent Beach:
Minimum: .1
Lower Hinge: 1.1
Median: 2.15
Upper Hinge: 3.85
Maximum: 29.1

0	114
0	5566668899
1H	000011111233
1	55566666679
2M	0011223
2	56899
3	011113
3H	5577889
4	012
4	59
5	0033
5	789
6	0
6	5
7	0
7	56
OUTSIDE VALUES	
9	5
29	1

Stem and Leaf Plots for Worked Bone Medial Fragments for Length

Glenrose:
Minimum: .5
Lower Hinge: 2.4
Median: 3.7
Upper Hinge: 5.7
Maximum: 11.9

0	5
1	03377788
2H	11223344445577888899
3M	1133447778899
4	02256777
5H	234777
6	027778
7	49
8	1229
9	18
OUTSIDE VALUES	
11	69

St. Mungo:
Minimum: .9
Lower Hinge: 2.0
Median: 2.8
Upper Hinge: 4.1
Maximum: 9.3

0	9
1	0012244444
1	566677778888899
2H	00001111222333444444
2M	555566666788889999
3	000113344
3	555777788899
4H	011122
4	5679
5	0011122
5	566
6	244
6	6889
OUTSIDE VALUES	
7	3
8	2456
9	3

Crescent Beach:
Minimum: 1.3
Lower Hinge: 3.25
Median: 4.55
Upper Hinge: 5.8
Maximum: 13.0

1	3
1	79
2	0013444
2	5666789
3H	00234
3	5566777889
4	22244
4M	555666778899
5	01122233
5H	77889999
6	222
6	
7	034
7	568
8	4
8	
9	014
OUTSIDE VALUES	
12	4
13	0

WBEF:WORKED BONE END FRAGMENT:

In this category broken, shaped bone tool end fragments have been included. They are placed in this category due to insufficient information provided from the fragment to place it into a more specific artifact class, but there is definite evidence of shaping.

Table B.45 Worked Bone End Fragments

	Number	Median	Range	Interquartile Range
Glenrose Total=30 All artifacts are included.				
Weight	30	1.1	.2 - 65.3	.6 - 3.4
Length	30	3.2	1.6 - 25.0	2.4 - 3.8
Width	30	.8	.3 - 3.6	.6 - 1.2
Thickness	30	.4	.2 - 2.2	.3 - .6
St. Mungo Total=41 All artifacts are included.				
Weight	41	.8	.1 - 24.2	.4 - 2.3
Length	41	2.4	1.0 - 4.2	1.9 - 4.7
Width	41	.8	.3 - 4.0	.6 - 1.5
Thickness	41	.4	.1 - 1.6	.3 - .5
Crescent Bch Total=35 All artifacts are included.				
Weight	35	2.8	.1 - 23.2	.7 - 4.9
Length	35	4.5	1.1 - 13.1	3.2 - 6.9
Width	35	1.1	.3 - 5.7	.7 - 1.8
Thickness	35	.5	.2 - 2.3	.4 - .8

RI:RODENT INCISOR:

These objects are more commonly known as beaver teeth. The tips usually display a great deal of polish or chipping from utilization that creates a different shape than that from 'natural' wear (Matson 1976:173). Sometimes there is no further modification, sometimes the artifact is ground or decorated. Evidence of wear from hafting may also be present.

The natural hardness of the incisor makes it a perfect tool for precision wood carving and incising.

Table B.46 Rodent Incisors

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose Total=1 incomplete					
Weight	1	3.5	n/a	n/a	n/a
Length	1	4.5	n/a	n/a	n/a
Width	1	.8	n/a	n/a	n/a
Thickness	1	.7	n/a	n/a	n/a

St. Mungo Total=3 No complete artifacts are present.

Crescent Bch Total=3 No complete artifacts are present.

NMS:NET MESH SPACERS:

These implements are rectangular in shape with a large hollow centre. They are not very large and usually have a polished surface.

They are hypothesized to be the spacers positioned between the twine that comprised fishing dip nets (Ham et al. 1986:104), but a single example does not allow for a functional interpretation.

Table B.47 Net Mesh Spacers

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose No artifacts are present.					
St. Mungo Total=1 complete					
Weight	1	2.4	n/a	n/a	n/a
Length	1	5.8	n/a	n/a	n/a
Width	1	2.0	n/a	n/a	n/a
Thickness	1	.2	n/a	n/a	n/a

Crescent Bch No artifacts are present.

PEG:PEG:

Matson (1976:165) places small pointed bone objects which look like pegs into this artifact category. Some of the objects have notches at the end away from the point.

Their function is unknown, but this categorical name is one example of how misleading functional names can be, as it is doubtful that this object functioned as a peg, yet it is still placed in this category due to its peg-shape.

Table B.48 **Pegs**

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose Total=1 complete					
Weight	1	1.9	n/a	n/a	n/a
Length	1	3.5	n/a	n/a	n/a
Width	1	1.1	n/a	n/a	n/a
Thickness	1	.9	n/a	n/a	n/a
St. Mungo Total=1 incomplete					
Weight	1	5.4	n/a	n/a	n/a
Length	1	4.2	n/a	n/a	n/a
Width	1	1.2	n/a	n/a	n/a
Thickness	1	1.1	n/a	n/a	n/a

Crescent Bch No artifacts are present.

BHKO:BONE HOOK OBJECT:

Visually, a complete example of this implement would like a small ground hook made of bone. The basal end is blunted and the proximal end is pointed. The hook may have turned upwards to form an angled shank.

This single example is too fragmentary to suggest a function.

Table B.49 **Bone Hook Objects**

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose No artifacts are present.					
St. Mungo No artifacts are present.					
Crescent Bch Total=1 incomplete					
Weight	1	.8	n/a	n/a	n/a
Length	1	2.7	n/a	n/a	n/a
Width	1	.8	n/a	n/a	n/a
Thickness	1	.3	n/a	n/a	n/a

BONE PENDANTS

These artifacts all share the attribute of being suspendible around someone's neck. Beyond the general category of perforated bone pendant are two special subcategories defined on the basis of the type of raw material used.

PBP:PERFORATED BONE PENDANT:

These objects vary in shape, size and degree of finish, but all show evidence for suspension and are biconically drilled (Matson 1976:169). Many from the St. Mungo phase are rectangular shaped, flat and undecorated, although there are exceptions.

Table B.50 Perforated Bone Pendants

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose Total=13					
Weight	6	n/a	2.6	1.3 - 2.9	1.4 - 2.7
Length	7	n/a	3.2	2.1 - 4.0	2.9 - 3.5
Width	9	n/a	1.5	1.0 - 2.1	1.4 - 1.7
Thickness	13	n/a	.3	.2 - .5	.2 - .4
St. Mungo Total=13					
Weight	4	n/a	2.7	1.4 - 8.0	n/a
Length	4	n/a	4.9	3.0 - 5.6	n/a
Width	7	n/a	1.8	1.2 - 11.4	1.4 - 2.7
Thickness	6	n/a	.2	.1 - 1.4	.2 - .4
Crescent Bch Total=1 incomplete					
Weight	1	.7	n/a	n/a	n/a
Length	1	3.3	n/a	n/a	n/a
Width	1	.9	n/a	n/a	n/a
Thickness	1	.3	n/a	n/a	n/a

GM:GROUND MOLAR:

Ham et al. (1986:91) states that these artifacts were produced from both human and sea otter teeth. The roots of the teeth are ground but with no indication of suspension.

Ham suggests that due to the lack of suspension, they may have been used as inlay on other objects.

Table B.51 Ground Molars

	Number	Median	Range	Interquartile Range
Glenrose	No artifacts are present.			
St. Mungo	Total=4			
Weight	4	1.1	.5 - 2.1	n/a
Length	4	1.5	1.2 - 2.8	n/a
Width	4	1.2	1.1 - 1.6	n/a
Thickness	4	.5	.4 - .8	n/a
Crescent Bch	No artifacts are present.			

TPND:TOOTH PENDANT:

These objects are made from dog canines and molars, deer incisors and premolars as well as other small mammal canines (Ham et al. 1986:91). The perforations are biconically drilled. Some are suspended by a thong tied around an incised groove rather than by a thong threaded through an incised hole (Stewart 1973:144).

Their function is assumed to be one of personal adornment.

Table B.52 Tooth Pendants

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose	Total=8				
Weight	8	n/a	2.0	.4 - 3.5	1.1 - 3.0
Length	8	n/a	3.1	1.8 - 4.1	2.2 - 3.8
Width	8	n/a	1.4	.6 - 1.9	.9 - 1.7
Thickness	8	n/a	.8	.4 - 1.0	.6 - .9
St. Mungo	Total=8				
Weight	6	n/a	.5	.2 - 4.7	.3 - 1.6
Length	6	n/a	2.1	1.2 - 4.0	1.3 - 3.8
Width	8	n/a	.8	.5 - 1.7	.6 - 1.2
Thickness	8	n/a	.6	.4 - .9	.5 - .9
Crescent Bch	Total=2				
Weight	1	.9	n/a	n/a	n/a
Length	2	n/a	n/a	2.5 - 2.6	n/a
Width	1	1.0	n/a	n/a	n/a
Thickness	2	n/a	n/a	.6 - .7	n/a

ROUND BONE OBJECTS

These objects are divided into subcategories based on size and degree of surface area. Small objects with a minimal degree of surface area are placed into the bone bead category while the larger objects with a minimal degree of surface area are placed into the bone ring category. Large objects with a high degree of surface area are further divided based on whether or not perforations are present or absent on the uppermost surface.

BEAD:BONE BEAD:

Uncommon, varying degrees of finish and size, usually about the same size as ground stone disc beads, but can also come in longer more cylindrical style. Bird bone is the dominant raw material. It is easy to make beads from bird bone because the bone is naturally hollow and can be snapped to create the desired size.

Their function is assumed to be one of personal adornment.

Table B.53 Bone Beads

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose No artifacts are present.					
St. Mungo Total=2					
Weight	1	1.2	n/a	n/a	n/a
Length	1	1.9	n/a	n/a	n/a
Width	1	1.3	n/a	n/a	n/a
Thickness	2	n/a	n/a	.5 - .9	n/a
Crescent Bch Total=4					
Weight	4	n/a	.3	.2 - .4	n/a
Length	4	n/a	1.0	.8 - 1.1	n/a
Width	4	n/a	.9	.8 - 1.1	n/a
Thickness	4	n/a	.2	.2 - .3	n/a

RING:RING:

These artifacts are larger than beads and may be thicker in cross section. The amount of abrasion varies as does the size.

Whether the artifacts actually functioned as personal adornment is not known (Stewart 1973:142).

Table B.54

	Number	Msmt.	Rings Median	Range	Interquartile Range
Glenrose Total=1 incomplete					
Weight	1	1.1	n/a	n/a	n/a
Length	1	2.0	n/a	n/a	n/a
Width	1	.8	n/a	n/a	n/a
Thickness	1	.4	n/a	n/a	n/a

St. Mungo No artifacts are present.

Crescent Bch No artifacts are present.

TUBE:TUBE:

This class of objects refers to long sections of cut and polished bird bone that were often obtained from the leg bones of large birds such as great blue herons, swans or eagles. The ends are cut and smoothed with the entire surface well abraded. These tubes may or may not be decorated (Stewart 1973:151).

Ethnographically, bird bone tubes were used for drinking (like a straw) and were used in shamanic and puberty ceremonies (Barnett 1955:151,167,177). Whether they were used in the exact same context prehistorically one cannot say.

Table B.55

	Number	Tubes Median	Range	Interquartile Range
Glenrose No artifacts are present.				
St. Mungo Total=2				
Weight	2	n/a	4.3 - 4.8	n/a
Length	2	n/a	10.1 - 10.5	n/a
Width	2	n/a	.8 - .9	n/a
Thickness	2	n/a	.8 - .8	n/a

Crescent Bch No artifacts are present.

WHST:WHISTLE:

Objects in this category are long hollow sections of bone (usually bird) with one or more incised perforations located on one surface of the implement (Stewart 1973:150).

They are musical instruments and while ethnographic data presents them as functioning largely in a ceremonial context, they could function plausibly in any context where music was desired.

Table B.56 Whistles

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose	No artifacts are present.				
St. Mungo	Total=1 incomplete				
Weight	1	7.4	n/a	n/a	n/a
Length	1	10.7	n/a	n/a	n/a
Width	1	1.6	n/a	n/a	n/a
Thickness	1	1.2	n/a	n/a	n/a
Crescent Bch	No artifacts are present.				

AWLS

This is a large artifact category that usually dominates the bone tool assemblage (after minimally worked bone and fragments have been removed). As noted by Percy (1974:174), objects that are classified as awls are done so because there is a great deal of polish or use-scoring at the tip of the implement with a noticeable absence of usewear polish on the remaining portions of the object. This usewear polish is the most important attribute to look for when trying to separate awls from other pointed bone objects. The two major categories of awls (formed and splinter) are separated according to the degree of work present on the awl and the overall finishing of the object. Besides these two major categories of awls there are three other sub-categories that are all defined according to specific raw materials.

SAWL:SPLINTER BONE AWL:

These objects differ from formed awls in the degree of purposeful modification undergone. Splinter awls do not exhibit the all-over surface modification of formed awls. Their manufacture is much more expedient. There may be evidence of hafting. A subgroup of this artifact type is a group of splinter awls composed of splintered sections of bird bone with minimal surface abrasion. These splinter bird bone awls are not like the traditional bird bone awls discussed in Northwest Coast literature. These splinter awls made of bird bone are of an expedient nature with less overall modification compared to bird bone awls.

Their function is assumed to be of a piercing nature for tasks such as basket making, or matting manufacture (Ham et al. 1986:60).

Table B.57 Splinter Awls

	Number	Median	Range	Interquartile Range
Glenrose Total=27				
Weight	7	6.3	1.5 - 10.9	4.5 - 6.8
Length	7	11.7	4.4 - 12.7	10.8 - 12.5
Width	12	1.3	.6 - 4.2	1.1 - 1.5
Thickness	19	.5	.2 - 1.9	.5 - .6
St. Mungo Total=36				
Weight	5	5.8	.2 - 7.7	n/a
Length	5	10.4	3.9 - 11.8	n/a
Width	15	.9	.3 - 2.9	.4 - 1.2
Thickness	20	.3	.2 - 1.2	.2 - .5
Crescent Bch Total=15				
Weight	0	n/a	n/a	n/a
Length	8	9.9	3.6 - 12.9	7.3 - 12.2
Width	5	1.2	.8 - 1.8	n/a
Thickness	8	.7	.2 - 1.3	.3 - .9

SRA:SPLIT RIB AWL:

This is a specialized subgroup of splinter awls. These implements are made by dividing wapiti ribs through their longest

section in order to form two flat sections of bone. One end is smoothed while the others is ground to a point (Percy 1974:180). This is an unusual type of awl and Percy suggested it be included as a diagnostic of the Mayne phase.

The function is assumed to be similar to those of other awls, but due to their rarity and special manufacture, perhaps they were more specialized in function.

Table B.58 Split Rib Awls

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose	No artifacts are present.				
St. Mungo	No artifacts are present.				
Crescent Bch	**Total=6**				
Weight	0	n/a	n/a	n/a	n/a
Length	1	14.0	n/a	n/a	n/a
Width	3	n/a	1.1	.7 - 1.9	n/a
Thickness	4	n/a	.5	.3 - .7	n/a

FAWL:FORMED SPLIT BONE AWL:

This class includes objects that are split and sectioned bone pieces ground to form a long thin implement with a tapered point (Ham et al. 1986:60). The cross-section of the tip may be circular or rectangular (Matson 1976:159). The size varies with some being very heavy and large. The amount of abrasion and surface finishing may differ, but these artifacts exhibit more surface modification than do splinter awls.

Ham et al. (1986:60) mention some of the possible functions of these artifacts including: skin working, basketry, matting, blanket making and maintenance activities. They are usually seen as a woman's tool although we may be incorrectly defining their function and their users.

Table B.59 Formed Bone Awls

	Number	Median	Range	Interquartile Range
Glenrose Total=24				
Weight	12	4.9	.6 - 18.6	3.8 - 7.4
Length	12	10.0	4.9 - 16.7	7.4 - 12.8
Width	18	1.0	.4 - 2.1	.8 - 1.4
Thickness	23	.5	.2 - .9	.4 - .6
St. Mungo Total=13				
Weight	3	7.9	5.7 - 8.0	n/a
Length	3	12.8	9.7 - 13.8	n/a
Width	4	1.2	.9 - 1.4	n/a
Thickness	6	.6	.3 - .8	.5 - .7
Crescent Bch Total=12				
Weight	3	7.8	4.0 - 14.1	n/a
Length	8	12.9	5.4 - 17.0	6.8 - 15.8
Width	4	1.6	.7 - 2.1	n/a
Thickness	8	.6	.4 - 1.0	.5 - .9

MAWL:METAPODIAL AWL:

This is a specialized subcategory of awls in which the artifact has been formed from the cannon bone of a land mammal (often deer). While surface treatment varies, the surface is extensively shaped with a tapered point. These tools are distinctive and easily separated from other awl types. There may be evidence of hafting.

Once again, their functions are assumed to be similar to those of formed awls, because of the overall similarity in shape.

Table B.60 Metapodial Awls

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose No artifacts are present.					
St. Mungo Total=1 complete					
Weight	1	19.3	n/a	n/a	n/a
Length	1	10.8	n/a	n/a	n/a
Width	1	3.3	n/a	n/a	n/a
Thickness	1	1.5	n/a	n/a	n/a
Crescent Bch No artifacts are present.					

BAWL:BIRD BONE AWL:

As with metapodial awls, these implements have been classified together because of a similarity in the raw material used, in this case, bird bone which can vary in size. One tip is well ground and polished to a tapered point. Wear polish is concentrated on the tip, while the opposite end is often broken. Usually bird bone awls are unmodified except for the tip (Burley 1989:108). These objects are made from a complete piece of bird bone as opposed to the bird bone splinter awls which are made from a splinter of bird bone.

It is not unreasonable to assume that these implements were made with a more specialized purpose in mind, because they are not as robust as the other types of awls, perhaps their functions were more focused on piercing soft material.

Table B.61 Bird Bone Awls

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose No artifacts are present.					
St. Mungo Total=1 incomplete					
Weight	1	1.6	n/a	n/a	n/a
Length	1	9.8	n/a	n/a	n/a
Width	1	.6	n/a	n/a	n/a
Thickness	1	.5	n/a	n/a	n/a
Crescent Bch Total=2					
Weight	0	n/a	n/a	n/a	n/a
Length	0	n/a	n/a	n/a	n/a
Width	1	.7	n/a	n/a	n/a
Thickness	1	.6	n/a	n/a	n/a

ULNA:ULNA AWL:

This category is also a specialized subcategory of bone awls. These implements have been made using the ulna bone of a deer. Their usewear polish is concentrated at the tip like other bone awls. There may be evidence of hafting.

The functions of these implements is not known for sure.

Table B.62 Ulna Awls

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose Total=3					
Weight	2	n/a	n/a	10.9 - 18.0	n/a
Length	2	n/a	n/a	12.1 - 12.5	n/a
Width	3	2.3	2.3	.7 - 3.8	n/a
Thickness	3	.6	.6	.4 - .9	n/a
St. Mungo Total=1 complete					
Weight	1	26.0	n/a	n/a	n/a
Length	1	10.6	n/a	n/a	n/a
Width	1	4.0	n/a	n/a	n/a
Thickness	1	3.3	n/a	n/a	n/a
Crescent Beach Total=2					
Weight	1	13.3	n/a	n/a	n/a
Length	1	11.8	n/a	n/a	n/a
Width	1	3.0	n/a	n/a	n/a
Thickness	1	1.3	n/a	n/a	n/a

BPIN:BLANKET PIN:

Complete objects that are round in cross section, very thin and tapering to a point are usually classified as blanket pins. Decoration on the proximal portion is optional, but the entire surface of the implement is well polished. These implements are distinguished from needles by the lack of an incised or drilled hole at the proximal end.

They were used to 'pin' together the two front sections of a blanket worn over the shoulders.

Table B.63 Blanket Pins

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose No artifacts are present.					
St. Mungo Total=1 complete					
Weight	1	4.4	n/a	n/a	n/a
Length	1	17.3	n/a	n/a	n/a
Width	1	1.1	n/a	n/a	n/a
Thickness	1	.3	n/a	n/a	n/a
Crescent Bch No artifacts are present.					

BDRL:BONE DRILL:

These implements are usually made from split deer cannon bone and have been ground to form a nearly round point at the distal end. Wear pattern includes fine scratches at the distal end (Ham 1982:229-230).

This wear is consistent with the damage expected from drilling wood. Ethnographically bone drills were hafted in a wooden handle for use in woodworking (Barnett 1955:111).

Table B.64 Bone Drills

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose	No artifacts are present.				
St. Mungo	No artifacts are present.				
Crescent Bch	Total=1 incomplete				
Weight	1	.5	n/a	n/a	n/a
Length	1	5.6	n/a	n/a	n/a
Width	1	.3	n/a	n/a	n/a
Thickness	1	.3	n/a	n/a	n/a

SMALL POINTED BONE OBJECTS

Often, implements that do not fit into the awl taxonomy are placed into the following categories. These artifacts are smaller than awls, have a circular cross section, along with a well formed and abraded surface. They usually show evidence of hafting on the basal end. These implements are separated based on the presence or absence of shaped tips.

UNPT:UNIPOINT:

Artifacts in this category look like very small, rounded splinters of bone. One tip is shaped into a sharp point while the opposite tip is blunt. Thickness is less than .6 cm. Length can be as much as 7 cm.

Functional interpretation is unknown, but Ham et al. (1986:103) state they may be arming points for three pronged fishing spears.

Table B.65 **Unipoints**

	Number	Median	Range	Interquartile Range
Glenrose Total=8				
Weight	6	.3	.2 - .5	.2 - .4
Length	6	3.5	2.5 - 5.4	2.8 - 4.6
Width	8	.3	.2 - .5	.3 - .4
Thickness	8	.3	.2 - .4	.3 - .3
St. Mungo Total=3				
Weight	3	1.7	.5 - 2.2	n/a
Length	3	6.2	6.1 - 6.6	n/a
Width	3	.6	.4 - .6	n/a
Thickness	3	.4	.2 - .5	n/a
Crescent Bch Total=4				
Weight	2	n/a	.2 - 1.7	n/a
Length	3	3.9	3.4 - 6.0	n/a
Width	3	.7	.3 - .9	n/a
Thickness	3	.4	.2 - .4	n/a

BIPT:BIPOINT:

Both tips of artifacts in this class are pointed. They are somewhat rectangular in cross section and surface finish is not usually complete. Constructions for attachment are not present (Matson 1976:167).

Ham et al. (1986:104) suggest that these objects may be gorge hooks used on set lines for flounder.

Table B.66 **Bipoints**

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose Total=1 incomplete					
Weight	1	1.1	n/a	n/a	n/a
Length	1	6.1	n/a	n/a	n/a
Width	1	.7	n/a	n/a	n/a
Thickness	1	.4	n/a	n/a	n/a

St. Mungo Total=2					
Weight	2	n/a	n/a	.2 - .5	n/a
Length	2	n/a	n/a	7.0 - 7.1	n/a
Width	2	n/a	n/a	.4 - .6	n/a
Thickness	2	n/a	n/a	.2 - .3	n/a
Crescent Bch Total=1 complete					
Weight	1	.2	n/a	n/a	n/a
Length	1	3.6	n/a	n/a	n/a
Width	1	.3	n/a	n/a	n/a
Thickness	1	.2	n/a	n/a	n/a

PBOF:POINTED BONE OBJECT FRAGMENT:

Small broken pointed objects that could not be classified into unipoint and bipoint categories were left in this category.

Table B.67 Pointed Bone Object Fragments

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose Total=1 incomplete					
Weight	1	.1	n/a	n/a	n/a
Length	1	1.7	n/a	n/a	n/a
Width	1	.2	n/a	n/a	n/a
Thickness	1	.2	n/a	n/a	n/a

St. Mungo No artifacts are present.

Crescent Bch No artifacts are present.

BONE CHISELS, WEDGES, AND POINTS

Objects in these categories have been given many different names including bone wedges, chisels, gouges, bark priers and points. From documentation alone, it is difficult to determine what the analyst is defining in this surprisingly large and diverse artifact group. From my examination of these artifact classes from three Charles components (Glenrose, St. Mungo and Crescent Beach) as well as three Locarno Beach components (Crescent Beach, Locarno Beach and Whalen Farm), I have decided to divide these artifacts into the three major categories of bone chisel, bone wedge and bone point. These artifact types are defined

partly on the basis of their manufacture and surface polish. Percy describes how most of these artifacts were made:

> Land mammal bones with one articular end (also known as an epiphysis) still attached were split into halves and then worked to the desired form. This method would lay bare varying amounts of medullary cavity which in some cases have been ground smooth [Percy 1974:167].

The finished shape of these artifacts are similar in that they are flat, smooth, polished pieces of bone, but in this typology artifacts have been partially separated into different subcategories depending on whether or not the middle section of the implement contains a central channel which is sometimes, but not always, a medullary cavity.

BONE CHISELS

These objects are the most numerous subcategory of the larger bone chisels, wedges and points categories. Not all bone chisels have been made from bone with medullary cavity, it can difficult to tell on some artifacts. Usewear polish is concentrated at the tip and there is evidence of wear, but not a great deal of battering. They are abraded and worked on the non-channelled surface.

BCUT:BONE CHISEL WITH UNILATERALLY TAPERED END:

The cross section is rectangular and they taper unilaterally to a flattened point. There are different shapes of unilateral tips ranging from rounded to squared, with rounded more common. On many of these objects distinctive ridges are present which run the entire length of the object on both sides of the central cavity, but in some cases, these ridges have been smoothed either by wear or in manufacture. They should be examined for evidence of hafting.

Opinions concerning function vary and include: use as a specialized wedge, antler crafting implement, or bark prier (Ham et

al. 1986:47, Matson 1976:164, Mitchell 1971:133 and Percy 1974:167). Ham et al. (1986:50) demonstrate how they may have been hafted. onto a hollow bone haft.

Table B.68 Bone Chisels with Unilaterally Tapered Ends

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose Total=24					
Weight	1	11.8	n/a	n/a	n/a
Length	1	10.3	n/a	n/a	n/a
Width	8	n/a	2.3	.7 - 3.5	1.9 - 2.7
Thickness	15	n/a	.8	.1 - 1.9	.6 - .9
St. Mungo Total=21					
Weight	4	n/a	11.8	5.8 - 17.7	n/a
Length	4	n/a	11.1	8.6 - 11.7	n/a
Width	5	n/a	1.6	1.1 - 2.2	n/a
Thickness	8	n/a	.7	.4 - 1.3	.6 - .8
Crescent Bch Total=10					
Weight	0	n/a	n/a	n/a	n/a
Length	4	n/a	9.8	6.8 - 11.9	n/a
Width	2	n/a	n/a	2.3 - 2.6	n/a
Thickness	4	n/a	1.0	.6 - 1.0	n/a

BWED:BONE WEDGE:

Comparable manufacturing techniques on the same kind of raw material has created an implement similar to a bone chisel with a unilaterally tapered end. Artifacts in this class may be a specialized subcategory of bone chisels. The distal end is not as well modified as those of bone chisels, while the proximal end shows signs of heavy use. Overall, these implements give the impression of being capable of more 'heavy duty' functions.

The wear pattern on these tools suggests heavier wear and battering on the proximal end similar to the usewear pattern seen on antler wedges.

Table B.69 Bone Wedges

	Number	Mean	Median	Range	Interquartile Range
Glenrose Total=1 incomplete					
Weight	1	41.0	n/a	n/a	n/a
Length	1	12.4	n/a	n/a	n/a
Width	1	3.3	n/a	n/a	n/a
Thickness	1	.8	n/a	n/a	n/a
St. Mungo Total=1 incomplete					
Weight	1	18.1	n/a	n/a	n/a
Length	1	6.5	n/a	n/a	n/a
Width	1	2.6	n/a	n/a	n/a
Thickness	1	1.6	n/a	n/a	n/a

Crescent Bch No artifacts are present.

BONE POINTS

Bone points have a different proximal tip compared to bone chisels and wedges. The tip does not exhibit the exaggerated taper of the aforementioned categories. Bone points have been subdivided depending on the presence or absence of a central channel. This kind of categorizing is somewhat unusual, but held together well for this analysis. During the Locarno Beach phase bone points are also present in non-facetted and facetted styles which is why the bone point categories used for the Charles components include the term non-facetted. The facetted bone points mimic their ground stone counterparts.

NFPT:NON-FACETTED BONE POINT LANCEOLATE-SHAPED:

These objects have been ground very flat with no central channel found on the dorsal surface. Most show evidence of hafting with all being shouldered. They retain the familiar leaf-shape of their chipped stone and ground stone cousins.

Table B.70 Non-Facetted Bone Points Lanceolate-Shaped

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose Total=5					
Weight	1	24.9	n/a	n/a	n/a
Length	1	13.8	n/a	n/a	n/a
Width	4	n/a	2.5	2.0 - 2.6	n/a
Thickness	5	.8	.8	.5 - 1.0	n/a
St. Mungo Total=2					
Weight	1	11.9	n/a	n/a	n/a
Length	1	7.0	n/a	n/a	n/a
Width	1	2.4	n/a	n/a	n/a
Thickness	2	.6	n/a	.2 - .9	n/a

Crescent Bch No artifacts are present.

NFPN:NON-FACETTED BONE POINT WITH NO CENTRAL CAVITY:

These implements are not common during early Northwest Coast prehistory. They are smaller than the lanceolate-shaped points, and lack the lanceolate-shape. The central cavity is not present and there may be evidence of hafting.

Table B.71 Non-Facetted Bone Points With No Central Cavity

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose No artifacts are present.					
St. Mungo Total=1 complete					
Weight	1	3.2	n/a	n/a	n/a
Length	1	6.3	n/a	n/a	n/a
Width	1	.7	n/a	n/a	n/a
Thickness	1	.6	n/a	n/a	n/a

Crescent Bch No artifacts are present.

NFPM:NON-FACETTED POINT WITH CENTRAL CAVITY:

These objects are smaller than their facetted bone points with central cavity counterparts. Surface finishing varies in degrees, but is generally not as methodical as with the facetted points with central cavities. These implements are also thicker, and blunter than their facetted counterparts.

Table B.72 Non-Facetted Points With Central Cavity

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose Total=1 complete					
Weight	1	22.9	n/a	n/a	n/a
Length	1	18.6	n/a	n/a	n/a
Width	1	2.1	n/a	n/a	n/a
Thickness	1	.6	n/a	n/a	n/a
St. Mungo Total=5					
Weight	1	7.7	n/a	n/a	n/a
Length	1	10.2	n/a	n/a	n/a
Width	2	n/a	n/a	1.2 - 1.7	n/a
Thickness	4	n/a	.5	.4 - .8	n/a
Crescent Bch Total=4					
Weight	0	n/a	n/a	n/a	n/a
Length	2	n/a	n/a	8.8 - 9.8	n/a
Width	1	1.4	n/a	n/a	n/a
Thickness	2	n/a	n/a	.5 - .7	n/a

NFPF:NON-FACETTED BONE POINT FRAGMENT:

Those objects too fragmentary to be placed into a more specific non-facetted bone point category.

Table B.73 Non-Facetted Bone Point Fragments

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose No artifacts are present.					
St. Mungo Total=2 All artifacts are included.					
Weight	2	n/a	n/a	.5 - 1.3	n/a
Length	2	n/a	n/a	1.7 - 3.9	n/a
Width	2	n/a	n/a	.1 - 1.0	n/a
Thickness	2	n/a	n/a	.3 - .4	n/a
Crescent Bch Total=1 incomplete					
Weight	1	1.6	n/a	n/a	n/a
Length	1	5.4	n/a	n/a	n/a
Width	1	1.2	n/a	n/a	n/a
Thickness	1	.4	n/a	n/a	n/a

UWCF:UNIDENTIFIED BONE WEDGE, CHISEL, POINT FRAGMENT:

All artifacts not placed into the bone chisel, wedge or point category (due to their fragmentary nature) were grouped into this class. Most proximal ends have been broken, so the modified epiphyses are not always present. Some

pieces are burnt. In general, the tools are broken pieces of long bone with a flattened, tapered look to them and either a rounded or squared margin.

Table B.74 Unidentified Bone Wedge, Chisel, Point Fragments

	Number	Median	Range	Interquartile Range
Glenrose Total=7 All artifacts are included.				
Weight	7	3.8	.9 - 17.6	2.3 - 11.5
Length	7	5.3	2.4 - 7.7	3.6 - 6.6
Width	7	1.2	.9 - 2.2	1.1 - 1.9
Thickness	7	.5	.4 - 1.0	.5 - .8
St. Mungo Total=19 All artifacts are included.				
Weight	19	1.3	.4 - 53.1	.9 - 6.7
Length	19	3.3	1.6 - 10.0	2.1 - 5.8
Width	19	1.1	.7 - 4.8	.9 - 1.7
Thickness	19	.5	.3 - 2.1	.4 - .7
Crescent Bch Total=12 All artifacts are included.				
Weight	12	5.3	1.1 - 18.8	3.0 - 14.0
Length	12	5.5	3.2 - 9.2	5.1 - 7.0
Width	12	1.5	1.0 - 3.8	1.2 - 2.3
Thickness	12	.9	.4 - 2.0	.6 - 1.3

BARBED BONE POINTS AND HARPOONS

These objects are defined on the basis of evidence for their being 'fixed' onto a shaft. Those objects that do not show evidence of line guards are defined as barbed bone points, those that do show evidence of line guards are defined as barbed bone harpoons. The two subcategories are defined by the type of barbs present on the object (unilateral or bilateral).

UBFP:UNILATERALLY BARBED FIXED POINT:

These tools are unilaterally barbed and are well formed and finished. Size varies as do the barbs. Artifacts in this class do not have line guards.

These artifacts did not have to be removed from their shaft, in other words, they were 'fixed' to the shaft for which they were made. They are considered a fishing implement.

Table B.75 Unilaterally Barbed Fixed Points

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose	No artifacts are present.				
St. Mungo	Total=1 complete				
Weight	1	2.9	n/a	n/a	n/a
Length	1	5.6	n/a	n/a	n/a
Width	1	1.4	n/a	n/a	n/a
Thickness	1	.7	n/a	n/a	n/a
Crescent Bch	No artifacts are present.				

FUB:FRAGMENT UNILATERALLY BARBED HARPOON/POINT:

If the distal end is not present, it is difficult to separate unilaterally barbed harpoons and fixed points. This category grouping all unilateral fragments together, was created.

Table B.76 Fragments of Unilaterally Barbed Harpoons/Points

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose	Total=1 incomplete				
Weight	1	2.9	n/a	n/a	n/a
Length	1	5.7	n/a	n/a	n/a
Width	1	1.2	n/a	n/a	n/a
Thickness	1	.6	n/a	n/a	n/a
St. Mungo	Total=1 incomplete				
Weight	1	.1	n/a	n/a	n/a
Length	1	1.5	n/a	n/a	n/a
Width	1	.4	n/a	n/a	n/a
Thickness	1	.2	n/a	n/a	n/a
Crescent Bch	Total=1 incomplete				
Weight	1	4.2	n/a	n/a	n/a
Length	1	5.7	n/a	n/a	n/a
Width	1	1.0	n/a	n/a	n/a
Thickness	1	.6	n/a	n/a	n/a

BBFP:BILATERALLY BARBED FIXED POINT:

Implements showing no evidence of a line guard with bilateral barbs have been placed into this category.

These implements are also thought to be a specialized tool used for fishing.

Table B.77 Bilaterally Barbed Fixed Points

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose Total=1 incomplete					
Weight	1	1.0	n/a	n/a	n/a
Length	1	2.9	n/a	n/a	n/a
Width	1	1.0	n/a	n/a	n/a
Thickness	1	.7	n/a	n/a	n/a

St. Mungo No artifacts are present.

Crescent Bch No artifacts are present.

BBRB:BONE BARB:

These objects are made from bone, with their entire surface well abraded. On one side they are ground flat, this 'distal' end is also somewhat rounded and larger than the tapered point of the proximal end. There is a slight curve to their profile and evidence of a wear pattern attributable to hafting.

While the function of the tools in this category is not certain, visually, in comparison to pictures in Stewart (1973 and 1977) these implements resemble barbs composing part of a fish hook.

Table B.78 Bone Barbs

	Number	Median	Range	Interquartile Range
Glenrose Total=3				
Weight	3	2.3	2.3 - 2.4	n/a
Length	3	6.0	5.4 - 6.1	n/a
Width	3	.7	.7 - 1.0	n/a
Thickness	3	.6	.6 - .6	n/a

St. Mungo No artifacts are present.

Crescent Bch No artifacts are present.

FHS:FISH HOOK SHANK:

Ham et al. (1986:100) describe the objects in this category as being made from sectioned and ground large mammal bone with an incised continuous groove around one end with the opposite end broken.

They hypothesize that these objects composed part of a composite fish hook, although a larger sample is needed to ascertain function.

Table B.79 Fish Hook Shanks

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose	No artifacts are present.				
St. Mungo	**Total=1 complete**				
Weight	1	1.0	n/a	n/a	n/a
Length	1	4.4	n/a	n/a	n/a
Width	1	.5	n/a	n/a	n/a
Thickness	1	.4	n/a	n/a	n/a
Crescent Bch	No artifacts are present.				

DECORATED BONE

As per Kornbacher (1989:114), objects in this category exhibit, "...some decorative potential exclusively". Decoration is created by processes such as grooving, incising, or perforation. Intact decorated bone objects that are perceivably human or animal in form have been placed into separate categories.

The function of these tools was aesthetic in nature rather than utilitarian. Otherwise, these objects could be placed into other categories. If one wants, one could argue that these objects are separated because they had the potential of functioning as status markers. This is the nucleus of my difference with some archaeologists, who emphasize the decoration on artifacts as the be all and end all of the object, no matter how minor a factor the decoration is to the overall context of the artifact.

DBON:DECORATED BONE OBJECT:

All of these objects are decorated bone fragments.

Table B.80 Decorated Bone Objects

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose Total=1 incomplete					
Weight	1	2.1	n/a	n/a	n/a
Length	1	3.2	n/a	n/a	n/a
Width	1	1.8	n/a	n/a	n/a
Thickness	1	.4	n/a	n/a	n/a
St. Mungo Total=3 All artifacts are included.					
Weight	3	n/a	1.2	.9 - 5.1	n/a
Length	3	n/a	4.0	3.5 - 9.4	n/a
Width	3	n/a	1.2	.7 - 1.8	n/a
Thickness	3	n/a	.3	.2 - .4	n/a

Crescent Bch No artifacts are present.

GRUB:GRUB:

Artifacts described in this class have been given many names including; grub, charm and game piece. They are small bone objects with convex sides tapering to rounded ends. They are incised with several approximately equidistant encircling grooves giving it a segmented grub-like appearance (Borden 1975:76).

They were originally found in the Fraser Canyon by Charles Borden who describes them as resembling fly larvae (1975:76). Regardless of their name, they probably were not used on a day to day basis. Their distinctiveness has made them a cultural marker of the middle period (Charles) on the Fraser River. The grub effigies found in the Fraser Canyon are made from inorganic lithic raw material types as opposed those at St. Mungo which are organic. This difference in raw material preference may or may not be important, but the lack of preservation in the Fraser Canyon makes it uncertain that organic grub effigies were also present.

Table B.81

	Number	Msmt.	Grubs Median	Range	Interquartile Range
Glenrose Total=1 complete					
Weight	1	1.0	n/a	n/a	n/a
Length	1	2.2	n/a	n/a	n/a
Width	1	.6	n/a	n/a	n/a
Thickness	1	.5	n/a	n/a	n/a
St. Mungo Total=3					
Weight	3	1.1	1.0	.4 - 2.0	n/a
Length	3	2.1	1.9	1.8 - 2.5	n/a
Width	3	.9	.9	.6 - 1.1	n/a
Thickness	3	.6	.5	.4 - .9	n/a

Crescent Bch No artifacts are present.



Figure B.6 Splinter Awls - Glenrose



Figure B.7 Split Rib Awls - Crescent Beach

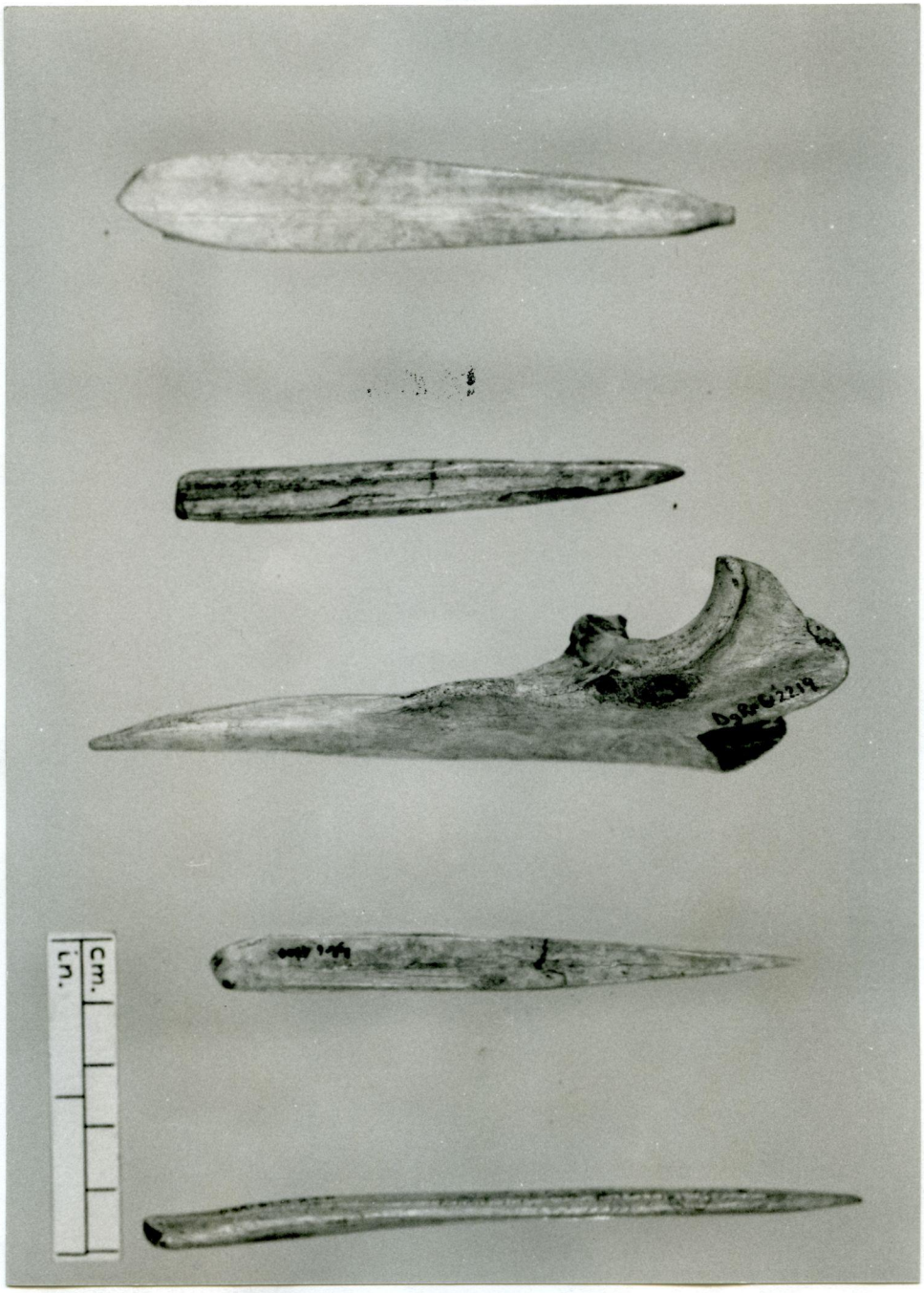


Figure B.8 Formed Bone Awls - Glenrose



Figure B.9 Bone Chisels With Unilaterally Tapered Ends
St. Mungo



Figure B.10 Bone Artifacts - St. Mungo
Top Row: 3 Unidentified Bone Wedge, Chisel, Point Fragments
Middle Row: 4 Non-Facetted Points With Central Cavities
Bottom Row: 2 Non-Facetted Bone Points With No Central Cavity,
2 Non-Facetted Bone Points Lanceolate-Shaped



Figure B.11 Bone Artifacts - Glenrose
Top Row: Bone Chisel With Unilaterally Tapered End, Perforated Bone Pendant, Halibut Hook
Middle Row: Perforated Bone Pendant, Bone Needle
Bottom Row: Bone Chisel With Unilaterally Tapered End, Non-Facetted Bone Point Lanceolate-Shaped



Figure B.12 Bone Artifacts - St. Mungo
Top Row: 3 Ground Molars
Second Row: 3 Bone Pendants
Third Row: 1 Bone Ring, 2 Grub effigies
Bottom Row: 4 Ground Stone Disc Beads, 1 Shell Bead

ANTLER IMPLEMENTS

Antler tools, like bone tools, are organic and deteriorate rapidly from the archaeological record. In general, antler tools are not as common as bone tools at most Northwest Coast sites. Antler tools are usually not made from split or sectioned antler cores. The most common or numerous antler implements excavated by archaeologists are tools that exploit the natural shape of the antler and require little alteration in order to perform the desired activity. This type of tool is also known as a an expedient tool. The most common split or sectioned antler tools are barbed points or harpoons and they are manufactured in the same way as their bone counterparts.

SHAPED ANTLER TOOLS

Like all other shaped tools the original shape and texture of the antler has been altered significantly. In comparison to inorganic stone, antler is more pliable and can be shaped through many different processes including cutting, chopping, grinding, engraving and drilling (Stewart 1973:110).

MINIMALLY WORKED ANTLER

These objects have been minimally shaped or modified. They are placed into subcategories depending on whether they are end or medial fragments. Dividing these objects into these types of categories allows for comparisons of artifact breakage patterns.

WAMF:WORKED ANTLER MEDIAL FRAGMENT:

These implements show deliberate shaping through manufacturing processes such as grinding, cutting or splitting. They are fragmentary and cannot be further classified.

Table B.82 Worked Antler Medial Fragments

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose Total=5 All artifacts are included.					
Weight	5	n/a	11.7	.7 - 21.3	n/a
Length	5	n/a	6.5	3.5 - 7.6	n/a
Width	5	n/a	2.1	.9 - 3.6	n/a
Thickness	5	n/a	1.1	.6 - 1.5	n/a
St. Mungo Total=11 All artifacts are included.					
Weight	11	n/a	4.0	1.0 - 13.2	1.8 - 7.9
Length	11	n/a	4.8	1.8 - 7.8	2.9 - 5.3
Width	11	n/a	2.0	.8 - 4.0	1.1 - 2.8
Thickness	11	n/a	.9	.4 - 1.2	.7 - 1.0
Crescent Bch Total=1 incomplete					
Weight	1	15.8	n/a	n/a	n/a
Length	1	6.8	n/a	n/a	n/a
Width	1	2.5	n/a	n/a	n/a
Thickness	1	1.6	n/a	n/a	n/a

WAEF:WORKED ANTLER END FRAGMENT:

These implements show evidence of deliberate shaping through manufacturing processes such as grinding, cutting or splitting but due to their fragmentary nature, cannot be further classified.

Table B.83 Worked Antler End Fragments

	Number	Median	Range	Interquartile Range
Glenrose Total=2 All artifacts are included.				
Weight	2	n/a	1.2 - 4.7	n/a
Length	2	n/a	2.5 - 4.0	n/a
Width	2	n/a	1.2 - 1.6	n/a
Thickness	2	n/a	.7 - 1.6	n/a
St. Mungo Total=12 All artifacts are included.				
Weight	12	1.0	.2 - 30.2	.4 - 6.6
Length	12	2.3	1.6 - 9.0	2.1 - 5.1
Width	12	1.2	.6 - 3.6	.9 - 2.0
Thickness	12	.6	.2 - 1.5	.5 - .9
Crescent Bch Total=2 All artifacts are included.				
Weight	2	n/a	12.0 - 16.2	n/a
Length	2	n/a	8.6 - 11.1	n/a
Width	2	n/a	2.0 - 3.0	n/a
Thickness	2	n/a	1.4 - 1.7	n/a

PUN:PUNCH:

Mitchell (1971:141) calls the implements in this artifact class composite flaking-tool tips while Ham et al. (1986:40) call them utilized antler tines. Matson (1976:179) describes these objects as, "...antler tines modified into tapering cylindrical objects showing battering at both ends". The tips also exhibit striations and crushing (Ham et al. 1986:40).

All three agree that these implements were probably used as pressure flaking tools in the manufacture of chipped stone tools.

Table B.84 Punches

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose Total=7					
Weight	1	9.3	n/a	n/a	n/a
Length	1	5.6	n/a	n/a	n/a
Width	2	n/a	1.5	1.5 - 3.2	n/a
Thickness	3	n/a	1.5	1.5 - 1.7	n/a
St. Mungo Total=4					
Weight	1	15.0	n/a	n/a	n/a
Length	1	9.2	n/a	n/a	n/a
Width	2	n/a	n/a	2.5 - 3.8	n/a
Thickness	2	n/a	n/a	1.5 - 1.6	n/a
Crescent Bch Total=1 incomplete					
Weight	1	3.1	n/a	n/a	n/a
Length	1	5.9	n/a	n/a	n/a
Width	1	1.1	n/a	n/a	n/a
Thickness	1	.8	n/a	n/a	n/a

SMALL POINTED ANTLER OBJECTS:

These implements are not as common as their bone counterparts. These artifacts are smaller than awls, have a circular cross section with a well formed and abraded surface. There is evidence of hafting on the basal end. These implements are separated based on the presence or absence of shaped tips.

AUNP:ANTLER UNIPOINT:

Artifacts in this category look like very small, rounded splinters of antler. One tip is shaped into a sharp point while the opposite tip is blunt.

Due to their similarity to bone unipoints, perhaps their function was also related to fishing.

Table B.85 Antler Unipoints

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose	No artifacts are present.				
St. Mungo	No artifacts are present.				
Crescent Bch	**Total=1 incomplete**				
Weight	1	3.9	n/a	n/a	n/a
Length	1	8.6	n/a	n/a	n/a
Width	1	.8	n/a	n/a	n/a
Thickness	1	.8	n/a	n/a	n/a

ABIP:ANTLER BIPOINT:

The tips of both ends of artifacts in this class are pointed. Their cross section is circular.

As with their bone bipoint counterparts, these objects may have been used for fishing.

Table B.86 Antler Bipoints

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose	No artifacts are present.				
St. Mungo	No artifacts are present.				
Crescent Bch	**Total=1 complete**				
Weight	1	3.7	n/a	n/a	n/a
Length	1	7.1	n/a	n/a	n/a
Width	1	1.0	n/a	n/a	n/a
Thickness	1	.8	n/a	n/a	n/a

WEDG: ANTLER WEDGE:

In this category is included two subcategories. Both are made from antler. Due to an overlap in artifact style all antler wedges were grouped together, but it should be noted that some archaeologists separate antler wedges into two subcategories. One subtype utilizes the beam portion of an antler with the thinning end unifacially worked into a wedge shape (Matson 1976:178). These implements, in most cases, are not complete and have a great deal of tip damage including wear polish, striations and occasional chipping or crushing (Ham et al. 1986:49). The second subtype of this category utilizes the tine end. Unifacial wear facets are present at the tip. The proximal end is battered (Matson 1976:179).

These tools are assumed to have functioned as a major component of the Northwest Coast woodworking tool kit. As their name implies, antler wedges could be used as a wedge when removing sections of wood from the parent tree.

Table B.87 Antler Wedges

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose Total=32					
Weight	6	n/a	31.4	12.9 - 65.7	19.9 - 62.6
Length	6	n/a	9.4	6.3 - 11.9	8.5 - 10.6
Width	9	n/a	3.5	1.8 - 4.6	2.9 - 3.6
Thickness	10	n/a	2.3	.8 - 2.9	1.7 - 2.6
St. Mungo Total=27					
Weight	1	83.8	n/a	n/a	n/a
Length	1	10.5	n/a	n/a	n/a
Width	3	n/a	3.3	2.3 - 4.2	n/a
Thickness	3	n/a	2.8	1.6 - 3.0	n/a
Crescent Bch Total=1 incomplete					
Weight	1	14.0	n/a	n/a	n/a
Length	1	11.9	n/a	n/a	n/a
Width	1	2.1	n/a	n/a	n/a
Thickness	1	1.1	n/a	n/a	n/a

BARBED ANTLER POINTS

These objects are defined on the basis of evidence for their being 'fixed' onto a shaft. Those objects not exhibiting evidence of line guards, are defined as barbed antler points. The two subcategories are defined by the type of barbs present on the object (unilateral or bilateral).

UBFA:UNILATERALLY BARBED FIXED POINT:

These tools are unilaterally barbed. They vary in overall and barb size. Artifacts in this class do not have line guards.

These artifacts did not have to be removed from their shaft. They were 'fixed' to the shaft for which they were made. They are considered to be a specialized implement used for fishing.

Table B.88 Unilaterally Barbed Fixed Points

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose Total=1 incomplete					
Weight	1	1.9	n/a	n/a	n/a
Length	1	4.3	n/a	n/a	n/a
Width	1	1.0	n/a	n/a	n/a
Thickness	1	.5	n/a	n/a	n/a
St. Mungo Total=2					
Weight	1	25.5	n/a	n/a	n/a
Length	1	12.1	n/a	n/a	n/a
Width	1	2.4	n/a	n/a	n/a
Thickness	1	1.5	n/a	n/a	n/a

Crescent Bch No artifacts are present.

FUBA:FRAGMENT OF UNILATERALLY BARBED FIXED POINT/HARPOON:

If the distal end is not present, it is hard to differentiate between unilaterally barbed harpoons and fixed points, therefore, this category which groups the fragments of both artifact types has been created.

Table B.89 Fragments of Unilaterally Barbed Fixed Points/Harpoons

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose Total=1 incomplete					
Weight	1	2.9	n/a	n/a	n/a
Length	1	5.7	n/a	n/a	n/a
Width	1	1.2	n/a	n/a	n/a
Thickness	1	.6	n/a	n/a	n/a
St. Mungo No artifacts are present.					
Crescent Bch Total=1 incomplete					
Weight	1	4.7	n/a	n/a	n/a
Length	1	4.5	n/a	n/a	n/a
Width	1	1.5	n/a	n/a	n/a
Thickness	1	.8	n/a	n/a	n/a

BBFA:BILATERALLY BARBED FIXED POINT:

Implements with no evidence of a line guard and bilateral barbs are placed into this category.

These artifacts are assumed to have been a specialized tool used for fishing.

Table B.90 Bilaterally Barbed Fixed Points

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose No artifacts are present.					
St. Mungo Total=2					
Weight	1	6.9	n/a	n/a	n/a
Length	1	8.3	n/a	n/a	n/a
Width	2	2.6	n/a	2.1 - 3.1	n/a
Thickness	2	1.0	n/a	.7 - 1.2	n/a
Crescent Bch No artifacts are present.					

HFTA: ANTLER HAFT:

Implements in this artifact class are made from hollowed semi-finished sections of antler. They are small in size.

Ham et al. think that these tools may be the haft or handle of a composite tool (1984:53). They suggest that the artifacts such as bone chisels may have been hafted in such a way.

Table B.91 Antler Hafts

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose	No artifacts are present.				
St. Mungo	Total=1 complete				
Weight	1	10.5	n/a	n/a	n/a
Length	1	8.3	n/a	n/a	n/a
Width	1	2.1	n/a	n/a	n/a
Thickness	1	1.5	n/a	n/a	n/a
Crescent Bch	No artifacts are present.				

DECORATED ANTLER

As per Kornbacher (1989:114), objects in this category exhibit, "...some decorative potential exclusively". Decoration is created by processes such as grooving, incising or perforation. Intact decorated antler objects perceivably human or animal in form have been placed into separate categories.

The function of these tools was aesthetic in nature rather than utilitarian. Otherwise, these objects could be placed into other categories. One could argue that these objects can be separated because they also functioned as status markers. This is the nucleus of my difference with some archaeologists, who emphasize the decoration on artifacts as the be all and end all of the object, no matter how minor a factor the decoration is to the overall context of the artifact.

ANTA:ANTHROPOMORPHIC OBJECT:

These objects are recognizably human in shape. Styles vary widely through time and the degree of finishing is also variable.

The function of such objects is interpreted as largely ceremonial or as possible indicators of status. In some cases, the

object may have a more functional nature (for example Glenrose's little man could be used as an engraving tool). The implement has been fashioned into something distinctive and well made, indicating the importance of the activity in which the tool was used.

Table B.92 Anthropomorphic Objects

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose Total=1 complete					
Weight	1	54.7	n/a	n/a	n/a
Length	1	10.5	n/a	n/a	n/a
Width	1	3.0	n/a	n/a	n/a
Thickness	1	2.9	n/a	n/a	n/a

St. Mungo No artifacts are present.

Crescent Bch No artifacts are present.

COMB:COMB:

These objects are surface abraded and have several long thin prongs descending from a handle.

They look like the combs used ethnographically (Ham et al. 1986:87). Stewart (1973:146) also suggests that the use wear pattern suggests another function for these implements. They may have been used to soften sinew to make it pliable for sewing. This suggests the use of combs in an every day context as well as ceremonial (the ceremonial nature is usually emphasized).

Table B.93 Combs

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose No artifacts are present.					
St. Mungo Total=1 incomplete					
Weight	1	8.7	n/a	n/a	n/a
Length	1	6.5	n/a	n/a	n/a
Width	1	2.3	n/a	n/a	n/a
Thickness	1	.8	n/a	n/a	n/a

Crescent Bch No artifacts are present.

SHELL ARTIFACTS

Shell artifacts are never as numerous as stone, bone or antler implements. This seems almost paradoxical, because shell constitutes a large percentage of the middens excavated on the Northwest Coast. A partial explanation for the sparseness of shell artifacts is that, as a raw material, only certain types of shell were desired and those with access to these specific types benefitted.

SHAPED SHELL ARTIFACTS

The following is based on Stewart (1973:158). To work shell one used the same technique as for making ground slate objects, because both possessed a brittleness. Grinding with a whetstone produced the bevelled edge for a chisel or adze blade which could be resharpened when it became dull. Shell was cut by incising along a line and snapping the desired piece.

SPND:SHELL PENDANT:

These implements are uncommon. They are made from various kinds of shell. The shapes also vary. Suspension holes may be drilled or incised.

Like their pone pendant counterparts these implements were used as personal adornment.

Table B.94 Shell Pendants

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose No artifacts are present.					
St. Mungo No artifacts are present.					
Crescent Bch Total=1 incomplete					
Weight	1	.5	n/a	n/a	n/a
Length	1	1.5	n/a	n/a	n/a
Width	1	1.0	n/a	n/a	n/a
Thickness	1	.4	n/a	n/a	n/a

SHB:SHELL BEAD:

Objects in this category are usually made from clam shell, but mussel shell was also utilized. The small perforated beads are not always round, sometimes their edges are squarish. They may have been cut from shell or cut into sections like the cylindrical beads of bird bone (Stewart 1973:166).

Table B.95 Shell Beads

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose Total=1 complete (Approximately 135 were too fragmented to measure)					
Weight	1	.1	n/a	n/a	n/a
Length	1	.7	n/a	n/a	n/a
Width	1	.6	n/a	n/a	n/a
Thickness	1	.2	n/a	n/a	n/a
St. Mungo No artifacts are present.					
Crescent Bch Total=116					
Weight	116	n/a	.1	.1 - .7	.1 - .1
Length	116	n/a	.4	.3 - 1.5	.4 - .5
Width	116	n/a	.4	.3 - 1.4	.4 - .5
Thickness	116	n/a	.1	.1 - .4	.1 - .2

SAB:SHELL ADZE BLADE:

These implements are not common. They are most often made from California mussel shell. The cutting edge is bevelled, usually bifacially (Matson 1976:177). Complete objects are rare, and it is usually a fragment of the bevelled edge that is recovered. The edge angle is less than forty five degrees.

Archaeologists assume these tools were part of the Northwest Coast woodworking tool kit.

Table B.96 Shell Adze Blades

	Number	Msmt.	Median	Range	Interquartile Range
Glenrose No artifacts are present.					
St. Mungo Total=2 No complete artifacts are present.					
Crescent Bch No artifacts are present.					

MGSF:MISCELLANEOUS GROUND SHELL FRAGMENTS:

This is a category encompassing shell tool fragments lacking diagnostic traits to enable classification beyond this category. These implements indicate their status as artifacts through modification created by shaping, worked edges and surface abrasion.

Table B.97 Miscellaneous Ground Shell Fragments

	Number	Median	Range	Interquartile Range
Glenrose Total=2 All artifacts are included.				
Weight	2	n/a	2.7 - 11.5	n/a
Length	2	n/a	3.0 - 4.1	n/a
Width	2	n/a	2.8 - 3.2	n/a
Thickness	2	n/a	.4 - .8	n/a
St. Mungo Total=3 All artifacts are included.				
Weight	3	.7	.6 - 1.6	n/a
Length	3	1.7	1.1 - 2.6	n/a
Width	3	1.3	1.1 - 1.7	n/a
Thickness	3	.3	.2 - .3	n/a

Crescent Bch No artifacts are present.

Appendix C

ARTIFACT CLASSIFICATION FOR COMPONENTS ONE AND TWO FROM CRESCENT BEACH

Appendix C Organization

Appendix C does not include any artifact descriptions already present in Appendix B. This was done in order to avoid repetition. Any new artifact types are defined in the same way as those defined in Appendix B. The organization for Appendix C is also the same as Appendix B.

LITHIC ARTIFACTS

CHIPPED STONE

CORE:CORE: See Appendix B for definition.

Table C.1 **Cores**

	Number	Median	Range	Interquartile Range
Component 1. **Total=55** All artifacts are included.				
Weight	55	38.9	4.8 - 2049.4	20.4 - 70.7
Length	55	5.1	2.4 - 15.3	4.2 - 6.6
Width	55	3.5	1.5 - 12.9	2.8 - 4.4
Thickness	55	2.1	.9 - 9.8	1.6 - 2.7
Component 2. **Total=29** All artifacts are included.				
Weight	29	32.6	2.5 - 511.5	15.3 - 61.9
Length	29	4.8	1.6 - 9.4	3.7 - 6.1
Width	29	3.4	1.1 - 8.0	2.6 - 4.4
Thickness	29	2.0	.9 - 4.7	1.4 - 2.4

BP:BIPOLAR IMPLEMENT: See Appendix B for definition.

Table C.2 **Bipolar Implements**

	Number	Median	Range	Interquartile Range
Component 1. **Total=49** All artifacts are included.				
Weight	49	17.1	2.9 - 100.0	8.4 - 29.4
Length	49	4.3	2.6 - 9.1	3.5 - 5.3
Width	49	3.1	1.8 - 6.3	2.5 - 4.0
Thickness	49	1.2	.4 - 3.0	.9 - 1.6
Component 2. **Total=6** All artifacts are included.				
Weight	6	6.8	.6 - 36.6	4.3 - 12.6
Length	6	3.1	1.2 - 5.4	2.8 - 3.9
Width	6	2.4	1.0 - 4.5	1.7 - 2.7
Thickness	6	1.0	.5 - 2.0	.6 - 1.3

UNSHAPED CHIPPED STONE IMPLEMENTS

COBBLE CORE TOOLS

MODIFIED COBBLES

HAM:HAMMERSTONE: See Appendix B for definition.

Table C.3 **Hammerstones**

	Number	Median	Range	Interquartile Range
Component 1. Total=4				
Weight	3	178.5	109.1 - 890.0	n/a
Length	3	8.5	6.3 - 12.5	n/a
Width	3	4.1	4.0 - 9.9	n/a
Thickness	3	3.7	2.9 - 4.6	n/a
Component 2. Total=7				
Weight	2	n/a	249.8 - 645.5	n/a
Length	4	12.1	8.4 - 14.7	n/a
Width	4	6.5	5.5 - 7.1	n/a
Thickness	4	4.9	3.2 - 5.9	n/a

ANV:ANVILSTONE: See Appendix B for definition.

Table C.4 **Anvilstones**

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. Total=4					
Weight	0	n/a	n/a	n/a	n/a
Length	0	n/a	n/a	n/a	n/a
Width	0	n/a	n/a	n/a	n/a
Thickness	1	4.9	n/a	n/a	n/a
Component 2. Total=1 complete					
Weight	1	770.0	n/a	n/a	n/a
Length	1	14.6	n/a	n/a	n/a
Width	1	6.9	n/a	n/a	n/a
Thickness	1	6.0	n/a	n/a	n/a

HA:HAMMER ANVILSTONE: See Appendix B for definition.

Table C.5 **Hammerstone/Anvilstones**

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. Total=1 complete					
Weight	1	110.0	n/a	n/a	n/a
Length	1	18.6	n/a	n/a	n/a
Width	1	11.9	n/a	n/a	n/a
Thickness	1	8.1	n/a	n/a	n/a

Component 2. Total=1 complete					
Weight	1	126.6	n/a	n/a	n/a
Length	1	7.7	n/a	n/a	n/a
Width	1	4.8	n/a	n/a	n/a
Thickness	1	2.3	n/a	n/a	n/a

FLAKED COBBLE CORE TOOLS

PCHU:PEBBLE TOOL UNIFACE: See Appendix B for definition.

Table C.6 Pebble Tool Unifaces

	Number	Median	Range	Interquartile Range
Component 1. Total=16 All artifacts are included.				
Weight	16	657.7	63.0 - 1178.4	251.0 - 802.7
Length	16	10.8	5.7 - 13.3	8.7 - 12.4
Width	16	9.1	4.5 - 11.4	7.7 - 10.4
Thickness	16	4.6	1.9 - 7.8	3.2 - 6.2
Component 2. Total=12 All artifacts are included.				
Weight	12	542.5	142.2 - 1724.5	389.3 - 712.3
Length	12	10.5	7.0 - 17.0	9.4 - 11.1
Width	12	8.8	5.9 - 12.8	8.0 - 9.2
Thickness	12	4.5	2.5 - 7.8	4.0 - 5.8

PCHB:PEBBLE TOOL BIFACE: See Appendix B for definition.

Table C.7 Pebble Tool Bifaces

	Number	Median	Range	Interquartile Range
Component 1. Total=3 All artifacts are included.				
Weight	3	430.0	350.0 - 910.0	n/a
Length	3	10.5	8.1 - 12.5	n/a
Width	3	8.0	6.9 - 8.5	n/a
Thickness	3	4.9	4.7 - 6.1	n/a
Component 2. Total=2 All artifacts are included.				
Weight	2	n/a	120.4 - 601.5	n/a
Length	2	n/a	7.8 - 10.5	n/a
Width	2	n/a	5.2 - 10.0	n/a
Thickness	2	n/a	2.1 - 4.6	n/a

UNSHAPED CHIPPED STONE FLAKE TOOLS

COBBLE FLAKE TOOLS

CSP:CORTEX SPALL: See Appendix B for definition.

Table C.8 Cortex Spalls

	Number	Median	Range	Interquartile Range
Component 1. Total=14 All artifacts are included.				
Weight	14	36.6	9.0 - 74.8	24.1 - 51.2
Length	14	5.4	4.0 - 7.6	4.7 - 6.4
Width	14	4.3	3.5 - 5.8	4.0 - 4.7
Thickness	14	1.5	.9 - 2.2	1.0 - 1.6
Component 2. Total=8 All artifacts are included.				
Weight	8	38.9	9.2 - 104.7	27.2 - 52.6
Length	8	6.4	3.4 - 7.2	5.1 - 7.0
Width	8	4.5	3.2 - 5.6	3.6 - 4.9
Thickness	8	1.3	.7 - 2.2	1.0 - 1.5

UTILIZED FLAKE TOOLS

UF:UTILIZED FLAKE: See Appendix B for definition.

Table C.9 Utilized Flakes

	Number	Median	Range	Interquartile Range
Component 1. Total=118 All artifacts are included.				
Weight	118	13.1	1.3 - 160.3	5.6 - 28.5
Length	118	4.6	1.9 - 11.3	3.5 - 5.8
Width	118	3.1	1.4 - 7.9	2.4 - 3.9
Thickness	118	1.1	.3 - 3.6	.7 - 1.3
Component 2. Total=65 All artifacts are included.				
Weight	65	13.7	.7 - 90.3	5.8 - 21.5
Length	65	4.7	1.9 - 8.2	3.5 - 5.5
Width	65	3.3	.9 - 5.6	2.1 - 4.1
Thickness	65	1.0	.2 - 2.2	.7 - 1.2

RETOUCHED FLAKE TOOLS

QCML:QUARTZ MICROLITH: See Appendix B for definition.

Table C.10 Quartz Microliths

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. Total=1 incomplete					
Weight	1	1.0	n/a	n/a	n/a
Length	1	1.7	n/a	n/a	n/a
Width	1	1.4	n/a	n/a	n/a
Thickness	1	.4	n/a	n/a	n/a
Component 2. Total=11 All artifacts are included.					
Weight	11	n/a	.3	.1 - .9	.2 - .4
Length	11	n/a	1.2	.9 - 1.5	1.1 - 1.4
Width	11	n/a	.8	.7 - 1.3	.8 - 1.3
Thickness	11	n/a	.3	.2 - .6	.3 - .4

UNIFACIALLY RETOUCHED FLAKES

SRF:UNIFACIALLY STEEP-ANGLED RETOUCHED FLAKE: See Appendix B for definition.

Table C.11 Unifacially Steep-Angled Retouched Flakes

	Number	Median	Range	Interquartile Range
Component 1. Total=28 All artifacts are included.				
Weight	28	24.6	2.3 - 134.6	16.1 - 50.6
Length	28	5.7	2.7 - 7.9	4.4 - 6.5
Width	28	3.9	1.5 - 6.7	3.1 - 4.6
Thickness	28	1.3	.4 - 2.7	1.1 - 1.9
Component 2. Total=19 All artifacts are included.				
Weight	19	30.8	3.4 - 114.1	12.9 - 43.7
Length	19	5.1	2.5 - 9.9	3.9 - 5.9
Width	19	3.7	1.9 - 5.8	3.0 - 4.5
Thickness	19	1.6	.6 - 2.0	1.0 - 1.8

NRF:UNIFACIALLY NARROW-ANGLED RETOUCHED FLAKE: See Appendix B for definition.

Table C.12 Unifacially Narrow-Angled Retouched Flakes

	Number	Median	Range	Interquartile Range
Component 1. Total=19 All artifacts are included.				
Weight	19	15.2	4.5 - 595.5	8.1 - 22.8
Length	19	4.4	2.9 - 14.8	3.4 - 5.6
Width	19	3.3	2.2 - 11.6	2.8 - 3.9
Thickness	19	.9	.5 - 2.4	.7 - 1.3

Component 2. Total=10 All artifacts are included.				
Weight	10	22.8	2.1 - 120.4	15.8 - 37.7
Length	10	5.1	2.7 - 8.2	4.8 - 6.0
Width	10	4.4	1.5 - 7.6	3.3 - 4.6
Thickness	10	1.2	.5 - 2.0	1.0 - 1.4

BIFACIALLY RETOUCHED FLAKES

BRF:BIFACIALLY RETOUCHED FLAKE: See Appendix B for definition.

Table C.13 Bifacially Retouched Flakes

	Number	Median	Range	Interquartile Range
Component 1. Total=2 All artifacts are included.				
Weight	2	n/a	12.0 - 13.9	n/a
Length	2	n/a	4.6 - 4.7	n/a
Width	2	n/a	2.8 - 3.1	n/a
Thickness	2	n/a	1.0 - 1.1	n/a
Component 2. Total=3 All artifacts are included.				
Weight	3	9.5	1.7 - 10.4	n/a
Length	3	3.4	2.6 - 6.2	n/a
Width	3	2.0	1.9 - 3.0	n/a
Thickness	3	.7	.6 - 1.0	n/a

BLADE-LIKE TOOLS

BLFK:MACROBLADE-LIKE FLAKE: See Appendix B for definition.

Table C.14 Macroblade-Like Flakes

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. Total=1 complete					
Weight	1	4.1	n/a	n/a	n/a
Length	1	4.2	n/a	n/a	n/a
Width	1	1.5	n/a	n/a	n/a
Thickness	1	.5	n/a	n/a	n/a

Component 2. No artifacts are present.

SHAPED CHIPPED STONE TOOLS

FORMED CHIPPED STONE UNIFACES

NFU:NARROW-ANGLED FORMED UNIFACE: See Appendix B for definition.

Table C.15 Narrow-Angled Formed Unifaces

	Number	Median	Range	Interquartile Range
Component 1. Total=3	All artifacts are included.			
Weight	3	8.7	2.4 - 66.1	n/a
Length	3	5.4	3.2 - 7.4	n/a
Width	3	2.3	1.8 - 5.7	n/a
Thickness	3	1.0	.5 - 1.5	n/a

Component 2. No artifacts are present.

FORMED CHIPPED STONE BIFACES

LBF:LEAF-SHAPED BIFACE: See Appendix B for definition.

Table C.16 Leaf-Shaped Bifaces

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. Total=7					
Weight	4	n/a	10.5	3.5 - 12.4	n/a
Length	6	n/a	5.4	3.5 - 6.5	5.0 - 5.7
Width	6	n/a	2.2	1.6 - 2.5	2.0 - 2.4
Thickness	6	n/a	.9	.6 - 1.0	.7 - .9
Component 2. Total=1 incomplete					
Weight	1	5.2	n/a	n/a	n/a
Length	1	4.0	n/a	n/a	n/a
Width	1	1.9	n/a	n/a	n/a
Thickness	1	.7	n/a	n/a	n/a

CSTB:CONTRACTING STEM BIFACE NO SHOULDERS: See Appendix B for definition.

Table C.17 Contracting Stem Bifaces No Shoulders

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. Total=2					
Weight	2	n/a	n/a	11.4 - 18.4	n/a
Length	2	n/a	n/a	6.6 - 7.8	n/a
Width	2	n/a	n/a	1.9 - 2.6	n/a
Thickness	2	n/a	n/a	.9 - .9	n/a

Component 2. Total=1 complete					
Weight	1	13.0	n/a	n/a	n/a
Length	1	6.0	n/a	n/a	n/a
Width	1	2.7	n/a	n/a	n/a
Thickness	1	.9	n/a	n/a	n/a

CSBS:CONTRACTING STEM BIFACE WITH SHOULDERS: See Appendix B for definition.

Table C.18 Contracting Stem Bifaces With Shoulders

	Number	Median	Range	Interquartile Range
Component 1. Total=4				
Weight	2	n/a	8.8 - 25.1	n/a
Length	2	n/a	6.6 - 7.8	n/a
Width	2	n/a	2.9 - 3.6	n/a
Thickness	2	n/a	.8 - .9	n/a
Component 2. Total=4				
Weight	3	9.1	8.1 - 17.5	n/a
Length	3	5.7	4.6 - 7.7	n/a
Width	4	2.3	2.0 - 2.5	n/a
Thickness	3	.8	.8 - .9	n/a

INCOMPLETE FORMED BIFACES

BPF:BIFACE PROXIMAL FRAGMENT: See Appendix B for definition.

Table C.19 Biface Proximal Fragments

	Number	Median	Range	Interquartile Range
Component 1. Total=3 All artifacts are included.				
Weight	3	3.5	1.1 - 11.0	n/a
Length	3	3.2	2.6 - 5.2	n/a
Width	3	1.8	1.5 - 2.2	n/a
Thickness	3	.7	.3 - 1.3	n/a

Component 2. No artifacts are present.

BMF:BIFACE MEDIAL FRAGMENT: See Appendix B for definition.

Table C.20 Biface Medial Fragments

	Number	Median	Range	Interquartile Range
Component 1. Total=3 All artifacts are included.				
Weight	3	11.4	10.2 - 25.4	n/a
Length	3	4.0	3.6 - 5.9	n/a
Width	3	2.7	2.6 - 3.4	n/a
Thickness	3	1.1	1.0 - 1.3	n/a

Component 2. No artifacts are present.

BDF:BIFACE DISTAL FRAGMENT: See Appendix B for definition.

Table C.21 Biface Distal Fragments

	Number	Median	Range	Interquartile Range
Component 1. No artifacts are present.				
Component 2. Total=3 All artifacts are included.				
Weight	3	3.4	1.1 - 4.3	n/a
Length	3	2.4	1.4 - 2.5	n/a
Width	3	1.7	1.3 - 2.1	n/a
Thickness	3	.8	.6 - .9	n/a

UNBF:UNIDENTIFIABLE BIFACE FRAGMENT: See Appendix B for definition.

Table C.22 Unidentifiable Biface Fragments

	Number	Median	Range	Interquartile Range
Component 1. Total=8 All artifacts are included.				
Weight	8	4.4	3.5 - 10.6	4.0 - 10.1
Length	8	3.3	2.5 - 4.6	2.8 - 4.3
Width	8	2.3	1.7 - 3.0	2.1 - 2.7
Thickness	8	.8	.6 - 1.0	.8 - .9
Component 2. Total=2 All artifacts are included.				
Weight	2	9.6	3.4 - 15.8	n/a
Length	2	2.9	1.9 - 3.8	n/a
Width	2	2.6	1.9 - 3.3	n/a
Thickness	2	1.1	.8 - 1.4	n/a

SHAPED CHIPPED AND GROUND STONE IMPLEMENTS

CSSB:CHIPPED STONE NARROW-ANGLED BIFACE OBJECT:

These objects are not common in early Northwest Coast prehistory. They are made from pieces of slate thicker than the typical ground slate knife. There is no evidence of grinding, but the margins of the artifact have been

purposefully flaked. The edges have bifacial retouch (Mitchell 1968:187). They are usually seen as the predecessors to ground stone knives. Some archaeologists argue that these chipped slate implements are ground stone knife preforms that have been abandoned, but this is difficult to prove.

Table C.23 Chipped Stone Narrow-Angled Biface Objects

Number	Median	Range	Interquartile Range

Component 1. No artifacts are present.

Component 2. Total=2 No complete artifacts are present.

CTBO:CHIPPED NARROW-ANGLED TABULAR BIFACE OBJECT:

These implements are not common. They are part of a more general category of chipped and ground stone implements made from slate, but there is no evidence of grinding or abrasion. Sometimes these implements are called preforms because it is possible they were blanks that would eventually be used to make other objects such as ground stone knives. Unfortunately, proving these objects are preforms would require looking into the mind of the manufacturer, and that is not possible. This particular subgroup has marginal retouch (either bifacial or unifacial), and is square shaped. The angle of retouch is narrow.

It is possible these implements were used for cutting soft material such as flesh, but this has not been proven through experiments (yet).

Table C.24 Chipped Narrow-Angled Tabular Biface Objects

Number	Msmt.	Median	Range	Interquartile Range
Component 1. Total=1 incomplete				
Weight	1	116.7	n/a	n/a	n/a
Length	1	9.0	n/a	n/a	n/a
Width	1	8.2	n/a	n/a	n/a
Thickness	1	1.6	n/a	n/a	n/a

Component 2. No artifacts are present.



Figure C.1 Shaped Chipped and Ground Stone Implements
Components One and Two, Crescent Beach
Top Row: 2 Chipped Stone Narrow-Angled Biface Objects, Component Two
Bottom Row: Chipped Narrow-Angled Tabular Biface Object, Component One

GROUND STONE IMPLEMENTS

ABRASIVE STONES

SAW:SAW:

These implements have a tapered cutting edge with use striae running parallel to the cutting margin (Burley 1989:90). Burley (1989:90) states that these implements are immediate use tools which have not been shaped beyond the preparation of a functional edge.

Their function would be that of a sandstone saw which could be used to abrade soft material such as wood or bone.

Table C.25 **Saws**

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. No artifacts are present.					
Component 2. Total=1 incomplete					
Weight	1	46.4	n/a	n/a	n/a
Length	1	6.4	n/a	n/a	n/a
Width	1	4.5	n/a	n/a	n/a
Thickness	1	.9	n/a	n/a	n/a

AS:ABRASIVE STONE: See Appendix B for definition.

Table C.26 **Abrasive Stones**

	Number	Median	Range	Interquartile Range
Component 1. Total=13 No complete artifacts are present.				
Component 2. Total=17 No complete artifacts are present.				

FAS:FORMED ABRASIVE STONE: See Appendix B for definition.

Table C.27 **Formed Abrasive Stones**

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. Total=5					
Weight	1	241.4	n/a	n/a	n/a
Length	2	n/a	n/a	6.4 - 7.5	n/a
Width	0	n/a	n/a	n/a	n/a
Thickness	5	1.6	1.3	.8 - 2.8	n/a

Component 2. Total=3 No complete artifacts are present.

GSDB:GROUND STONE DISC BEADS: See Appendix B for definition.

Table C.28 Ground Stone Disc Beads

	Number	Median	Range	Interquartile Range
Component 1.	Total=508			
Weight	381	.1	.1 - .4	.1 - .1
Length	461	.6	.3 - 1.1	.5 - .6
Width	383	.5	.3 - 1.0	.5 - .6
Thickness	461	.2	.1 - .4	.2 - .2
Component 2.	Total=392			
Weight	374	.1	.1 - 4.0	.1 - .2
Length	392	.7	.3 - 1.7	.6 - .8
Width	374	.7	.3 - 1.6	.5 - .7
Thickness	392	.2	.1 - .5	.2 - .3

GRIN:GROUND STONE RING:

Artifacts in this category are well made. The outer diameter may be slightly irregular and surface finishing varies. The centre hole is unifacially created (Percy 1974:140).

Their function is not known but they may be for personal adornment.

Table C.29 Ground Stone Rings

	Number	Msmt.	Median	Range	Interquartile Range
Component 1.	No artifacts are present.				
Component 2.	Total=1 complete				
Weight	1	5.8	n/a	n/a	n/a
Length	1	3.8	n/a	n/a	n/a
Width	1	3.4	n/a	n/a	n/a
Thickness	1	.5	n/a	n/a	n/a

ADZ:ADZE:

Another name for items in this category is celts. These implements are made from a hard raw material such as nephrite. The shape of the objects is achieved through cutting a suitable piece of material from the parent rock (using water and sandstone to increase friction and help the abrasion process). The

general shape and final touches are achieved through grinding and polishing of all surfaces. Percy (1974:130) shows a diagram of an adze and the nomenclature used to describe the various parts of an adze.

These implements were a very important part of the Northwest Coast prehistoric wood working kit and while they are present in early Northwest Coast prehistory, they become much more common through time.

Table C.30 **Adzes**

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. No artifacts are present.					
Component 2. Total=1 incomplete					
Weight	1	22.5	n/a	n/a	n/a
Length	1	5.0	n/a	n/a	n/a
Width	1	4.1	n/a	n/a	n/a
Thickness	1	.8	n/a	n/a	n/a

GULF ISLAND COMPLEX IMPLEMENTS

These objects were first discussed in detail by Wilson Duff (1956). The artifacts with few exceptions are made from soapstone which is a soft metamorphosed talc. Gulf Island complexes are always well-made with highly abraded surfaces. Duff divided the objects into ten different groups, five of which were common. These subcategories are still in use today (see for example Patenaude 1985). The most common Gulf Island complex object is the labret. Today, labrets are usually isolated and described separately rather than as part of the complex, but their roots go back to the original Gulf Island complex categories. These artifacts are universally seen as diagnostic of the Locarno Beach or early Marpole Cultures, although they may also be present during the St. Mungo phase (Carlson 1985, 1986 and Patenaude 1985:154-160).

GIC:GULF ISLAND COMPLEX:

Placed into this category are all of those implements thought to be GIC's because of some similarity to those categories first described by Duff.

There has been little progress in determining the function of these objects.

Table C.31 Gulf Island Complexes

	Number	Median	Range	Interquartile Range

Component 1. No artifacts are present.

Component 2. Total=3 No complete artifacts are present.

LAB:LABRET:

As previously mentioned, labrets were originally included in the Gulf Island complex, but because they are relatively more numerous, occur outside the Gulf Islands and their function is known, they have been placed in their own separate category. These artifacts are made from other raw materials beside soapstone, including bone, shell and wood. Labrets come in many styles including t-shaped, hat-shaped and elliptical-shaped. The styles may vary, but all require that the lower lip be perforated to allow insertion (Stewart 1973:92).

Their function was one of personal ornamentation.

Table C.32 Labrets

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. No artifacts are present.					
Component 2. Total=2					
Weight	1	17.0	n/a	n/a	n/a
Length	1	5.0	n/a	n/a	n/a
Width	1	2.0	n/a	n/a	n/a
Thickness	2	n/a	n/a	1.1 - 1.4	n/a

DGS:DECORATED GROUND STONE: See Appendix B for definition.

Table C.33 Decorated Ground Stones

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. Total=1 incomplete					
Weight	1	60.1	n/a	n/a	n/a
Length	1	5.9	n/a	n/a	n/a
Width	1	4.6	n/a	n/a	n/a
Thickness	1	2.3	n/a	n/a	n/a

Component 2. No artifacts are present.

MGS:MISCELLANEOUS GROUND STONE: See Appendix B for definition.

Table C.34 Miscellaneous Ground Stones

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. Total=1 incomplete					
Weight	1	154.9	n/a	n/a	n/a
Length	1	10.6	n/a	n/a	n/a
Width	1	6.8	n/a	n/a	n/a
Thickness	1	1.5	n/a	n/a	n/a
Component 2. Total=1 incomplete					
Weight	1	23.0	n/a	n/a	n/a
Length	1	5.4	n/a	n/a	n/a
Width	1	3.9	n/a	n/a	n/a
Thickness	1	1.0	n/a	n/a	n/a

PECKED AND GROUND STONE IMPLEMENTS

MORT:MORTAR:

Names for artifacts in this category include cobble mortar (Mitchell 1971:123) or bowl (Ham et al. 1986:78). They are usually well-made from granite or other similar igneous raw material. The amount of pecking used to create the inner depression can vary. Degree of shaping on the outer surface varies.

It is possible that the smaller implements with shallower depressions served exclusively as mortars in which pigments could be ground, but there is no clear division between mortars and bowls.

Table C.35 **Mortars**

	Number	Median	Range	Interquartile Range
Component 1. No artifacts are present.				
Component 2. Total=2				
Weight	2	n/a	85.0 - 85.4	n/a
Length	2	n/a	5.0 - 5.2	n/a
Width	2	n/a	4.6 - 4.9	n/a
Thickness	2	n/a	2.1 - 2.5	n/a

BONE IMPLEMENTS

SHAPED BONE TOOLS

MINIMALLY WORKED BONE

WBMF:WORKED BONE MEDIAL FRAGMENT: See Appendix B for definition.

Table C.36 **Worked Bone Medial Fragments**

	Number	Median	Range	Interquartile Range
Component 1. Total=80 All artifacts are included.				
Weight	80	2.2	.1 - 29.1	1.1 - 3.9
Length	80	4.6	1.3 - 13.0	3.3 - 5.8
Width	80	1.1	.2 - 6.2	.8 - 1.5
Thickness	80	.5	.2 - 1.6	.5 - .7
Component 2. Total=16 All artifacts are included.				
Weight	16	2.1	.3 - 16.0	1.1 - 4.4
Length	16	4.3	2.5 - 9.1	3.4 - 6.6
Width	16	1.2	.5 - 7.0	.8 - 1.8
Thickness	16	.6	.3 - 1.5	.5 - .7

WBEF:WORKED BONE END FRAGMENT: See Appendix B for definition.

Table C.37 Worked Bone End Fragments

	Number	Median	Range	Interquartile Range
Component 1.	Total=35	All artifacts are included.		
Weight	35	2.8	.1 - 23.2	.7 - 4.9
Length	35	4.5	1.1 - 13.1	3.2 - 6.9
Width	35	1.1	.3 - 5.7	.7 - 1.8
Thickness	35	.5	.2 - 2.3	.4 - .8
Component 2.	Total=7			
Weight	7	.5	.3 - 3.9	.3 - 2.3
Length	7	2.6	1.6 - 10.8	1.8 - 4.1
Width	7	.7	.6 - 1.1	.7 - .8
Thickness	7	.4	.3 - .5	.3 - .5

RI:RODENT INCISOR: See Appendix B for definition.

Table C.38 Rodent Incisors

	Number	Median	Range	Interquartile Range
Component 1.	Total=3	No complete artifacts are present.		
Component 2.	No artifacts are present.			

BHKO:BONE HOOK OBJECT: See Appendix B for definition.

Table C.39 Bone Hook Objects

	Number	Msmt.	Median	Range	Interquartile Range
Component 1.	Total=1	incomplete			
Weight	1	.8	n/a	n/a	n/a
Length	1	2.7	n/a	n/a	n/a
Width	1	.8	n/a	n/a	n/a
Thickness	1	.3	n/a	n/a	n/a

Component 2. No artifacts are present.

BONE PENDANTS

PBP:PERFORATED BONE PENDANT: See Appendix B for definition.

Table C.40 Perforated Bone Pendants

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. Total=1 incomplete					
Weight	1	.7	n/a	n/a	n/a
Length	1	3.3	n/a	n/a	n/a
Width	1	.9	n/a	n/a	n/a
Thickness	1	.3	n/a	n/a	n/a

Component 2. No artifacts are present.

TPND:TOOTH PENDANT: See Appendix B for definition.

Table C.41 Tooth Pendants

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. Total=2					
Weight	1	.9	n/a	n/a	n/a
Length	2	n/a	n/a	2.5 - 2.6	n/a
Width	1	1.0	n/a	n/a	n/a
Thickness	2	n/a	n/a	.6 - .7	n/a

Component 2. No artifacts are present.

ROUND BONE OBJECTS

BEAD:BONE BEAD: See Appendix B for definition.

Table C.42 Bone Beads

	Number	Median	Range	Interquartile Range
Component 1. Total=4				
Weight	4	.3	.2 - .4	n/a
Length	4	1.0	.8 - 1.1	n/a
Width	4	.9	.8 - 1.1	n/a
Thickness	4	.2	.2 - .3	n/a

Component 2. No artifacts are present.

AWLS

SAWL:SPLINTER BONE AWL: See Appendix B for definition.

Table C.43 Splinter Awls

Number		Msmt.	Median	Range	Interquartile Range
Component 1. Total=15					
Weight	0	n/a	n/a	n/a	n/a
Length	8	n/a	9.9	3.6 - 12.9	7.3 - 12.2
Width	5	n/a	1.2	.8 - 1.8	n/a
Thickness	8	n/a	.7	.2 - 1.3	.3 - .9
Component 2. Total=4					
Weight	0	n/a	n/a	n/a	n/a
Length	0	n/a	n/a	n/a	n/a
Width	1	1.2	n/a	n/a	n/a
Thickness	1	.6	n/a	n/a	n/a

SRA:SPLIT RIB AWL: See Appendix B for definition.

Table C.44 Split Rib Awls

Number		Msmt.	Median	Range	Interquartile Range
Component 1. Total=6					
Weight	0	n/a	n/a	n/a	n/a
Length	1	14.3	n/a	n/a	n/a
Width	3	n/a	1.1	.7 - 1.9	1.0 - 1.4
Thickness	4	n/a	.5	.3 - .7	n/a

Component 2. No artifacts are present.

FAWL:FORMED SPLIT BONE AWL: See Appendix B for definition.

Table C.45 Formed Bone Awls

Number		Msmt.	Median	Range	Interquartile Range
Component 1. Total=12					
Weight	3	n/a	7.8	4.0 - 14.1	n/a
Length	8	n/a	12.9	5.4 - 17.0	6.8 - 15.8
Width	4	n/a	1.6	.7 - 2.1	n/a
Thickness	8	n/a	.6	.4 - 1.0	.5 - .9
Component 2. Total=3					
Weight	0	n/a	n/a	n/a	n/a
Length	0	n/a	n/a	n/a	n/a
Width	1	1.2	n/a	n/a	n/a
Thickness	1	.6	n/a	n/a	n/a

MAWL:METAPODIAL AWL: See Appendix B for definition.

Table C.46 Metapodial Awls

Number	Msmt.	Median	Range	Interquartile Range

Component 1. No artifacts are present.

Component 2. Total=1 incomplete					
Weight	1	3.3	n/a	n/a	n/a
Length	1	5.3	n/a	n/a	n/a
Width	1	2.1	n/a	n/a	n/a
Thickness	1	1.5	n/a	n/a	n/a

BAWL:BIRD BONE AWL: See Appendix B for definition.

Table C.47 Bird Bone Awls

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. Total=2					
Weight	0	n/a	n/a	n/a	n/a
Length	0	n/a	n/a	n/a	n/a
Width	1	.7	n/a	n/a	n/a
Thickness	1	.6	n/a	n/a	n/a
Component 2. Total=1 complete					
Weight	1	.2	n/a	n/a	n/a
Length	1	2.6	n/a	n/a	n/a
Width	1	.4	n/a	n/a	n/a
Thickness	1	.4	n/a	n/a	n/a

ULNA:ULNA AWL: See Appendix B for definition.

Table C.48 Ulna Awls

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. Total=2					
Weight	1	13.3	n/a	n/a	n/a
Length	1	11.8	n/a	n/a	n/a
Width	1	3.0	n/a	n/a	n/a
Thickness	1	1.3	n/a	n/a	n/a

Component 2. No artifacts are present.

ULTL:ULNA TOOL:

Incomplete fragments of ulna implements are placed into this category. From the wear pattern alone one cannot discern artifact classification beyond this general category. If the distal end is broken, function is difficult to determine.

Many archaeologists disagree on the functions of ulna tools that do not easily fit into the category of ulna awl. For example, some of the other possible

ulna tool categories include those mentioned by Burley (1989:108), ulna knives and miscellaneous ulna tools.

Table C.49 **Ulna Tools**

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. No artifacts are present.					
Component 2.	**Total=1**	**incomplete**			
Weight	1	3.0	n/a	n/a	n/a
Length	1	4.7	n/a	n/a	n/a
Width	1	2.5	n/a	n/a	n/a
Thickness	1	.5	n/a	n/a	n/a

BDRL:BONE DRILL: See Appendix B for definition.

Table C.50 **Bone Drills**

	Number	Msmt.	Median	Range	Interquartile Range
Component 1.	**Total=1**	**incomplete**			
Weight	1	.5	n/a	n/a	n/a
Length	1	5.6	n/a	n/a	n/a
Width	1	.3	n/a	n/a	n/a
Thickness	1	.3	n/a	n/a	n/a
Component 2. No artifacts are present.					

SMALL POINTED BONE OBJECTS

UNPT:UNIPOINT: See Appendix B for definition.

Table C.51 **Unipoints**

	Number	Msmt.	Median	Range	Interquartile Range
Component 1.	**Total=4**				
Weight	2	n/a	n/a	.2 - 1.7	n/a
Length	3	n/a	3.9	3.4 - 6.0	n/a
Width	3	n/a	.7	.3 - .9	n/a
Thickness	3	n/a	.4	.2 - .4	n/a
Component 2.	**Total=2**				
Weight	1	1.7	n/a	n/a	n/a
Length	1	3.9	n/a	n/a	n/a
Width	2	n/a	n/a	.9 - .9	n/a
Thickness	1	.4	n/a	n/a	n/a

BIPT:BIPOINT: See Appendix B for definition.

Table C.52 Bipoints

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. Total=1 complete					
Weight	1	.2	n/a	n/a	n/a
Length	1	3.6	n/a	n/a	n/a
Width	1	.3	n/a	n/a	n/a
Thickness	1	.2	n/a	n/a	n/a
Component 2. Total=1 complete					
Weight	1	.3	n/a	n/a	n/a
Length	1	4.3	n/a	n/a	n/a
Width	1	.4	n/a	n/a	n/a
Thickness	1	.2	n/a	n/a	n/a

PBOF:POINTED BONE OBJECT FRAGMENT: See Appendix B for definition.

Table C.53 Pointed Bone Object Fragments

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. No artifacts are present.					
Component 2. Total=1 incomplete					
Weight	1	.3	n/a	n/a	n/a
Length	1	3.4	n/a	n/a	n/a
Width	1	.4	n/a	n/a	n/a
Thickness	1	.3	n/a	n/a	n/a

BONE CHISELS, WEDGES, AND POINTS

BONE CHISELS

BCUT:BONE CHISEL WITH UNILATERALLY TAPERED END: See Appendix B for definition.

Table C.54 Bone Chisels with Unilaterally Tapered Ends

	Number	Median	Range	Interquartile Range
Component 1. Total=10				
Weight	0	n/a	n/a	n/a
Length	4	9.8	6.8 - 11.9	n/a
Width	2	n/a	2.3 - 2.6	n/a
Thickness	4	1.0	.6 - 1.0	n/a

Component 2. Total=5 No complete artifacts are present.

BONE POINTS

NFPM:NON-FACETTED POINT WITH CENTRAL CAVITY: See Appendix B for definition.

Table C.55 Non-Facetted Points With Central Cavity

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. Total=4					
Weight	0	n/a	n/a	n/a	n/a
Length	2	n/a	n/a	8.8 - 9.8	n/a
Width	1	1.4	n/a	n/a	n/a
Thickness	2	n/a	n/a	.5 - .7	n/a
Component 2. Total=1 incomplete					
Weight	1	5.6	n/a	n/a	n/a
Length	1	8.9	n/a	n/a	n/a
Width	1	1.2	n/a	n/a	n/a
Thickness	1	.5	n/a	n/a	n/a

NFPF:NON-FACETTED BONE POINT FRAGMENT: See Appendix B for definition.

Table C.56 Non-Facetted Bone Point Fragments

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. Total=1 incomplete					
Weight	1	1.6	n/a	n/a	n/a
Length	1	5.4	n/a	n/a	n/a
Width	1	1.2	n/a	n/a	n/a
Thickness	1	.4	n/a	n/a	n/a

Component 2. No artifacts are present.

UWCF:UNIDENTIFIED WEDGE, CHISEL, BONE POINT FRAGMENT: See Appendix B for definition.

Table C.57 Unidentified Bone Wedge, Chisel, Point Fragments

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. Total=12 All artifacts are included.					
Weight	12	8.2	5.3	1.1 - 18.8	3.0 - 14.0
Length	12	5.9	5.5	3.2 - 9.2	5.1 - 7.0
Width	12	1.9	1.5	1.0 - 3.8	1.2 - 2.3
Thickness	12	1.0	.9	.4 - 2.0	.6 - 1.3

Component 2. Total=1 incomplete					
Weight	1	17.8	n/a	n/a	n/a
Length	1	6.8	n/a	n/a	n/a
Width	1	3.0	n/a	n/a	n/a
Thickness	1	2.0	n/a	n/a	n/a

BARBED BONE POINTS

FUB:FRAGMENT UNILATERALLY BARBED HARPOON/POINT: See Appendix B for definition.

Table C.58 Fragments of Unilaterally Barbed Harpoons/Points

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. Total=1 incomplete					
Weight	1	4.2	n/a	n/a	n/a
Length	1	5.7	n/a	n/a	n/a
Width	1	1.0	n/a	n/a	n/a
Thickness	1	.6	n/a	n/a	n/a

Component 2. No artifacts are present.

BLAB:BONE LABRET:

These objects are the bone counterparts of ground stone labrets but are not as common in the archaeological record partially because of their organic nature.

Like other labrets, their function is one of personal adornment.

Table C.59 Bone Labrets

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. No artifacts are present.					
Component 2. Total=1 incomplete					
Weight	1	.6	n/a	n/a	n/a
Length	1	.9	n/a	n/a	n/a
Width	1	1.1	n/a	n/a	n/a
Thickness	1	.5	n/a	n/a	n/a

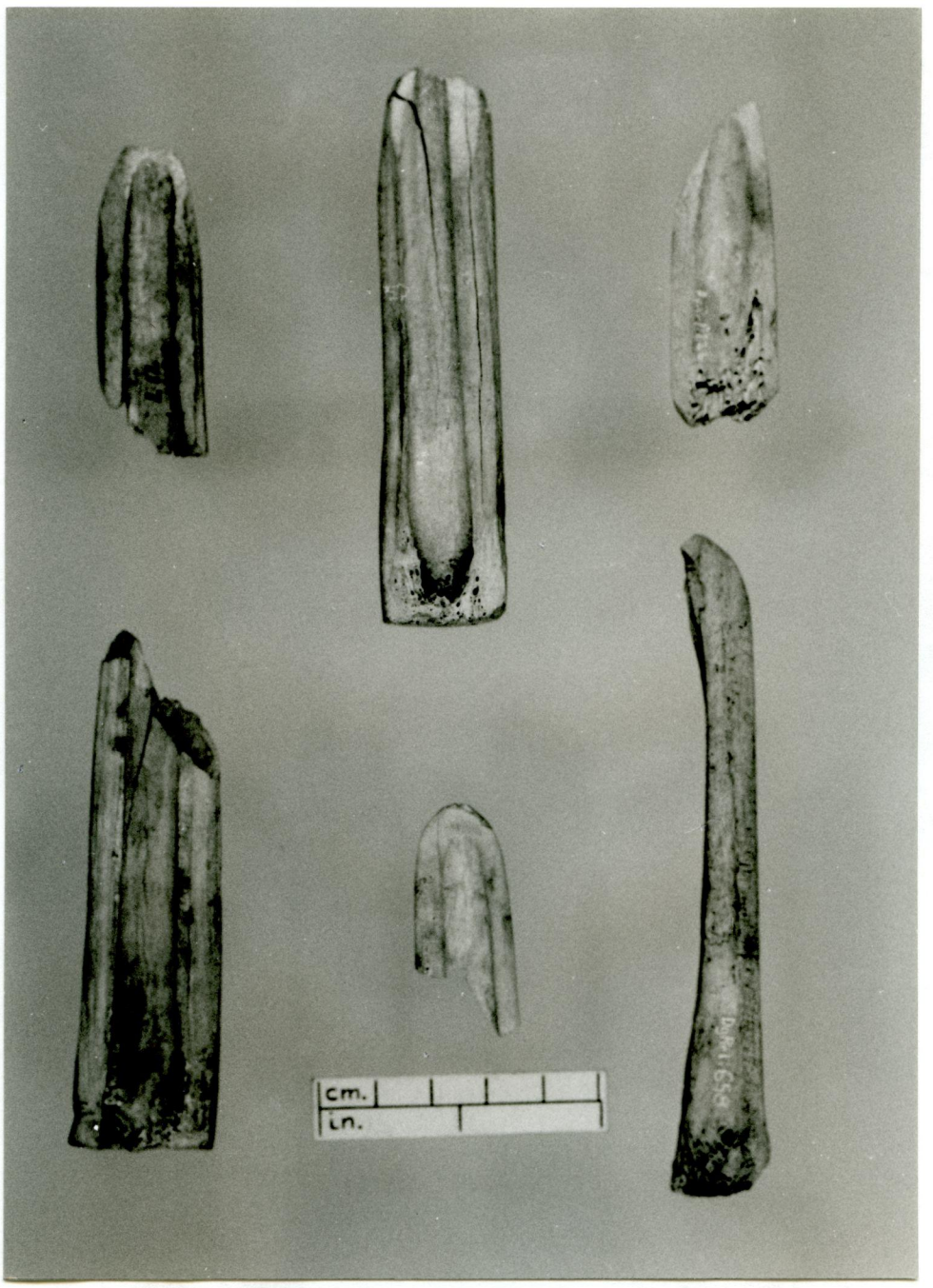


Figure C.2 Bone Chisels With Unilaterally Tapered Ends
Components One and Two, Crescent Beach

ANTLER IMPLEMENTS

SHAPED ANTLER TOOLS

MINIMALLY WORKED ANTLER

WAMF:WORKED ANTLER MEDIAL FRAGMENT: See Appendix B for definition.

Table C.60 Worked Antler Medial Fragments

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. Total=1 incomplete					
Weight	1	15.8	n/a	n/a	n/a
Length	1	6.8	n/a	n/a	n/a
Width	1	2.5	n/a	n/a	n/a
Thickness	1	1.6	n/a	n/a	n/a
Component 2. Total=2 All artifacts are included.					
Weight	2	n/a	n/a	1.1 - 3.1	n/a
Length	2	n/a	n/a	3.1 - 4.0	n/a
Width	2	n/a	n/a	1.1 - 1.4	n/a
Thickness	2	n/a	n/a	.5 - .7	n/a

WAEF:WORKED ANTLER END FRAGMENT: See Appendix B for definition.

Table C.61 Worked Antler End Fragments

	Number	Median	Range	Interquartile Range
Component 1. Total=2 All artifacts are included.				
Weight	2	n/a	12.0 - 16.2	n/a
Length	2	n/a	8.6 - 11.1	n/a
Width	2	n/a	2.0 - 3.0	n/a
Thickness	2	n/a	1.4 - 1.7	n/a
Component 2. Total=2 All artifacts are included.				
Weight	2	n/a	.6 - 3.3	n/a
Length	2	n/a	1.8 - 6.3	n/a
Width	2	n/a	.8 - 1.3	n/a
Thickness	2	n/a	.7 - .8	n/a

PUN:PUNCH: See Appendix B for definition.

Table C.62 Punches

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. Total=1 incomplete					
Weight	1	3.1	n/a	n/a	n/a
Length	1	5.9	n/a	n/a	n/a
Width	1	1.1	n/a	n/a	n/a
Thickness	1	.8	n/a	n/a	n/a

Component 2. No artifacts are present.

SMALL POINTED ANTLER OBJECTS:

AUNP:ANTLER UNIPOINT: See Appendix B for definition.

Table C.63 Antler Unipoints

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. Total=1 incomplete					
Weight	1	3.9	n/a	n/a	n/a
Length	1	8.6	n/a	n/a	n/a
Width	1	.8	n/a	n/a	n/a
Thickness	1	.8	n/a	n/a	n/a
Component 2. Total=1 incomplete					
Weight	1	5.2	n/a	n/a	n/a
Length	1	8.0	n/a	n/a	n/a
Width	1	1.0	n/a	n/a	n/a
Thickness	1	.9	n/a	n/a	n/a

ABIP:ANTLER BIPOINT: See Appendix B for definition.

Table C.64 Antler Bipoints

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. Total=1 complete					
Weight	1	3.7	n/a	n/a	n/a
Length	1	7.1	n/a	n/a	n/a
Width	1	1.0	n/a	n/a	n/a
Thickness	1	.8	n/a	n/a	n/a

Component 2. No artifacts are present.

WEDG: ANTLER WEDGE: See Appendix B for definition.

Table C.65 Antler Wedges

	Number	Msmt	Median	Range	Interquartile Range
Component 1. Total=1 incomplete					
Weight	1	14.0	n/a	n/a	n/a
Length	1	11.9	n/a	n/a	n/a
Width	1	2.1	n/a	n/a	n/a
Thickness	1	1.1	n/a	n/a	n/a
Component 2. Total=4					
Weight	0	n/a	n/a	n/a	n/a
Length	0	n/a	n/a	n/a	n/a
Width	3	n/a	3.1	2.2 - 4.5	n/a
Thickness	3	n/a	1.9	1.7 - 3.0	n/a

BARBED ANTLER POINTS

FUBA:FRAGMENT OF UNILATERALLY BARBED FIXED POINT/HARPOON:

See Appendix B for definition.

Table C.66 Fragments of Unilaterally Barbed Fixed Points/Harpoons

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. Total=1 incomplete					
Weight	1	4.7	n/a	n/a	n/a
Length	1	4.5	n/a	n/a	n/a
Width	1	1.5	n/a	n/a	n/a
Thickness	1	.8	n/a	n/a	n/a

Component 2. No artifacts are present.

DECORATED ANTLER

ZOOA:ZOOMORPHIC OBJECT:

These objects are recognizably animal shaped. Styles vary widely through time and the degree of finishing is also variable.

The function of such objects is interpreted as largely ceremonial or as possible indicators of status. The implement has been fashioned into something distinctive and well made, indicating the importance of the activity in which the tool was used.

Table C.67 Zoomorphic Objects

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. No artifacts are present.					
Component 2. Total=1 incomplete					
Weight	1	5.0	n/a	n/a	n/a
Length	1	9.8	n/a	n/a	n/a
Width	1	3.2	n/a	n/a	n/a
Thickness	1	1.7	n/a	n/a	n/a

SHELL ARTIFACTS

SHAPED SHELL ARTIFACTS

SPND:SHELL PENDANT: See Appendix B for definition.

Table C.68 Shell Pendants

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. Total=1 incomplete					
Weight	1	.5	n/a	n/a	n/a
Length	1	1.5	n/a	n/a	n/a
Width	1	1.0	n/a	n/a	n/a
Thickness	1	.4	n/a	n/a	n/a

Component 2. No artifacts are present.

SHB:SHELL BEAD: See Appendix B for definition.

Table C.69 Shell Beads

	Number	Median	Range	Interquartile Range
Component 1. Total=116				
Weight	95	.1	.1 - .7	.1 - .1
Length	106	.4	.3 - 1.5	.4 - .5
Width	96	.4	.3 - 1.4	.4 - .5
Thickness	106	.1	.1 - .4	.1 - .2
Component 2. Total=30				
Weight	30	.1	.1 - .9	.1 - .1
Length	30	.5	.3 - 1.2	.4 - .8
Width	30	.5	.2 - 1.2	.4 - .7
Thickness	30	.1	.1 - .4	.1 - .2

SLAB:SHELL LABRET:

These objects are the shell counterparts of ground stone labrets but are not as common in the archaeological record partially because of their organic nature.

Like other labrets, their function is one of personal adornment.

Table C.70 **Shell Labrets**

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. No artifacts are present.					
Component 2. Total=1 complete					
Weight	1	5.5	n/a	n/a	n/a
Length	1	4.8	n/a	n/a	n/a
Width	1	1.8	n/a	n/a	n/a
Thickness	1	.9	n/a	n/a	n/a

SAB:SHELL ADZE BLADE: See Appendix B for definition.

Table C.71 **Shell Adze Blades**

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. Total=1 incomplete					
Weight	1	.8	n/a	n/a	n/a
Length	1	1.7	n/a	n/a	n/a
Width	1	1.3	n/a	n/a	n/a
Thickness	1	.3	n/a	n/a	n/a
Component 2. No artifacts are present.					

MGSF:MISCELLANEOUS GROUND SHELL FRAGMENTS: See Appendix B for definition.

Table C.72 **Miscellaneous Ground Shell Fragments**

	Number	Msmt.	Median	Range	Interquartile Range
Component 1. No artifacts are present.					
Component 2. Total=1 incomplete					
Weight	1	.8	n/a	n/a	n/a
Length	1	1.7	n/a	n/a	n/a
Width	1	1.1	n/a	n/a	n/a
Thickness	1	.5	n/a	n/a	n/a