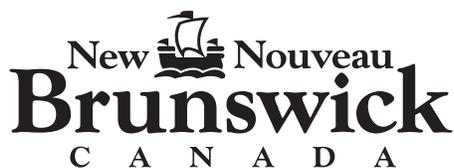


---

*The Oxbow Site 1984*  
*Metepenagiag Mi'kmaq First Nation*  
*Miramichi, New Brunswick*

*NEW BRUNSWICK MANUSCRIPTS IN ARCHAEOLOGY 39*

By  
Patricia Allen



---

Culture and Sport Secretariat

This series is designed to facilitate the distribution of manuscripts relating to New Brunswick archaeology. They will be published in small quantities and will generally be available by special request only.

© Patricia Allen and the Province of New Brunswick

New Brunswick Manuscripts in Archaeology 39.

Edited by: Dr. Frances L. Stewart, Sandy Glidden-Hachey,  
C. Drew Gilbert and Brent D. Suttie

Published by:

Archaeological Services, Heritage Branch  
Culture and Sport Secretariat, 2005.

P.O. Box 6000  
Fredericton, N.B.  
E3B 5H1, Canada

ISBN 1-55396-452-7

Printed in Canada

CNB 2892

## Table Of Contents

<b>List Of Figures</b> .....	4	Layer 9. ....	40
<b>List Of Tables</b> .....	6	Layer 10. ....	40
<b>Abstract.</b> .....	7	Layer 11. ....	40
<b>Acknowledgements</b> .....	7	Layers 12 to 18 .....	40
<b>Chapter 1</b>		Layer 19. ....	40
<b>Introduction.</b> .....	9	Artifacts. ....	40
Oxbow Environs - The Miramichi River District . . .	10	Feature .....	44
Distribution of Natural		Layer 20. ....	46
Resources in the Miramichi River District .....	11	Layer 21. ....	46
<b>Chapter 2</b>		Layer 22. ....	46
<b>A General Description Of The Oxbow Site</b> . . .	13	Summary of the 1984 Cultural Assemblages .....	46
Depositional History .....	14	<b>Chapter 5</b>	
<b>Chapter 3</b>		<b>The 1984 Chronological Framework With A</b>	
<b>Archaeological Research At The Oxbow Site.</b> . .	17	<b>Comparison To The 1978-1979 Chronology</b> . .	51
Initial Tests and Excavations: 1977-1979 .....	17	The Early Maritime Woodland Period .....	51
Excavations in 1984 .....	19	The Middle Maritime Woodland Period .....	54
Details on Stratigraphy and		The Late Maritime Woodland Period. ....	55
Distribution of Cultural Deposits .....	22	Chronology Conclusions. ....	56
<b>Chapter 4</b>		<b>Chapter 6</b>	
<b>Oxbow Site Artifacts And</b>		<b>Site Seasonality And Subsistence</b> .....	57
<b>Features Excavated In 1984.</b> .....	25	Historical Accounts of Mi'kmaq Fishing .....	57
Introduction .....	25	Oxbow Site Faunal Samples .....	58
A Layer by Layer Description of the 1984 Findings .	26	Oxbow Site Botanical Samples .....	61
Layer 1. ....	26	Food Preservation and Storage .....	64
Layer 2. ....	26	A Reconstruction of	
Layer 3. ....	26	Seasonality and Subsistence at Oxbow. ....	66
Layer 4. ....	26	<b>Chapter 7</b>	
Layer 5. ....	27	<b>Other Sites On The Miramichi</b> .....	69
Layer 6. ....	27	The Nature and Distribution of Sites .....	69
Artifacts. ....	27	<b>Chapter 8</b>	
Features. ....	31	<b>Summary And Discussion.</b> .....	73
Layer 7. ....	34	<b>References Cited</b> .....	77
Layer 8. ....	34		
Artifacts. ....	34		
Features. ....	38		

## List Of Figures

- Figure 1 - 1. Some of the areas occupied at Red Bank and surrounding area by Miramichi Mi'kmaq prior to 1500 AD.
- Figure 1 - 2. Aerial photograph of the Oxbow site (CfD11) in foreground.
- Figure 1 - 3. South wall profile of test Unit 77-1, revealing a deeply stratified site.
- Figure 1 - 4. Miramichi estuary, inner and outer Miramichi Bay and environs.
- Figure 1 - 5. Joseph Augustine with a large Atlantic Salmon ca. 1950.
- Figure 2 - 1. Looking downriver over the Oxbow site (CfD11) 1978.
- Figure 2 - 2. View of the Oxbow site prior to clearing for excavation.
- Figure 2 - 3. Surveyors map of 1792 showing the Oxbow inhabited "Indian Village & improvements"
- Figure 2 - 4. North wall of unit 78-12, showing stratigraphy.
- Figure 2 - 5. 1978 Test unit North to South profile showing natural/ cultural layers lightly dipping towards the river.
- Figure 3 - 1. Site map of the Oxbow site showing limits of excavation.
- Figure 3 - 2. 1978 test units. Albert Ferguson and Howard Augustine excavating. Thickness of soil lens varied across the length and width of the site.
- Figure 3 - 3. Madeline Augustine fine spraying the walls to reveal the profile
- Figure 3 - 4. Looking West over final depth of Unit 78-12 and beyond into Unit 79-13.
- Figure 3 - 5. Unit 78-12. Final depth had a deep ceramic bearing layer that guided the 1984 excavations.
- Figure 3 - 6. The crew excavating Unit 84-1 (from left to right) Hadrian Abbott, Terry Tenass, Darren Augustine and Chris Ward.
- Figure 3 - 7. Profile of north wall of Unit 84-2.
- Figure 3 - 8. Unit 84-3 with Joan Peterson and Delbert Ward excavating.
- Figure 3 - 9. Excavating Unit 84-3, (left to right) Joan Peterson and Delbert Ward.
- Figure 3 - 10. Set-up for floating excavated sediments, Todd Ward (left) and Darren Augustine seated.
- Figure 3 - 11. Pam Ward (foreground) and Joan Peterson record keeping at the Oxbow site 1984.
- Figure 3 - 12. Profile of North wall from unit 84-7.
- Figure 3 - 13. During excavation at Oxbow in 1984 soil profiles were clearly marked to coordinate the transfer of information regarding the layers between excavation units.
- Figure 3 - 14. Profile of east wall of Unit 84-5
- Figure 4 - 1. Vessel 300, Layer 4.
- Figure 4 - 2. Vessel 300, Layer 4.
- Figure 4 - 3. Lithic artifacts recovered from Layer 6.
- Figure 4 - 4. Vessel 301, Layer 6.
- Figure 4 - 5. Vessel 303, recovered from Layer 6c.
- Figure 4 - 6. Portion of rim and inverted base of Vessel 303 recovered during 1978 excavation.
- Figure 4 - 7. Vessel 304, Layer 6.
- Figure 4 - 8. Vessel 304, layer 6.
- Figure 4 - 9. Vessel 305, Layer 6c.
- Figure 4 - 10. Vessel 305, layer 6c.
- Figure 4 - 11. Vessel 324, Layer 6.

- Figure 4 -12. Floor Plan of Layer 6c showing artifact locations and features
- Figure 4 - 13. Surface exposure of Feature 2 (6).
- Figure 4 - 14. Surface exposure of Feature 3.
- Figure 4 - 15. Surface exposure of Feature 4.
- Figure 4 -16. Profile showing Feature 4.
- Figure 4 -17. Lithic artifacts from Layer 8.
- Figure 4 -18. Vessel 302, Level 8.
- Figure 4 - 19. Vessel 302, Layer 8.
- Figure 4 - 20. Vessel Lots 306, 307, 309 & 310, Level 8.
- Figure 4 - 21. Vessels 306(uR), 307(IR), 309(uL), and 310(IL), Layer 8.
- Figure 4 - 22. Vessel lot 308, Level 8.
- Figure 4 - 23. Vessel 308, Layer 8.
- Figure 4 - 23. Floor plan for Layer 8.
- Figure 4 - 24. Projectile point recovered from Layer 10 (1984).
- Figure 4 - 25. (Left to right) Joan Peterson and Pamela Ward collecting wood charcoal sample (1984).
- Figure 4 - 26. Lithic artifacts recovered from Layer 19.
- Figure 4 - 27. Steep-edged unifaces recovered from Layer 19.
- Figure 4 - 28. Ground stone axe in situ on the surface of Layer 19.
- Figure 4 - 29. Vessel lots 313, 314, 316, 317, 318, 321 Layer 19.
- Figure 4 - 30. Vessels 313, 314, 316, 317, 318, and 321 Layer 19.
- Figure 4 - 31. Floor Plan for Layer 19.
- Figure 4 - 32. Surface exposure of Feature 5, Layer 19.
- Figure 4 - 33. Artists rendering of ceramic vessel manufacturing process.
- Figure 4 - 34. Sequence of vessel rim attributes (1984)
- Figure 5 - 1. Oxbow Site Central Area Sequence (Allen 1980a).
- Figure 5 - 2. Oxbow site Ceramic Sequence (78-11 and 78-4).
- Figure 5 - 3. Artifacts recovered from earliest layers at the Oxbow site: 1984
- Figure 5 - 4. Oxbow site central area sequence: 1984
- Figure 5 - 5. Bifaces recovered during 1984 excavations.
- Figure 5 - 6. Projectile point sequence for the Oxbow site.
- Figure 6 - 1. Fly fishing for Salmon on the Little Southwest Miramichi, Upper Oxbow, just above the Oxbow site - CfD11 (1985).
- Figure 6 - 2. Sturgeon recently caught at Red Bank, Joseph Ward (left) and William Ward ca. 1980.
- Figure 6 - 3. Artists rendering of hunting sturgeon by torchlight
- Figure 6 - 4. William John Augustine with a large Atlantic Salmon caught at Red Bank (1979).
- Figure 6 - 5. (From left to right) Tom Cloud (Red Bank) and Joe Augustine (Big Cove) at Red Bank ca. 1950.
- Figure 6 - 6. Routine collecting of charcoal and burnt soil samples from Oxbow hearths provided valuable information concerning site seasonality and diet. (1984).
- Figure 6 - 7. Artists rendering of peoples collecting plants and berries
- Figure 6 - 8. Artists rendering of bark and quill containers filled with berries
- Figure 6 - 9. Fiddleheads (*Metteuccia Struthiopteris*) grow in abundance on the islands at Red Bank.
- Figure 6 - 10. Artist rendering of the interior of a 19th Century dwelling in New Brunswick
- Figure 6 - 11. Artists rendering of a drying rack in use.
- Figure 6 - 12. Pit feature excavated at the Mejipke site (1983).
- Figure 6 - 13. Mary Augustine fishing at Red Bank ca. 1950

- Figure 7 - 1. Surveying along the Mirimichi Estuary (1980).
- Figure 7 - 2. Pointe aux Sables site Baie St.Anne (CgDf1) (1982).
- Figure 7 -3. David Keenlyside investigated Tracadie River sites in the 1970s.
- Figure 7 - 4. Tammy Prince (foreground) and Michael Nicholas at a test excavation on the Wilson's Point site (CfDj33)(1991).
- Figure 7 - 5. View from upper terrace looking down on the Davidson site (CfDk48).
- Figure 7 - 6. Map of Red Bank area, showing major archaeological sites.
- Figure 7 - 7. Bill Cockburn and Howard Augustine during the 1975 excavations at the Howe site.
- Figure 7 - 8. Mejipki site during excavation (horizontal scale 50cm) (1983).
- Figure 7 - 9. Madeline Augustine excavating at the Wilson site.
- Figure 7 - 10. Looking down the main Northwest Miramichi across the Wilson site (1975).
- Figure 8 - 1. Artists rendering of eel-spearing through the ice in winter

## List Of Tables

- Table 1. Layer Descriptions for the Oxbow Site 1984 Excavations.
- Table 2. Artifact Distribution in the 1984 Oxbow Site Layers.
- Table 3. Steep-edged Uniface Attributes - Layer 19, Oxbow Site.
- Table 4. Edible Wild Plant Remains from the Oxbow Site.

## Abstract

During the summer of 1984 limited excavations were conducted on a portion of the deeply stratified Oxbow site in Northumberland County, New Brunswick. A Mi'kmaq Maritime Woodland Period occupation, the Oxbow site is located on the north bank of the Little Southwest Miramichi River about one kilometre west of the present day community of Metepenagiag Mi'kmaq First Nation (Red Bank).

The 1984 Oxbow project was initiated in an effort to substantiate the findings of earlier work in 1978 and 1979, and as a part of New Brunswick's continuing research into pre-contact chronology and life ways within the Miramichi River District. The project was co-sponsored by a federal government Summer Canada Works grant and by the Archaeology Branch of New Brunswick's then Department of Historical and Cultural Resources, currently Archaeological Services Unit, Heritage Branch, Culture and Sport Secretariat.

With a small crew and a new excavation approach substantially less site area was excavated in 1984 than had been in either of the two previous years. The information recovered in 1984 was gathered according to natural and cultural layers rather than arbitrary levels. In 1984, several distinctive assemblages were identified.

The information resulting from the 1984 work confirmed, with only minor variations, the patterns reported in *The Oxbow Site: Chronology and Prehistory in Northeastern New Brunswick* (Allen 1981) and in *The Oxbow Site: An Archaeological Framework for Northeastern New Brunswick* (Allen 1980a). The evidence added by the 1984 excavations reinforced both the previously formulated cultural chronology and the conclusion that the Oxbow site was a warm weather fishing camp. The earliest cultural assemblage on the site has been clearly identified and expanded to include both plain and pseudo-scallop decorated ceramics, large scrapers, and medium to large stemmed projectile points. The artifact associations found in this assemblage have not been identified, as yet, in other Maritime sites.

Following Keenlyside (1984) the term Maritime Woodland is used to denote the Period during which the Miramichi Mi'kmaq people made and used earthenware ceramics. The Early Middle Maritime Woodland ceramics from this assemblage continue to confound the ceramic record as defined in the adjacent New England States. This report, compiled in the 1980s, has not been updated to include more recent research. The excavation results however, can assist other researchers and the Metepenagiag Mi'kmaq First Nation with an accurate interpretation of Miramichi Cultural History.

## Acknowledgements

The 1984 Oxbow archaeology project was co-sponsored by a federal government Summer Canada Works grant and the Province of New Brunswick's Archaeology Branch, of the then Department of Historical and Cultural Resources. Without funding from both these agencies and without the co-operation of the Red Bank First Nation, the project could not have taken place. I wish to give special thanks to the late Chief Gerald Levi and his Band Council for permission to excavate at the Oxbow site in 1984.

During the nine weeks of the field programme, a number of students participated in both excavation and laboratory work. I would like to thank the following for their daily contributions: Hadrian Abbott, Darren Augustine, Gail Dedam, Joan Peterson, Claudia Tenass, Terry Tenass, Christopher Ward, Delbert Ward, Pamela Ward and Todd Ward. Added special thanks are extended to Joan Peterson who shared accommodations and many after-hours duties with me.

In addition to the regular field crew, I would thank Dr. David Keenlyside and Stacy Gurling, of the Canadian Museum of Civilization, for their voluntary services during the last week of the project. I would also like to extend my appreciation to Dr. Christopher Turnbull and those who assisted him in removing a soil profile from the central portion of the site. Thanks are also extended to Linda Jefferson for her visits to the site and for her attempts to identify blood residues on the Oxbow lithics.

During the analysis of the 1984 material, I received assistance from a number of persons and institutions. Alan Seaman, a geologist with New Brunswick's Department of Natural Resources, donated his time to examine and comment on the site's stratigraphy and the local geology. Dr. Arthur Speiss of the Maine Historic Preservation Commission generously examined and reported on the small calcined bones from the Oxbow hearths. David Black, then of the Anthropology Department, McMaster University, examined and offered comments on some shellfish periostrachum found at the site. I gratefully acknowledge the contributions of these individuals.

The author is indebted to the late Dr. Harold Hinds for his time consuming studies of the Oxbow botanical samples from both the 1978 and 1984 seasons. Beth Armstrong-Bewick is thanked for her many hours in the laboratory extracting the botanical specimens from numerous flotation samples. I also here gratefully acknowledge the contribution of historical research by Mr. Fidèle Thériault, a historian, then with the provincial Archaeology Branch. For his exceptionally fine illustrations, a number of which are reproduced in this report, I owe much appreciation to Angel Gomez-Miguelangez. Another note of appreciation goes to Drew Gilbert for his fine photos of the Oxbow ceramics and to Francine Ward-Francis for her interpretive line drawings. Both are included in this report. I would also like to extend my appreciation to Frances Stewart, Sandy Glidden-Hachey, Drew Gilbert and Brent Suttie for their edits of the final draft of this report.

In addition to the above contributors, I would also like to thank Adele Emin-Grant and Garnet DeMerchant for their work on Oxbow soil samples. Facilities for these studies were provided by both Agriculture Canada and the New Brunswick Department of Agriculture, for which I am grateful. Also, I would like to gratefully acknowledge the Archaeological Survey of Canada, National Museum of Civilization for two 1984 radiocarbon dates from the site. To all those mentioned as well as to others who assisted with the work of the earlier years at Oxbow, I offer my sincere appreciation.

During the 1970s and 1980s, I spent a good portion of my life doing archaeological field research in the Red Bank area. Augmenting the archaeology, the strong friendships extended to me by members of the Joseph Augustine family allowed me to know the lands, waters and people of this place as well as any non-resident could. I respectfully acknowledge the major contribution of the late Mr. Joseph Augustine to this and other archaeological projects in the Red Bank area. Mr. Augustine found the Oxbow site and shared his knowledge of language and natural resources. His clever hands and sharp sense of humour made working together an absolute pleasure. I also especially thank Madeline Augustine for her support and kindness over the past years. This report is dedicated to the memory of her son Darren.

# Chapter 1

## Introduction

During the summers of 1975, 1976, and 1977, at the same time as excavations were taking place at the Augustine Mound, Red Bank, New Brunswick, archaeological surveys searching for other sites were being conducted in the surrounding areas. Over 50 pre-contact sites were located within a one kilometre radius of the confluence of the Northwest and the Little Southwest Miramichi rivers at Red Bank. The Oxbow site was one of these (Figures 1-1, 1-2). The Oxbow site had been reported earlier by the late Mr. Joseph Augustine of Red Bank (Figure 1-5) and then tested with one test unit in 1977 (Figure 1-3).

The 1977 testing of the Oxbow site revealed that it was a large, basically undisturbed and culturally stratified Maritime Woodland period living area. The importance of the site, with its potential for establishing a Maritime Woodland period cultural chronology for the Miramichi area, was recognized immediately (Figure 1-3).



Figure 1 - 2. Aerial photograph of the Oxbow site (CfD11) in foreground.

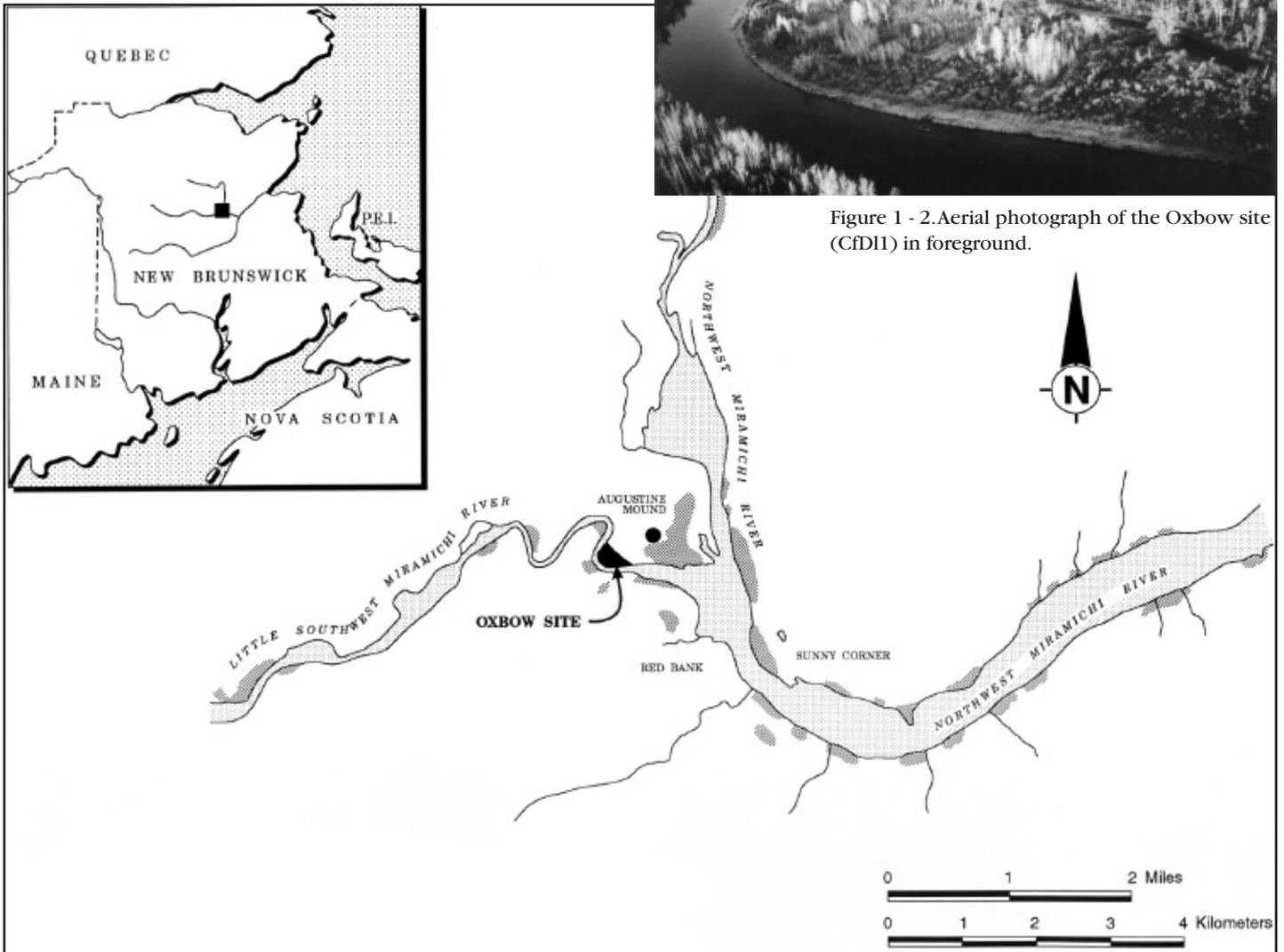


Figure 1 - 1. Some of the areas occupied at Red Bank and Surrounding area by Miramichi Mi'kmaq prior to 1500 AD (Artist: Angel Gomez Miguelagez 1987).

With the agreement and co-operation of the Red Bank First Nation, archaeological excavations were conducted on the site during the summers of 1978, 1979, and 1984. This report describes the work accomplished in 1984 and the conclusions reached on the basis of that work. The results of the 1984 excavations are compared to those of the 1978 and 1979 excavations. The combined information allows confirmation of the earlier sequences proposed for the Oxbow site and a reconstruction of some of the activities of the ancestral Mi'kmaq who lived in this region.



Figure 1 - 3. South wall profile of test Unit 77-1, revealing a deeply stratified site.

### Oxbow Environs - The Miramichi River District

The Miramichi River drains approximately 25,000 square kilometres of northeastern and central New Brunswick through two main branches and their tributaries. The main Miramichi River pours into a somewhat protected Inner Bay, which is bordered by a series of shoal islands, to the east of which lies the Outer Bay and the Gulf of Saint Lawrence. Along the north shore of the Inner and Outer Bays, there are four major indentations formed by the Bartibog, Tracadie, Pokemouche and Tabusintac Rivers. Along the south shore lie fairly extensive marshlands and the mouths of the Napan, Black, Baie du Vin, and Eel Rivers. These southern rivers are smaller than those on the north shore. The Miramichi estuary is comprised of the Inner Bay, the main Miramichi River, and about 25 and 35 kilometres of the Northwest and Southwest River branches respectively (Figure 1-4). The head of tide on the Northwest River occurs near its junction with the Little Southwest Miramichi, just above the present day community of Red. On the Southwest Miramichi the head of tide occurs near its junction with the Renous River at the present day village of Renous.

The present winter freeze-up date in the river basin is near mid-December. By mid- to late-April, the river is usually ice-free (Philpott 1978:59). During

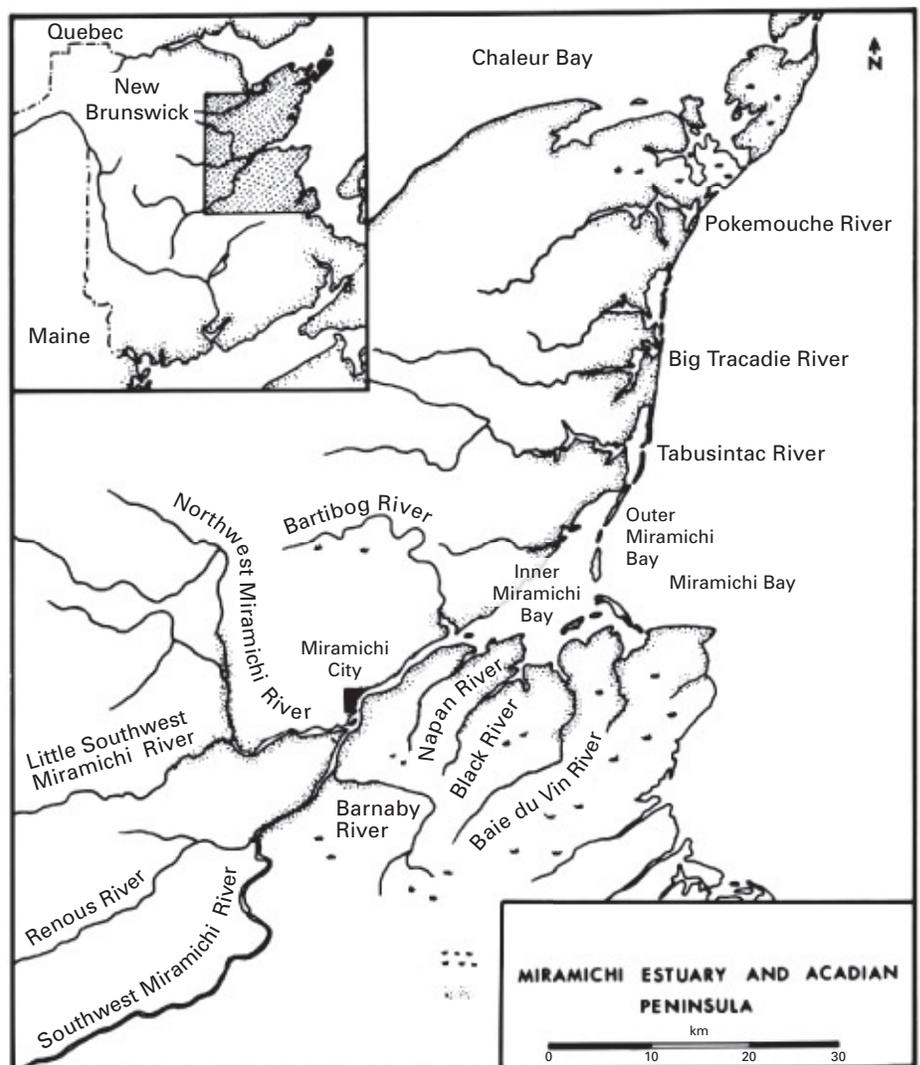


Figure 1 - 4. Miramichi estuary, inner and outer Miramichi Bay and environs.

spring freshets, moderate flooding of river banks is common. Occasionally, more serious flooding will cause severe erosion to river edges and terraces. Freshets in the Red Bank area have caused alluvial sediments to be deposited at the confluence of the Northwest and the Little Southwest rivers creating a number of islands (Jacques Thibault pers. comm. 1978). Such erosion and deposition has affected the archaeological sites in the region over the years.

### Distribution of Natural Resources in the Miramichi River District

The Miramichi River district lies within the Eastern Lowlands section of the Acadia forest region (Rowe 1972:115). This mixed forest, which probably became established here between 2500 and 3500 years ago (Mott 1975), includes a variety of trees and bushes, a number of which produce edible nuts and berries. The area also supports other vegetables and grains. Some of the more common of these wild foods have been identified in the Oxbow botanical sample, described in Chapter 6.

The Miramichi district includes fauna of both the coastal/estuary and the river/forest zones. A partial inventory of species available in this district in historic times includes the larger land mammals such as Moose (*Alces alces*), White-tailed Deer (*Odocoileus virginianus*), Maritime Woodland Caribou (*Rangifer tarandus*), and Black Bear (*Ursus americanus*). Smaller fur bearing animals such as Beaver (*Castor canadensis*), Muskrat (*Ondatra zibethicus*), River Otter (*Lutra canadensis*), Woodchuck (*Marmota monax*), Red Fox (*Vulpes vulpes*) and Snowshoe Rabbit (*Lepus americanus*) can also be found in the surrounding area.

Sea mammals, which are often seen in the estuary, include Harbour Seal (*Phoca vitulina*), Gray Seal (*Halichoerus grypus*), and Harbour Porpoise (*Phocoena phocoena*). Formerly, Walrus (*Odobenus rosmarus*) were known to frequent the Outer Bay (Squires 1968). (Scientific names for mammals follow Peterson 1966.)

Many bird species inhabit the Miramichi area. The Acadia forests support the Spruce Grouse (*Dendragapus canadensis*) and the Ruffed Grouse (*Bonasa umbellus*) while the sheltered coastal marshlands, common along the south shores,

provide spring and fall feeding areas for many geese and ducks with particularly high numbers of Canada Goose (*Branta canadensis*) and American Brant (*Branta bernicla*). Of the other waterfowl which nest in these areas, the Black Duck (*Anas rubripes*) is the most common. In late spring, Herring Gulls (*Larus argentatus smithsonianus*) nest in inshore colonies. (Scientific names for birds follow Godfrey 1986.)

The Outer Bay estuary and inland waterways of the Miramichi support a wide variety of marine fish species. In the Bays, Smooth Flounder (*Liopsetta putnami*), Winter Flounder (*Pseudopleuronectes americanus*) and Atlantic Herring (*Clupea harengus*) swim near the shores in late spring. The Inner Bay portion of the estuary also supports, although not abundantly, Softshell Clam (*Mya arenaria*), Quahog (*Mercenaria mercenaria*), Bar Clam (*Spisula solidissima*), Common Blue Mussel (*Mytilus edulis*), Eastern Oyster (*Crassostrea virginica*) and Lobster (*Homarus americanus*) (Philpott 1978:192). (Scientific names for invertebrates follow Abbott 1968.)

The major anadromous fish runs up the Miramichi River begin sometime during the latter part of April or early May. Rainbow Smelt (*Osmerus mordax*) are the first to move up the rivers, often during the height of the spring freshet. This species is greedily consumed by the black Atlantic Salmon (*Salmo salar*) (Figure 1-5) which spends the winter under the river ice. The smelt are closely followed by runs of American Shad (*Alosa sapidissima*), Striped Bass (*Morone saxatilis*), Gaspereau (*Alosa pseudoharengus*), Sea Trout (*Salvelinus fontinalis*) and the first run of bright Atlantic Salmon (*Salmo salar*). Salmon are present in the rivers throughout the summer and frequently have another peak run in the fall.

Atlantic Sturgeon (*Acipenser oxyrinchus*) can be added to the above list. In the past, sturgeon reached their spawning grounds, at the head of tide, in late May. Other fishes of past and present economic importance to the Miramichi are the American Eel (*Anguilla rostrata*), which spends most of its life in fresh water and burrows into the muddy river bottoms in winter, and the Atlantic

Tomcod (*Microgadus tomcod*), which ascends the rivers in large numbers to reach the head of tide spawning areas in mid-December.

In addition to the above, the Miramichi supports an additional 25 species of freshwater fishes (Leim and Scott 1966). A more detailed summary of the geography, climate, flora and fauna of the Miramichi River district can be found in Allen (1981).

(Scientific names for fish follow Scott and Scott 1988).



Figure 1 - 5. Joseph Augustine with a large Atlantic Salmon ca. 1950.  
(Photo courtesy of Madeline Augustine)

## Chapter 2

### A General Description Of The Oxbow Site

The Oxbow site is situated on a low terrace which forms the inside curve on the first bend on the Little Southwest Miramichi just above the community of Red Bank (Figure 2-1). The site area is locally referred to as *Oxbow*. The site itself, under the Borden system of site designation for sites all across Canada, is registered as CfDI-1. The site is on land owned by the Metepenagiag Mi'kmaq First Nation of Northumberland County, New Brunswick and is officially a portion of Red Bank Reserve No.4.



Figure 2 - 1. Looking downriver over the Oxbow site (Cfdl-1) 1978.

The site is located on the river flood plain; as a result, upon occasions of high water, particularly during spring freshets, the entire Oxbow terrace, including the site, becomes inundated. During periods of average water level, the more westerly portions of the Oxbow site lie adjacent to an excellent salmon fishing pool. Shallower waters of the same pool extend downriver for a distance of several hundred meters. Presently the head of tide on the Little Southwest Miramichi is located near the lower Oxbow bend at the western extremity

of the site. Upstream from this point, the water is shallower and considerably more rapid. The site is bounded on the northeast by a narrow strip of river backwater. Across from the upper end of the Oxbow site, on the south bank of the river, a small unnamed brook flows into the Little Southwest Miramichi River.



Figure 2 - 2. View of the Oxbow site prior to clearing for excavation.

The Oxbow site today is mostly covered by a thick tangle of alder and hawthorn bushes (Figure 2-2). Approximately 40 meters north of the river, young poplar trees dominate with a few spruce and pine trees interspersed. The western sections of the site are covered with patches of wild hay, mixed bramble and hawthorn bushes. About 500 meters northwest of the river, a woods road connects the lower Oxbow terrace to higher elevations and associated gravel pits.

Historically, the Miramichi Mi'kmaq used the Oxbow terrace; a 1792 surveyor's map bears a note indicating that the Oxbow site was at that time, at least the temporary home for "the tribe of Indians of which Chief Francis Julian was the head" (Figure 2-3). The terrace was farmed during the 19th and 20th century by the Red Bank First Nation and as recently as 1950, portions of the site were cultivated (Joseph Augustine, pers. comm. 1975). Slight furrows caused by ploughing and a shallow cart track are still visible as surface features on the eastern portions of the site. Bulldozer road clearing operations and ice push by recent freshet jams have altered some surface areas on the western portions of the site.



Figure 2 - 4. North wall of unit 78-12, showing stratigraphy. deposited during periods of exceptionally high water. Testing and excavation during 1978 and 1979 resulted in numerous profile drawings, colour

slides, and black and white photographs depicting the stratigraphy from all areas of the site.

During the 1984 excavations, in addition to using the above-mentioned recording methods, a profile column was removed from the central area of the site. Following an examination of this profile and the viewing of air photos and maps of the surrounding area, geologist Alan Seaman of New Brunswick's

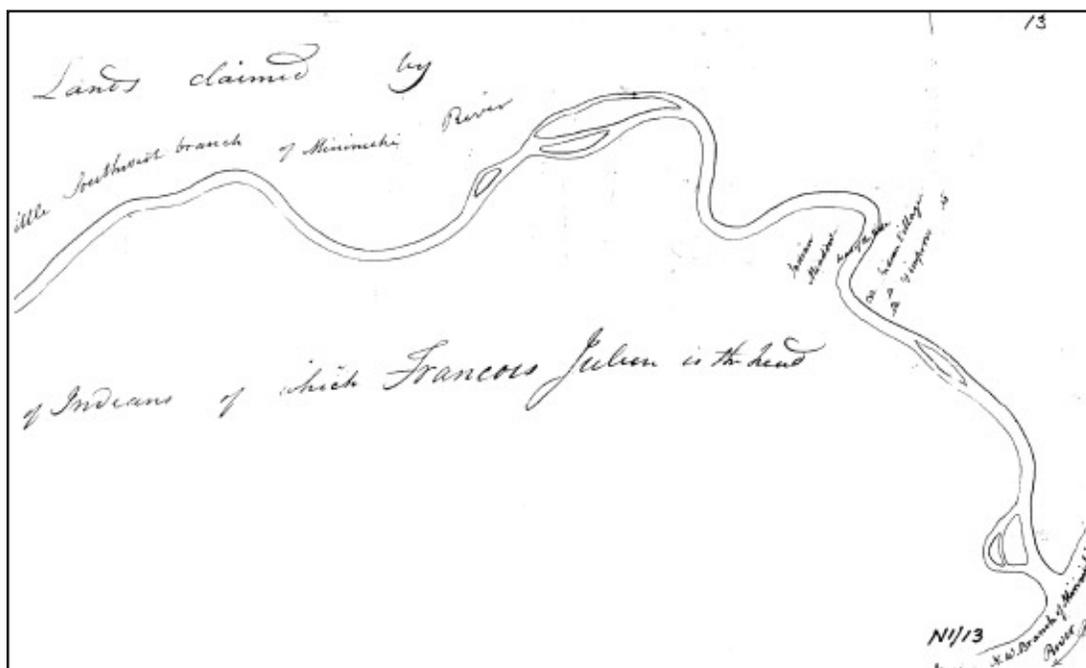


Figure 2 - 3. Surveyors map of 1792 showing the Oxbow inhabited "Indian Village & improvements" (New Brunswick Provincial Archives - Northumberland County Grant Book).

## Depositional History

During the initial testing of the site in 1977, the Oxbow terrace was identified as being alluvial in origin. The near level riverside terrace is composed of over 2.5 metres of layered sands and silts

Department of Natural Resources, offered comments on the composition of the site and its depositional history. The North to South profiles of most units across the site attest to the manner in which the site has been built up during recent

geological time (Allen 1981: Figures 5, 6, 7, 10, 12). The Oxbow terrace began as a point bar deposit, dipping southwards towards the river channel. At the base of the site, mixed coarse sand, underlain by large river cobbles (Figure 2-4) indicate the once submerged beginnings of the terrace (Alan Seaman, pers. comm. 1985). On top of this, a low riverside terrace emerged as layers of sediment were added over the years.



Figure 2 - 5. 1978 Test unit North to South profile showing natural/cultural layers lightly dipping towards the river (from right to left).

Additional layers of sand and silt not only built up the terrace but also gradually extended it further southwards. The east wall profile of Unit 84-5 indicates that as this southward building of the terrace progressed, sand and silt layers, non-existent in areas further back from the river, were added only to those surface areas that were adjacent to the river (Figure 3-14). This process continues today, as evidenced by fresh sand deposits located along the east-west oriented river bank. A large surface sand deposit on the western end of the site, near Unit 78-11, is the result of an unusually high spring freshet in 1972 (Joseph Augustine, pers. comm. 1978). A 10cm to 20cm thick southward sloping deposit of sand located just beneath the surface of Unit 78-3 is probably also a consequence of this recent flood (Allen 1981).

Similar to this recent sand lens, earlier deposits are not evenly distributed, in either their thickness or the extent of their surface areas across the terrace. Profiles from the west, central and eastern sectors of the site clearly illustrate the varied stratigraphy. Profiles from units more than 20 or 30 metres apart cannot be temporally aligned using soil strata or the depth from the surface. Rather the confusing array of natural strata can only be compared

through matching cultural levels and, more cautiously, with the assistance of radiocarbon dates (Allen 1981). Profiles from adjacent or more closely spaced excavation units can however, be confidently matched.

Depending on the velocity, height and content of past flood events, the Oxbow terrace was at times eroded, added to, and selectively scarred (Alan Seaman, pers. comm. 1984). Entire layers of sediment or portions thereof could have been carried off by swift flood waters or gouged by the bulldozer like action of large ice flows. Disruptions to gradual

soil formation of this nature can occasionally be discerned in the north to south profiles of excavation units across the site (Figure 2-5). One particularly heavy disturbance, originally thought to be caused by a pre-contact ice jam, mutilated a subterranean area in Unit 79-13. A later closer assessment of the facts revealed that the deformed masses of sediment on this portion of the site had been caused by seismically-induced liquefaction of unfrozen sediment. This disturbance would have been a result of an earthquake with the magnitude of 5 or greater (Broster, Allen and Burke 1993). This portion of the site was avoided in 1984 and information from the compromised area was not included in earlier analysis. Other smaller disturbances to the strata of the Oxbow site have been observed and attributed to rodent activity, root penetration, and to the 19th and 20th century farming activities on the site. Evidence of farming occurs in the uppermost 30cm of the site.



## Chapter 3

### Archaeological Research At The Oxbow Site

#### Initial Tests and Excavations: 1977-1979

During the summer of 1977, a two metre square test Unit 77-1, was excavated in an area later shown to be centrally located on the Oxbow site (Figure 3-1). The excavation of this unit resulted in the identification of a deeply stratified site, which produced cultural materials in the form of pottery, lithic debitage, stone tools, and hearth features. Such indications of past human activities continued to be uncovered as far down as 168 cm. The depth and volume of material suggested that the site was significant and had be subject to a long history of use. Based upon this assessment, it was decided that we would return to conduct further excavations the following summer.

During the spring and summer of 1978, testing began with nine, two-metre square excavation units being placed at varying distances from the river's edge, along and beyond a 200 metre East to West grid line (Figure 3-1). One test trench, 78A, was established perpendicular to the river in an attempt to clarify the depositional history of the terrace. All nine test units and the trench were excavated in 20 cm arbitrary levels (Figure 3-2). Vertical control was established through the use of a datum point located at the far eastern end of the site.



Figure 3 - 2.  
1978 test units. Albert Ferguson and Howard Augustine excavating.  
Thickness of soil lens varied across the length and width of the site.

With one exception, the nine test units produced pre-contact cultural material while the uppermost levels of some also produced historic materials. The most productive areas produced a concentration of lithic debitage, ceramics, and hearth features within the first meter. Scattered finds were recovered to depths of up to 220cm. Test units on the far eastern and northern sections of the site did not produce indications of human activity to as great a depth or in as great an abundance as units in the western and more central parts of the site.

The 1978 testing showed that the Oxbow site extended in an east-west direction for a distance of at least 200 metres and that it had a varying width from 40 to 80 metres. Testing also revealed that the layering of the sand and silt deposits were by no means uniform across the site and in most areas the compact layers of similarly coloured silts proved very difficult to identify and to segregate. Thus, it was decided that larger units should be excavated in manageable 10 cm levels and that the varying stratigraphy should be recorded accurately for each unit.

Three areas were chosen in which to concentrate excavations during the remaining 1978 field season. Unit 78-10, a six by seven metre rectangular unit, was excavated near the eastern end of the site, Unit 78-11, a five metre square was on the western end, while Unit 78-12, another five metre square, was positioned in the central area of the site.

All of the excavation work at Oxbow during 1978 was shovel-shining except when a feature or a concentration of cultural materials warranted the use of smaller tools, primarily trowels. All excavated soil from the larger excavation units was sifted through a quarter inch, wire mesh screen before being discarded. Soil from hearth areas was collected for floatation. Of the 140 square meters of the site opened during the 1978 season, 115 square meters were totally excavated. By the end of the 1978 season, it was obvious that this site not only extended over a large area but also that it contained rich archaeological

deposits to considerable depths. Based upon these excavations, the site was assessed as the most deeply stratified archaeological site known in the Maritime Provinces and had the potential for revealing much about the past of the Mi'kmaq peoples in this area (Figure 3-3).



Figure 3 - 3. Madeline Augustine fine spraying the walls to reveal the profile.

During the spring of 1979 work at the Oxbow site resumed. Unit 78-12 was completely excavated and two new units were opened. At the western end of the site, a five by five metre square, Unit 79-14 was placed just south of Unit 78-11. Near the central portion of the site, a five by six metre rectangular unit, Unit 79-13, was placed just west of Unit 78-12.



Figure 3 - 4. Looking West over final depth of Unit 78-12 and beyond into Unit 79-13.

These two 1979 units were excavated in the same manner as the 1978 units had been. The 1979 units added an additional 55 square meters to the total excavated area of site (Figure 3-1).

Reports on the significant discoveries made during the late 1970s at this large site are available. Results of the 1978 excavations at the Oxbow site are detailed in *The Oxbow Site: Chronology and Prehistory in Northeastern New Brunswick* (Allen 1981). Important chronological and technological information has been drawn from the 1979 record and this data has been combined with the 1978 information to produce three papers: *The Oxbow Site: An Archaeological Framework For Northeastern New Brunswick* (Allen 1980a), *Ceramics From a Stratified Site in Northeastern New Brunswick* (Allen 1982a) and *Maritime Woodland period Settlement and Subsistence Practices in the Miramichi River District of Northeastern New Brunswick* (Allen 1983).

To summarize, a significant amount of work was conducted at the Oxbow site during the late 1970s. The horizontal and vertical limits of the site were established and Oxbow was recognized as one of the largest and most intensively occupied Maritime Woodland period sites in the Maritimes. Charred food remains from hearth areas throughout the site provided ample evidence to define Oxbow as a spring, summer and early fall fishing camp (Allen 1983). The stratified nature of the site provided a chronological framework for Maritime Woodland period studies in the Miramichi River district and beyond (Allen 1980a, 1982a). As an important added benefit, the site also introduced the Red Bank Mi'kmaq community to tangible evidence of their near continuous and over 2000 year old history in the area.

The 1978-1979 Oxbow research provided much useful information about the site and local history, extending back between 2000 and 3000 years. Some of the initial Oxbow findings complicated and confused our previous understandings of regional cultural change and material culture over time. Several of the radiocarbon dates from the site, although consistent within the Oxbow sequence, were thought by some archaeologists to be too early considering the styles of some of the artifacts associated with the dated levels. In addition, some researchers questioned the real association of certain artifacts. Despite careful excavation and recording techniques, the dates obtained raised a question: Did the combination of profile drawings and arbitrary levels used during the 1978-1979

research lack the accuracy needed to adequately register the chronological record provided by this site?

To answer this question and also, admittedly, in an effort to substantiate the 1978-1979 research results, a nine week field programme was planned for the summer of 1984. The design of the programme incorporated several factors, the most important of which were: 1) confronting the unevenness of alluvium build up across the terrace, 2) avoiding the subterranean disturbed areas discovered in 1979, and 3) excavating a discrete cultural assemblage with carbon samples from a deep ceramic bearing layer. Such an undisturbed area had been discovered in the fall of 1978. In 1984, an objective was to relocate this deposit and then to excavate other parts of it carefully, in order to dispel any doubts of a true association among the stratigraphy, the cultural items uncovered, and the charcoal collected for dating. With these objectives in mind, an area for excavation was selected and the 1984 field approach was devised.

### Excavations in 1984

The 1984 work area was located in the central portion of the site (Figure 3-1). It was in this area, near the south wall and base of Unit 78-12 that a deep ceramic bearing level had previously been discovered (Figure 3-5). Profile drawings from Unit 78-12 displayed clearly identifiable

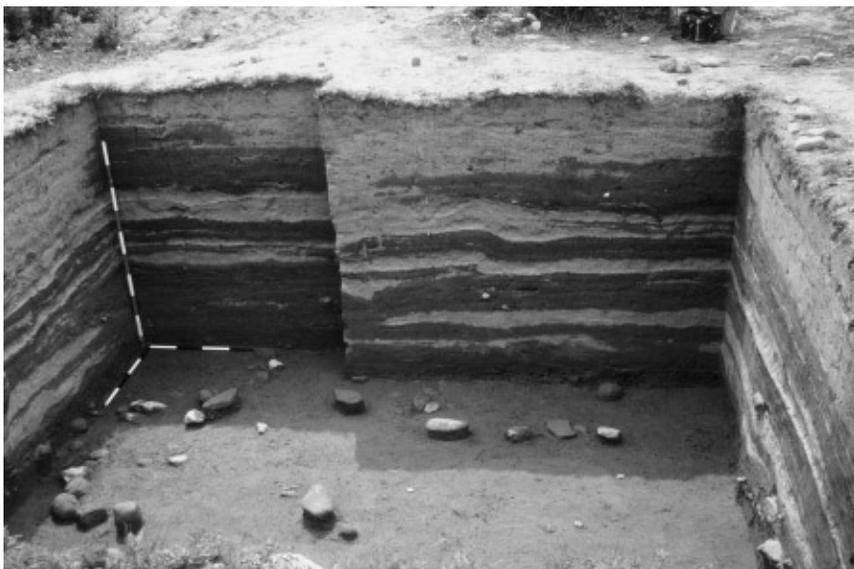


Figure 3 - 5. Unit 78-12 Final depth had a deep ceramic bearing layer that guided the 1984 excavations.

levels of sand and silt interrupted by a few charcoal-stained silt bands in the upper half of the profile. With the exception of some root involvement near the surface, the area was clear of disturbance. Although, for the most part, the strata in the east wall of Unit 78A sloped southward, the profile was uninterrupted.

Initially, two areas in close proximity were identified for excavation during the 1984 season. Unit 84-1, a five by one metre unit, was placed adjacent the east wall of Unit 78A and Unit 84-2, a five metre by 50 cm unit, was placed adjacent the south wall of Unit 78-12 (Figure 3-1). It was decided that a different technique of excavating would be used in 1984. Both Units 84-1 and 84-2 were to be excavated in the natural deposition layers evident on the south wall of Unit 78-12 and on the east wall of Unit 78A, respectively. This strategy of excavating by natural soil layers differed from the previous technique. Prior to 1984, the excavation was by arbitrary levels of 10 and 20 cm thick, as mentioned above.

Using natural layers meant that the extents of the various excavation layers in 1984 were determined by their own configurations and the ability of the excavators to accurately observe and follow them in the vertical profiles. To assist in this, trenches for profile viewing were dug along the southern and eastern sections of previously excavated Units 78-12 and 78A. The removal of fill from these units was accomplished by shovel and then the associated profiles were cleaned by trowel.

Very soon, it became evident that the one metre width and the southward sloping strata of Unit 84-1 were causing problems. Excavators were having difficulty following the natural strata (Figure 3-6). At a depth of about one meter, the unit was divided into two sections, each 50 cm wide. This proved successful at first but, as the depth increased, layers once again became difficult to follow. By the end of the third week of excavation, a decision was made to abandon work in Unit 84-1. This was done to avoid any possible confusion or assemblage mixing.

As a further precaution, the limited amount of information gathered from this unit has not been included in the analysis, reported below.



Figure 3 - 6. The crew excavating Unit 84-1 (from left to right) Hadrian Abbott, Terry Tenass, Darren Augustine and Chris Ward.

As opposed to Unit 84-1, the excavation in Unit 84-2 proceeded well. As the field crew removed backfill from the southerly section of Unit 78-12, the clean uncomplicated north wall of Unit 84-2 was revealed (Figure 3-7). An area along the south wall of Unit 78-12, comprising about one quarter of the wall surface and being approximately 40

cm wide, had collapsed in 1979 following a heavy rainstorm. In profile, this disturbed area was clearly visible and the disturbed earth was removed easily.

The natural layers in Unit 84-2 were easily recognized and easy to follow. As each was removed, it was identified and a numbered card was placed on the newly exposed profile (Figure 3-9, 3-13). Cards placed on the south



Figure 3 - 8. Excavating Unit 84-3, (left to right) Joan Peterson and Delbert Ward.

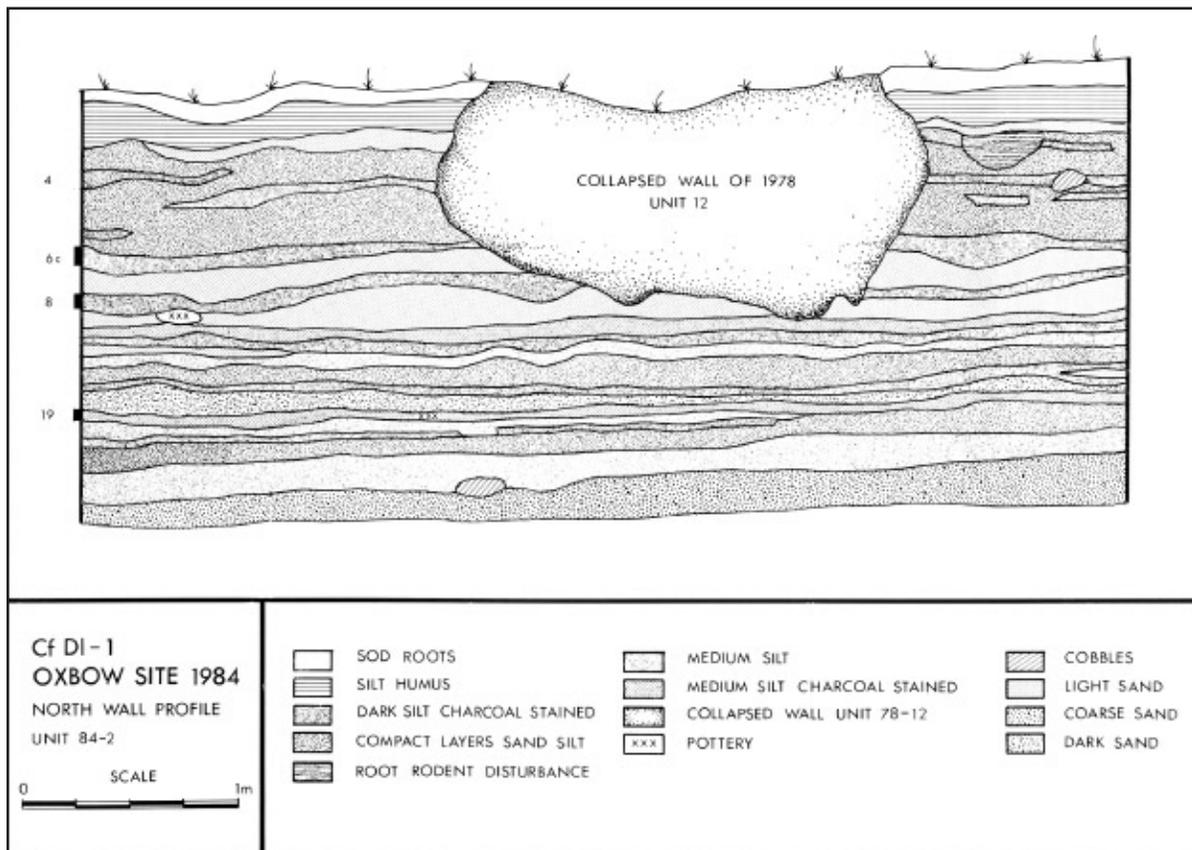


Figure 3 - 7. Profile of north wall of Unit 84-2 (Artist: Angel Gomez Miguelagez 1987).

wall of the unit being excavated thus identified the layers on the north wall of the next unit to be dug. If additional layers became apparent as a new profile was being exposed, then they were identified as an alphabetical sub-layer of the layer located immediately above. For example, Layer 6, was eventually followed by Layers 6a, 6b and 6c. If a layer discontinued during excavation, then its assigned number remained frozen and the layers below it retained their original numbers.

Units 84-3, 84-4, 84-6, and 84-7 were excavated following the profile provided by Unit 84-2. Each of these units was five metres long by 50 cm wide. The layers of Unit 84-5, which were oriented perpendicular to the main excavation area, were matched to those of Unit 84-2 as well (Figure 2-5). A summary of the 1984 excavation area is presented as an insert in the lower right corner of Figure 3-1.



Figure 3 - 9. Unit 84-3 with Joan Peterson and Delbert Ward excavating.

With the exception of the uppermost sod layer, which was removed by shovel, all excavation during the 1984 season was by trowel (Figures 3-5, 3-6). Whenever a hearth or any other area of special interest was identified, it was drawn, recorded, and excavated separately from the rest of the layer in which it was situated. The soil from all hearths and all other darkened soils from cultural levels was collected for floatation (Figure 3-10).



Figure 3 - 10, Set-up for floating excavated sediments, Todd Ward (left) and Darren Augustine.

During excavation, maximum depths were recorded for each layer and profile drawings were made following the completion of each unit (Figure 3-11). In addition to the numbered cards that were placed on the newly exposed strata (Figure 3-18), profile drawings and Polaroid photographs assisted in the identification of the layers to be excavated in the next unit.

In summary, during the 1984 season a total surface area of 14.5 square meters of the Oxbow site were investigated (Figure 3-1). All of Units 84-2, 3, 4, 5, 6, and 7 were excavated following their distinct natural/cultural layers until ground water was reached which was almost constantly at a depth of just over two metres. In total volume, 29 cubic meters of the site were removed.

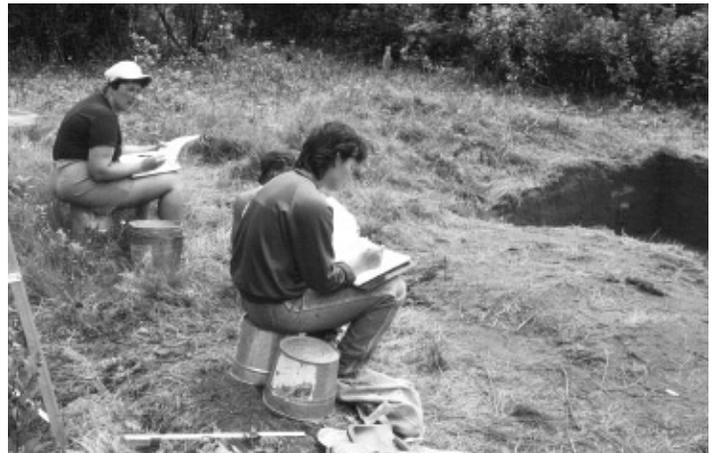


Figure 3 - 11. Pam Ward (foreground) and Joan Peterson record keeping at the Oxbow site 1984.

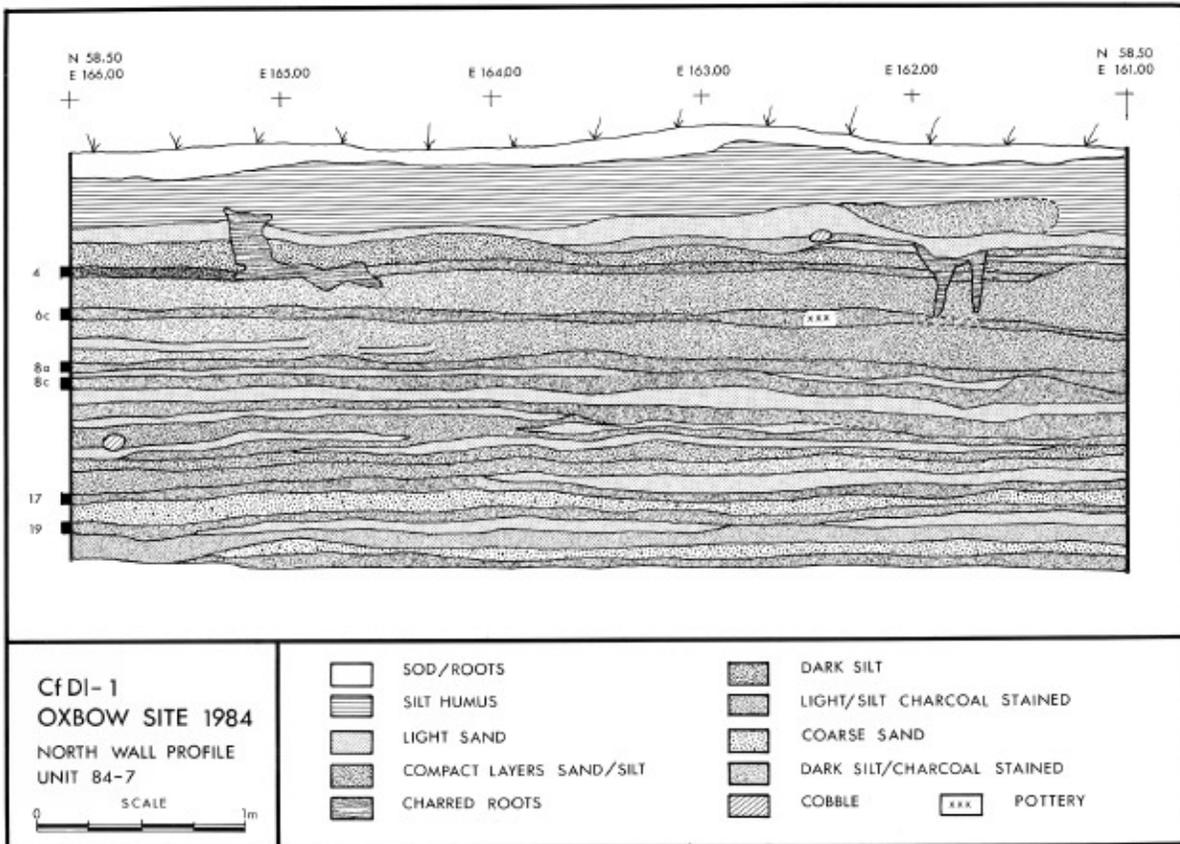


Figure 3 - 12. Profile of North wall from unit 84-7 (Artist: Angel Gomez Miguelagez 1987).

A total length of 34 metres of profiles was drawn. The excavation was closely supervised with the result that the cultural associations were maintained and recorded accurately.

### Details on Stratigraphy and Distribution of Cultural Deposits

As mentioned above, the Oxbow terrace is composed of over 2.5 metres of successive, mainly water-deposited, layered sands and silts at the base of which lie large river cobbles in a coarse sand matrix. The portion of the Oxbow site selected for excavation in 1984 was centrally located and adjacent to the former 1978 excavation Unit 78-12 (Figure 3-1). The profile exposed along the south wall of this unit or the north wall of Unit 84-2, displayed a great many strata. There were 32 identifiable layers that exhibited little disturbance after their original deposition (Figure 3-7).

The excavation of Unit 84-2 proceeded slowly according to the natural layers that were numbered 1 through 22 with some alphabetically marked sub-divisions (Figure 3-12). Minor changes in strata

observed in the comparisons of profiles were noted as additions or deletions to the original Unit 84-2 profile.

For the most part, these strata changes consisted of the disappearance or the introduction of some thin layers that were not culturally productive. Root disturbances were periodically identified and removed as an intact unit. Descriptions of the matrices of each layer are presented here in tabular form (Table 1). The height or thickness of these varied somewhat within the five metres long by

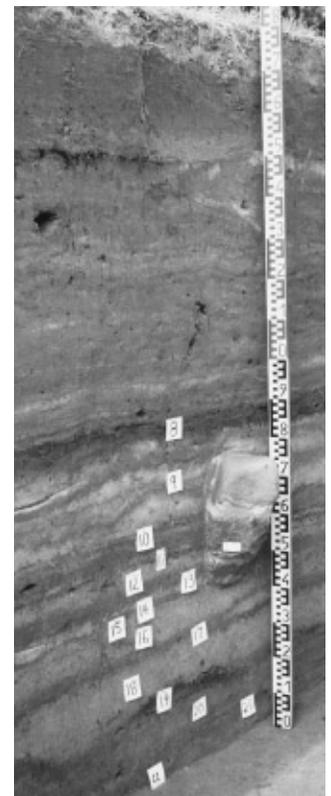


Figure 3 - 13. During excavation at Oxbow in 1984 soil profiles were clearly marked to coordinate the transfer of information regarding the layers between excavation units.

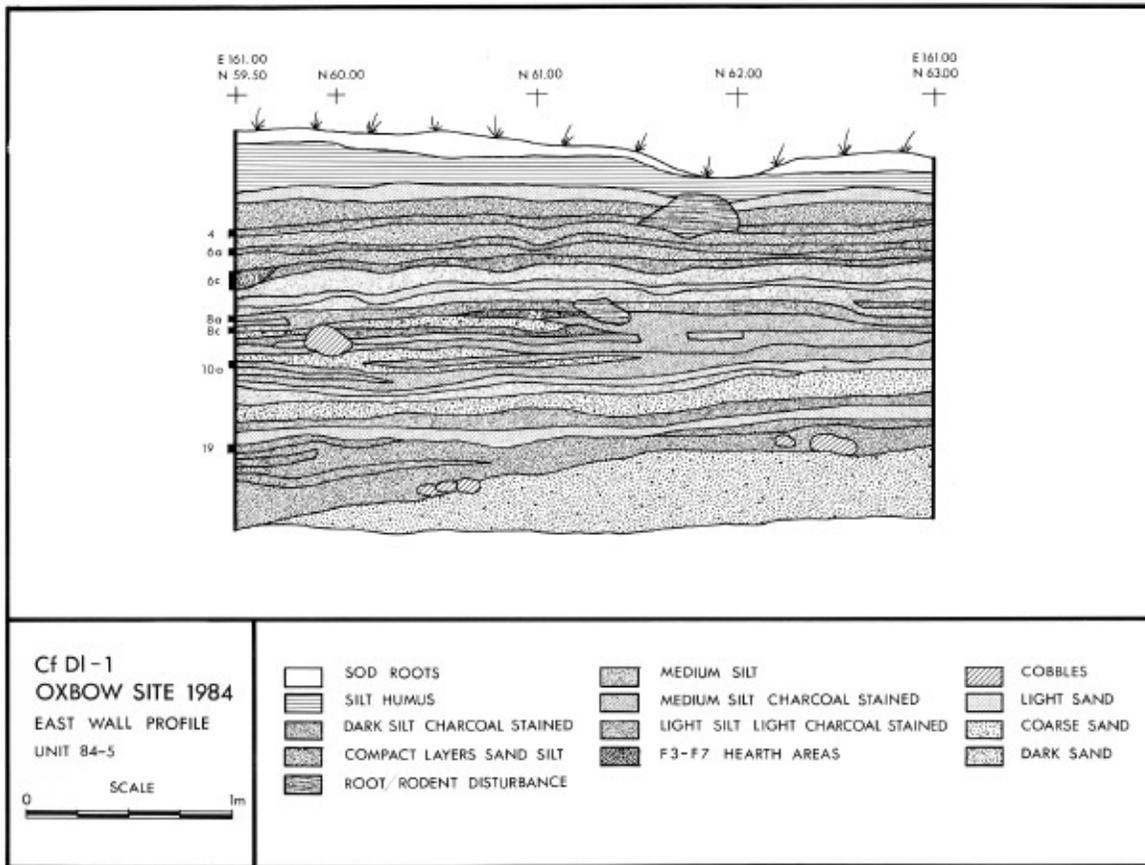


Figure 3 - 14. Profile of east wall of Unit 84-5 (Artist: Angel Gomez Miguelagez 1987).

two and a half metre wide excavation area. For this reason, a range of thickness for each layer is given. A sample profile drawing from Unit 84-7 exhibits the most outstanding cultural layers (Figure 3-14).

**Table 1: Layer Descriptions for the Oxbow Site 1984 Excavations**

Layer	Deposit Description	Thickness in cm
1a	Root layer with dark silt humus	10-15
1b	Dark silt humus (plough zone)	14-20
2	White fine sand	0-8
3	Dark silt	5-15
4	Light charcoal stained silt	3-6
5	Fine layered sand and silt	4-8
6a	Lightly charcoal stained silt	4-8
6b	Medium silt	2-8
6c	Dark charcoal stained silt	2-6
7a	Medium silt	2-8
7b	Light sand	2-4
7c	Medium silt	4-12
8a	Dark charcoal stained silt	4-8
8b	Light sand	0-4
8c	Dark charcoal stained silt	0-4
9a	Light sand	0-10
9b	Compact silt layers	5-10
9c	Light sand	4-8
10a	Dark silt	2-4
10b	Dark charcoal stained silt	6-8
11	Lightly charcoal stained silt/sand	2-4
12	Light sand	0-4
13	Silt	0-4
14	Sand	2-4
15	Silt	2-4
16	Dark sand	4-8
17	Dark charcoal stained silt	2-6
18	Light to dark sand	6-14
19	Lightly charcoal stained silt	2-10
20a	Medium silt	0-10
20b	Lightly charcoal stained silt	0-4
20c	Compact sand/silt layers	4-14
21	Compact medium silt layers	10-20
22	Coarse sand/occasional cobbles	10+



## Chapter 4

### Oxbow Site Artifacts And Features Excavated In 1984

#### Introduction

The major cultural layers identified in Unit 84-2 remained constant throughout the excavation of Units 84-3, 4, 5, 6, and 7. Layers 4, 6c, 8, 10, and 19 produced chronologically diagnostic cultural material such as projectile points and/or ceramics. The data on the numbers of artifacts of various types found in specific layers is presented as Table 2.

**Table 2: Artifact Distribution in the 1984 Oxbow Site Layers**

Layer*	European Artifacts	Cores	Flakes	Lithic Artifacts	Pottery Sherds
1	8	0	2	0	0
2	0	0	1	0	0
3	0	1	14	1	0
4	0	2	222	0	21
5	0	0	13	0	1
6	0	19	1384	9	210+
7	0	0	68	0	1
8	0	27	2234	12	157+
9	0	0	7	0	1
10	0	0	14	1	3
11	0	0	5	0	2
12	0	0	1	0	0
13	0	0	0	0	1
14	0	0	0	0	0
15	0	0	0	0	0
16	0	0	0	0	0
17	0	3	15	0	0
18	0	0	0	0	0
19	0	20	1895	26	68+
20	0	0	7	0	2
21	0	0	0	0	0
22	0	0	8	0	0

(\*Layer sub-divisions have been incorporated into major layer divisions)

Details on these artifacts and on the features found in 1984 form the body of this chapter. Prior to these layer by layer descriptions, there is a brief explanation of the methods used in the analysis and the organization of the chapter.

As is apparent from Table 2, Layers 14, 15, 16, 18 and 21 produced no cultural material. Although these five layers were unproductive in the units excavated in 1984, it is very possible that elsewhere on the site, the layers that were barren here might be more culturally productive. Fortunately, many of the other layers contained numerous indications of human activity. All artifacts and features associated with each layer will be described under the major topics of: Historic European Artifacts, Lithics, Ceramics, Features, and Floatation samples.

The terminology and attributes of projectile points and steep-edged unifaces discussed in this report have been illustrated and explained elsewhere (Allen 1981:252, 258). As was true for the 1978 and 1979 research, the 1984 unit of ceramic analysis is the vessel as opposed to individual pottery sherds. Attributes and terminology used in reference to the 1984 vessel lots have been illustrated and explained previously (Allen 1981: 289).

The division of rim and body sherds found in 1984 into their vessel lots was accomplished for the most part based upon the combination of colour, temper, paste, thickness, and decorative attributes. The limited number of sherds found in each layer, as well as the meticulous field procedures utilized in their recovery greatly facilitated sorting the ceramic pieces to their vessels.

Occasionally, a sherd or sherds from the 1984 project could be cross-mended with a fragment or fragments that had been identified as a portion of a vessel, defined in 1979. When such matches were made, the total number of sherds identified as belonging to the same vessel was used in the description of the 1984 vessel lot. Also, where such cross mending has taken place, this is noted in the vessel description.

A description of the features associated with the different cultural assemblages is also included in this section. Most of the features contained small, calcined, bone fragments. These were examined by Arthur Speiss of the Maine Historic Preservation Commission.

Soil samples taken from the various hearths and surrounding areas were analyzed in an agricultural laboratory for mercury and phosphorus content. Mercury content is recorded in parts per billion (PPB) whereas phosphorus content is recorded as high, medium, or low, based on a pounds per acre assessment. Although the latter type of test does not rate phosphorus beyond the maximum acceptable level for growing crops; this scale did indicate variability among the submitted samples.

## A Layer by Layer Description of the 1984 Findings

### Layer 1

With the exception of one badly corroded modern teaspoon and a broken line level from a previous year's excavation, the historic European items recovered during the 1984 project were of 19th century origin. These artifacts included one rose head, square cut, flooring nail and seven sherds of white ironstone ceramics. Both 17th and 18th century European artifacts had been recovered from the site previously (Allen 1981), but no such evidence from these two centuries was found in 1984. This uppermost deposit contained two small quartz flakes as the sole evidence of the earlier Native presence.

### Layer 2

One, small, quartz flake was found in this otherwise clean sand level.

### Layer 3

Layer 3 yielded one utilized quartz flake, a quartz core, 14 unmodified quartz flakes, and one non-quartz flake. The utilized quartz flake (specimen CfDI-1:2512) is triangular, measuring 28 mm by 16 mm and weighs 3.0 grams. Approximately 13 mm

of a convex edge of this specimen exhibits tiny wear chips. The edge angle of this portion of the flake is 40°.

### Layer 4

The cultural material recovered from Layer 4 included two quartz cores, 222 unmodified quartz flakes, and 20 pieces of pottery. The 16 pottery body sherds and four rim sherds were from a single vessel (labelled Vessel lot 300; Figure 4-1, 4-2). This vessel was tempered with both organic and grit material. Due to leaching of the temper, the sherds exhibit numerous cavities. The angular shape of the cavities suggests that the temper might have been crushed shell. In profile, the upper rim of this vessel is parallel-sided and vertical. The lip edge has a maximum thickness of 7 mm and the rim thickness 1 cm beneath the lip is also 7 mm thick. The somewhat rounded lip surface is rolled forward and slightly overhangs the exterior surface of the vessel. The interior lip edge forms a rounded junction with the interior vessel surface.

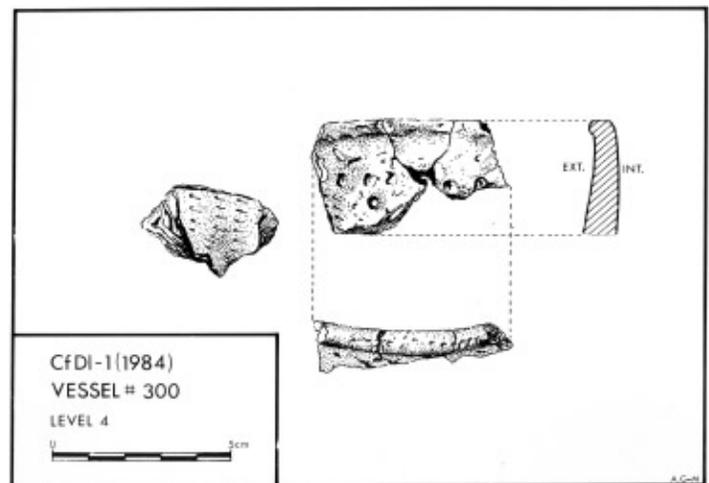


Figure 4 - 1. Vessel 300, Layer 4.  
(Artist: Angel Gomez Miguelagez 1987).

The upper rim of Vessel 300 is decorated on its exterior surface, with an encircling row of oval punctates that are approximately 2 mm by 4 mm wide. This row of punctates is located about 13 mm beneath the lip edge and there are two punctates per cm. The punctates have convoluted interiors and this suggests that they could have been made with a partially hollow bone. Immediately beneath the row of punctates, there

is a post-firing, drilled perforation which is slightly over 3 mm in diameter and which was drilled from the exterior.

Whereas the interior of this vessel is smoothed, the lip and exterior surfaces have been decorated with the impressions of an S twist, cord-wrapped stick. The approximate centre line of the lip surface has been impressed with single applications of this tool. The upper rim surface of the vessel exhibits vertical impressions that extend up to the encircling row of punctates.



Figure 4 - 2. Vessel 300, Layer 4 (Photo: Drew Gilbert 2004).

The body sherds of Vessel 300 also exhibit cord-wrapped stick decoration, applied both with a rocking motion and as single impressions. Finally, one body sherd from this vessel exhibits a zigzag-incised marking in combination with the cord-wrapped stick marks.

## Layer 5

This layer contained 13 quartz flakes and a single piece of pottery. The ceramic fragment was a grit-tempered, rim sherd (Vessel lot 323). Although the lip surface of this sherd was exfoliated, the lip would appear to have formed a wide rounded junction with both the interior and exterior surfaces of the vessel. In profile, the 7 mm thick rim walls are parallel. At about 1 cm beneath the lip, the rim flares slightly outwards. The interior of the vessel is undecorated while the exterior displays an obscured 2 mm wide impression that runs obliquely from left to right.

## Layer 6

### Artifacts

As can be seen in Table 2, Layer 6 contained a large number of lithic and ceramic artifacts. The many lithics from this provenience will be described before the numerous ceramic fragments.

The lithic debitage included two quartz flakes and one quartz core from the silt Layers 6a and 6b. The dark charcoal-stained Layer 6c contained 1,350 quartz flakes, 22 non-quartz flakes and 18 quartz cores. Some of these flakes might have been associated with the production of the three projectile points or the biface found in this layer.

One of the four bifacially worked artifacts (catalogued as CfD11:2143) is the base portion of a contracting stemmed, quartz, projectile point (Figure 4-3a). This specimen is bi-convex in cross-section and has a maximum width of 20mm, a maximum thickness of 10mm, and a convex base width of 6mm. The sole shoulder present is wide-rounded. Edge angles on the convex blade edges range between 40° and 60°. A second specimen (CfD11:2144) is the tip portion of a quartzite projectile point (Figure 4-3b). This specimen has edge angles of between 40° and 50°.

The third biface fragment (CfD11:2202) is a small tip portion of a quartz projectile point. The remaining bifacially worked piece (CfD11:2422) is a base fragment of a small quartz biface. Edge angles on this specimen measure between 50° and 60°. The fragment has a maximum width of 28 mm and a maximum thickness of 9mm.

Three additional flaked artifacts were recovered. These were all steep-edged, unifacially worked pieces. The first (CfD11:2430) is a quartz uniface retaining a portion of cortex on its dorsal surface (Figure 4-3c). The length of the specimen is 41mm; the width is 40mm; the maximum thickness is 16mm, and the specimen weighs 30.8 grams. This uniface displays a concave working edge that has a span of 31mm, an edge height of 8mm, and an edge angle of 80°. This tool was probably used as a spoke-shave.

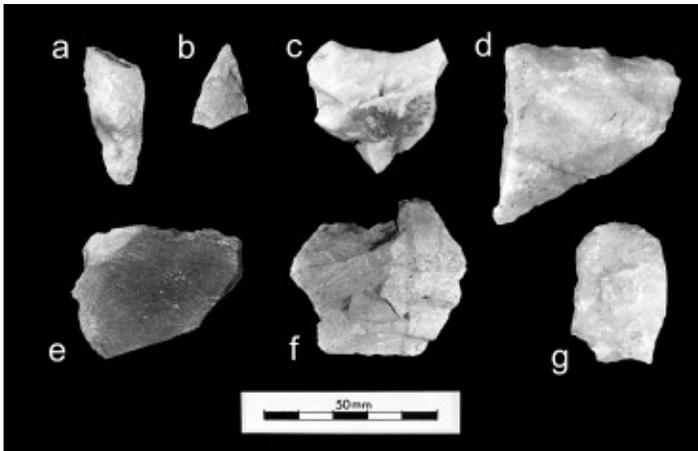


Figure 4 - 3. Lithic artifacts recovered from Layer 6.

A rectangular shaped quartz uniface (CfDI-1:2198) that is worked on the distal end (Figure 4-3g) was also recovered from this layer. This tool has a maximum length of 42mm, a maximum width of 27mm, a maximum thickness of 9 mm and a weight of 18.4 grams. The span across the convex working edge is 24mm. The working edge height is 4 mm and the working edge angle is 70°.

Finally, in this group of artifacts, (CfDI-1:2429) is a chunky, triangular, cortex flake with one edge entirely retouched. The tool has a maximum length of 51mm, a width of 53mm, a maximum thickness of 16 mm and a weight of 56.6 grams. The straight working edge is 51 mm in length, has an edge height of 13 mm and an edge angle of 80° (Figure 4 -3d.).

Besides these flaked artifacts, two fragments of ground stone were recovered from Layer 6. The first (CfDI1:2155) is a large flake of dark grey slate, measuring 47 mm by 51 mm and weighing 29.9 grams. One surface of this specimen is finely ground and polished. It is also bevelled along one broken edge. This flake could have broken from the exterior surface of some ground stone tool or ornament (Figure 4-3e). The second ground stone fragment (CfDI1:2145) is a large flake of brownish quartzite that has rough grinding striations on two surfaces. This fragment might have been a portion of a ground stone tool (Figure 4-3f).

Layer 6 produced more ceramic fragments than any other dug in 1984 (Table 2). The ceramic fragments appear to have originated from five vessels. Vessel Lot 301 contained six organically tempered body sherds (Figure 4-4). Leaching of the organic temper

left the sherds with numerous small cavities, some angular, some not. The average thickness of these sherds is 6mm. The interior of this vessel was smoothed and then marked by channels or grooves. This *channelling* probably resulted from the dragging of a cord-wrapped stick tool around the interior of the vessel. The exterior of the vessel exhibits impressions left from the rocking application of an S twist, cord-wrapped stick. Although the length of this stick tool could not be determined, the frequency of cordage wraps was four per cm.

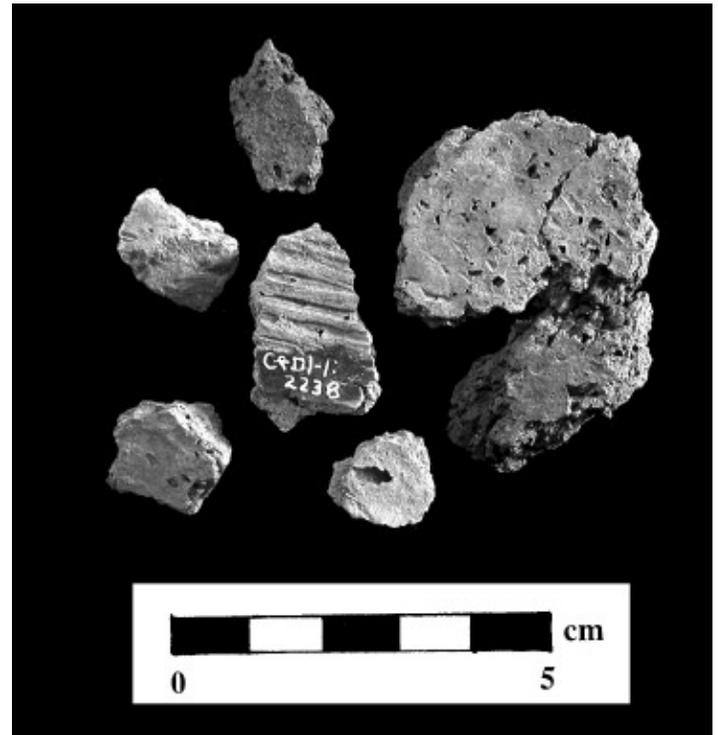


Figure 4 - 4. Vessel 301, Layer 6 (Photo: Brent Suttie 2004)

Nine body sherds and one rim sherd were assigned to Vessel lot 303 (Figure 4-5). During a comparison with vessel lots identified during the 1978 season, a cross-mend was made between a sherd from lot 303 and a previously identified vessel from the 1978 season. In total the vessel consists of over 1,000 ceramic fragments, including 20 rim sherds.

Vessel 303 is tempered with both organic and grit material. The cavities left by the leached organic material are, for the most part, angular and might have contained crushed shell. The vessel was built by the coil method and many sherds have broken along coil lines.

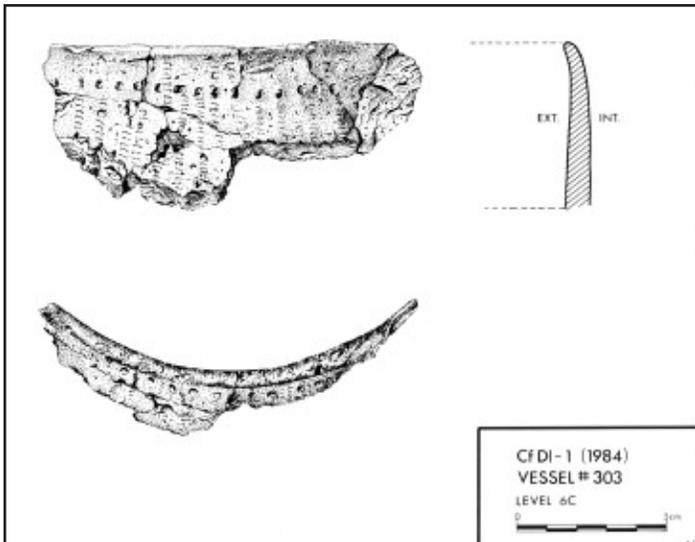


Figure 4 - 5. Vessel 303, recovered from Layer 6c 1984. (Artist: Angel Gomez Miguelagez 1987).

In profile, the rounded lip forms a wide rounded juncture with both the interior and exterior surfaces. The rim of the vessel appears vertical, however, the width of the upper rim contracts slightly, with the lip being 7 mm wide but 1 cm beneath the lip, the rim is 8 mm wide. Most of the body sherds from this vessel are about 8 mm thick as well. This vessel had a 167 mm mouth diameter, and the base of the vessel tapers to a pointed cone.

The interior of Vessel 303 is smooth and undecorated. The rounded lip is decorated with the simple stamp of a cord-wrapped stick applied to the oblique left. The exterior of the vessel is decorated with an encircling row of punctates as well as by vertical rows of cord-wrapped stick impressions. The punctates have been made with a partially hollow oval tool and occur in a row at 4 mm to 5 mm intervals about 12 mm beneath the lip. The cord-wrapped stick has been applied by vertical stamping of the tool at 5 mm intervals. Some of the vertical stamps follow through to the lip of the vessel but most only extend to the row of punctates (Figure 4-6).

Most of the body sherds of Vessel 303 have been decorated on their exterior surfaces with a rocker stamping application of a cord-wrapped stick. The S twist, cord-wrapped stick was approximately 3 mm wide while the cordage itself had a thickness of less than 1mm. The total length of the cord-wrapped stick is unknown but it was longer than 35mm.

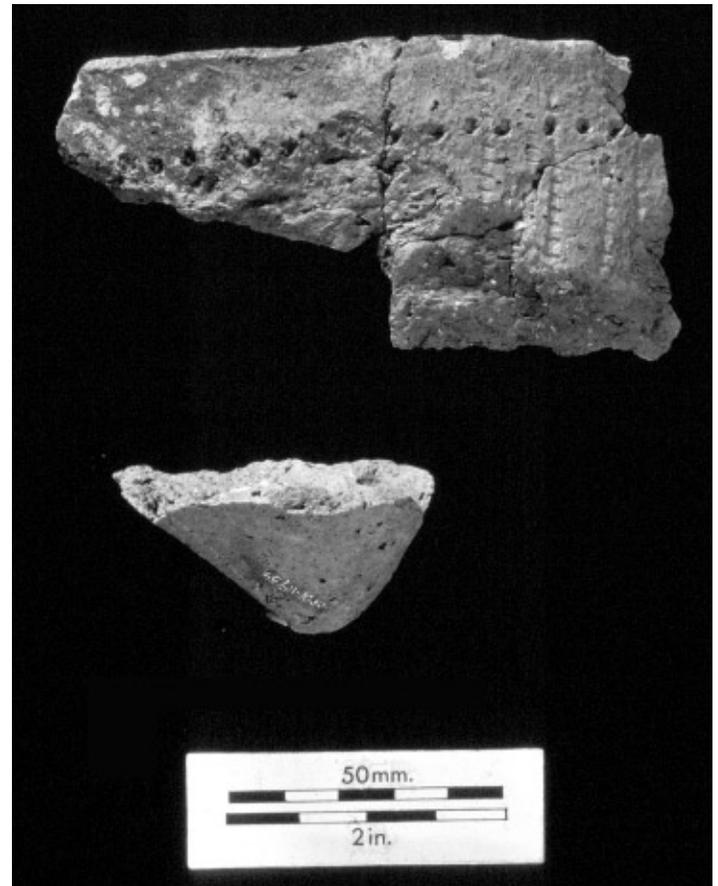


Figure 4 - 6. Portion of rim and pointed base of Vessel 303 Portions recovered during 1978.

Vessel Lot 304 (Figure 4-7, 4-8) consists of six body sherds and three rim sherds, all of which have been cross-mended with one another. The vessel is grit-tempered and its interior surface displays some charred food remains. The lip of Vessel 304 forms a wide-angle juncture with the interior surface and a near right angle juncture with the exterior surface. The lip is flat but exhibits a low rolling castellation about 5 mm in height and 35 mm long. In profile, the upper rim contracts from a thickness of just over 6 mm at a point 1 cm beneath the lip to 5 mm wide at the lip. The upper rim flares slightly outwards from a point approximately 20 mm beneath the lip. The body sherds are between 6 mm and 7 mm thick.

The interior of the vessel is smooth and undecorated. The lip edge is decorated with obscured impressions of a tool edge applied to the oblique right. The exterior of the vessel is decorated with horizontal bands that are approximately 10 mm to 12 mm apart. The uppermost band, just beneath the lip edge, is about 8 mm wide and has been made by the simple stamping of a finely notched,

pseudo-scallop tool. Approximately four vertical applications of this tool occur per cm. The tool has eight or nine teeth per cm. The remaining encircling bands were created by tight rocker stamping of the same tool, pressing it into the clay obliquely to the left. The tool was 12 mm long.

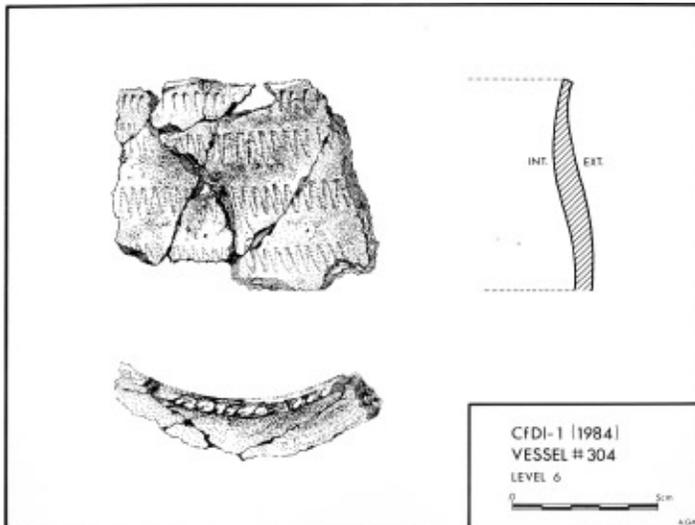


Figure 4 - 7. Vessel 304, Layer 6 (Artist: Angel Gomez Miguelagez 1987).

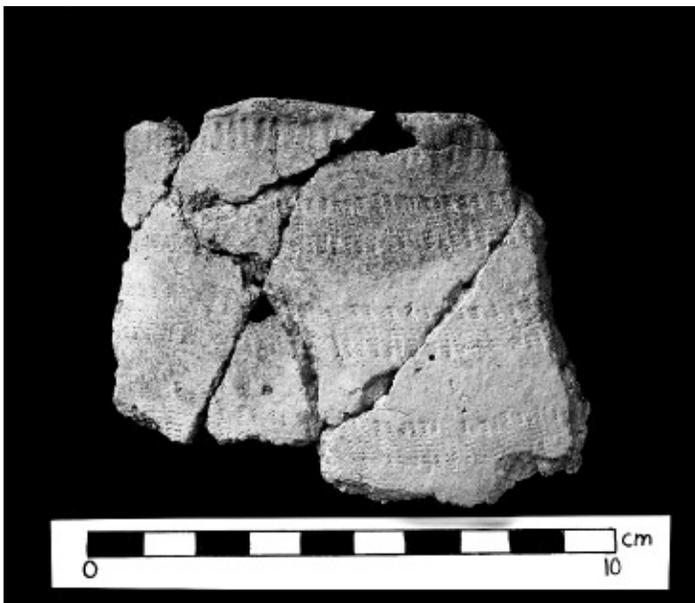


Figure 4 - 8. Vessel 304, layer 6. (Photo: Drew Gilbert 2004).

Vessel Lot 305 (Figure 4-9, 4-10) is composed of 132+ body sherds and eight rim sherds. The vessel is tempered with both organic and grit material and is dotted with cavities resulting from leached organic temper. The interior of this vessel is caked with charred food remains. The lip of the vessel has been flattened and forms an angular juncture with the interior. The lip surface slopes outwards and slightly overhangs the exterior vessel surface.

In profile, the upper rim contracts slightly from 9 mm at a point 1 cm beneath the lip to 8 mm at the lip. The rim appears nearly vertical and the body sherds are uniformly thick, at about 9mm.

The interior of this vessel has horizontal channels or grooves that were created by dragging something, possibly the cord-wrapped stick, around the interior of the vessel. The lip has been decorated along its central line with the simple stamp of an S twist, cord-wrapped stick. The exterior of the vessel has been decorated with a combination of punctate clusters and cord-wrapped stick impressions. The punctates, which occur in clusters of seven or eight impressions each, seem to encircle the rim at a point about 1 cm beneath the lip. The punctates within the clusters occur about 20 mm to 30 mm apart. Both the punctates and clusters are irregular in form.

In addition to the punctates, the upper rim is decorated with lightly applied, widely spaced, simple stamped applications of an S twist, cord-wrapped stick that was oriented to the oblique right. The cordage, which was 2 mm thick, was widely wrapped with only three twists per cm. The use of the cord-wrapped stick appears to have been restricted to the upper part of the vessel as none of the large number of body sherds had decorations.

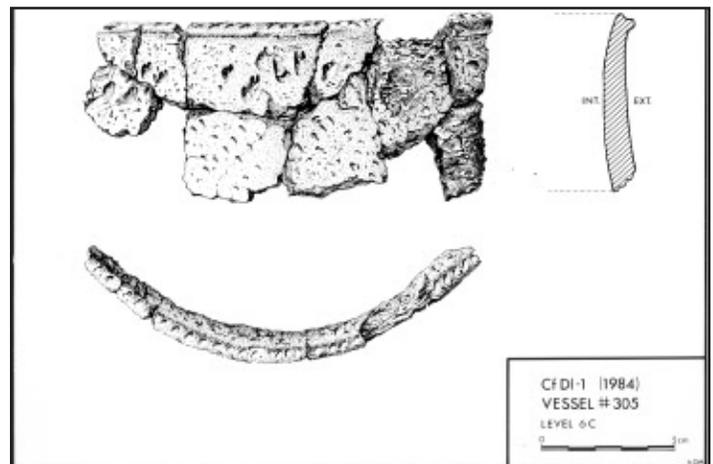


Figure 4 - 9. Vessel 305, Layer 6c (Artist: Angel Gomez Miguelagez 1987).

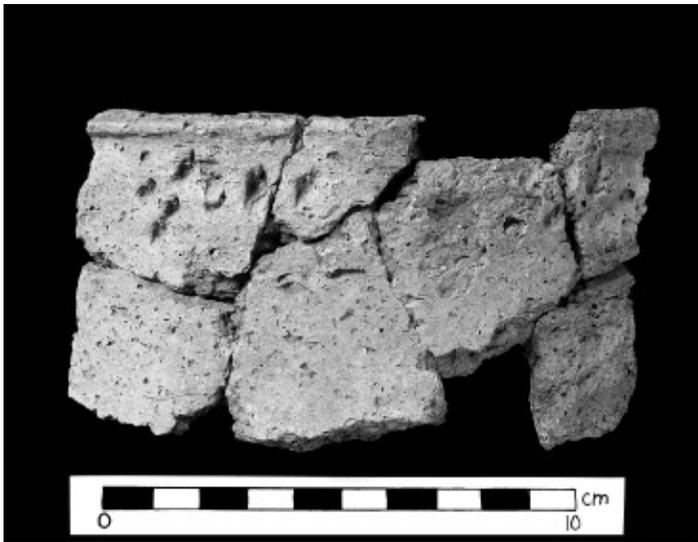


Figure 4 - 10. Vessel 305, layer 6c. (Photo: Drew Gilbert 2004).

Vessel Lot 324 (Figure 4-11) consists of one small rim sherd and five grit-tempered body sherds. The flat lip of the rim fragment is 6 mm wide. At 9 mm beneath the lip, the upper rim is 7 mm wide. The lip surface forms right angle junctions with both the interior and exterior rim surfaces. The lip of the vessel is decorated with 4 mm long by 1 mm wide, crescent shaped punctates, which lie lengthwise across the lip. The impressions, four per cm, have been applied with a push-pull motion to the right.

The exterior of the upper rim is decorated with at least one horizontal row created in the same way. There are approximately four impressions per cm. The interior of the vessel is decorated with wedge shaped, 3 mm by 4 mm impressions of a slightly toothed tool applied with a simple stamp. There are about three of these impressions per cm.

The body sherds, believed by their curvature to be from the upper rim portion of the vessel display horizontal and parallel rows of decoration manufactured by the push-pull application of a slightly-toothed tool. The horizontal rows occur about 5 mm apart and each row contains either four or five impressions per cm. The interiors of the body fragments are smoothed.

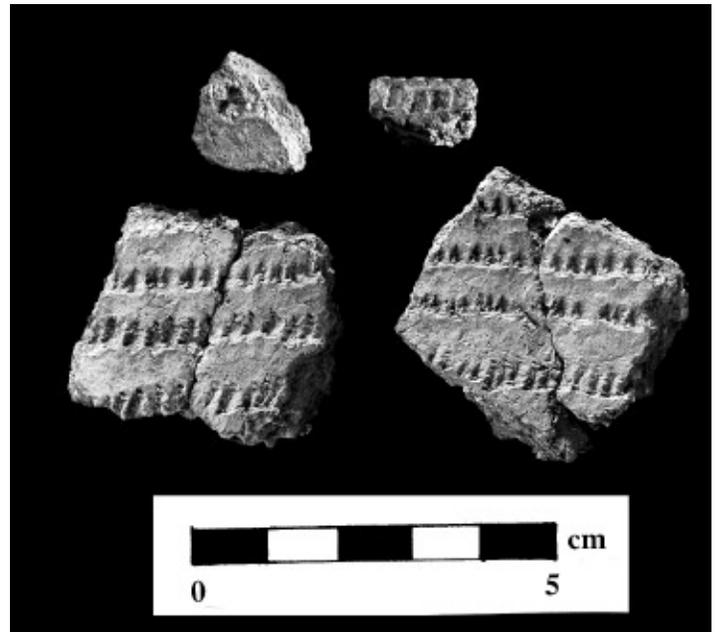


Figure 4 - 11. Vessel 324, Layer 6 (Photo: Brent Suttie 2004).

### Features

In addition to the artifacts described above, Layer 6 contained four cultural features. The four features are discussed in turn below.

Feature 2 was first identified as an oval hearth covering approximately one square metre at the western end of Unit 84-2. During the excavation of Layer 6c in Unit 84-5, the excavators recorded another hearth as Feature 6. This was later recognized as a western extension of Feature 2. Therefore both will be discussed as one unit, designated as Feature 2(6), here (Figure 4-12).

Feature 2(6) was the largest hearth area excavated during the 1984 season (Figure 4-13). The hearth consisted of a large, fire-reddened silt area, which measured over 100 cm in length. This red stain had a maximum depth of 10cm to 12cm and appeared as a shallow basin in cross section. To the west and south, the red stain was surrounded by charcoal-stained silt. This feature produced a considerable number of fire-cracked rocks, some calcined bone, two quartz cores, 91 quartz flakes, and an assemblage of undecorated and punctated pottery sherds.

Floating the soil from this feature yielded one carbonized Raspberry seed (*Rubus* spp.), one carbonized Bulrush seed (*Scirpus* spp.) and two carbonized seeds of Orache (*Atriplex* spp.).

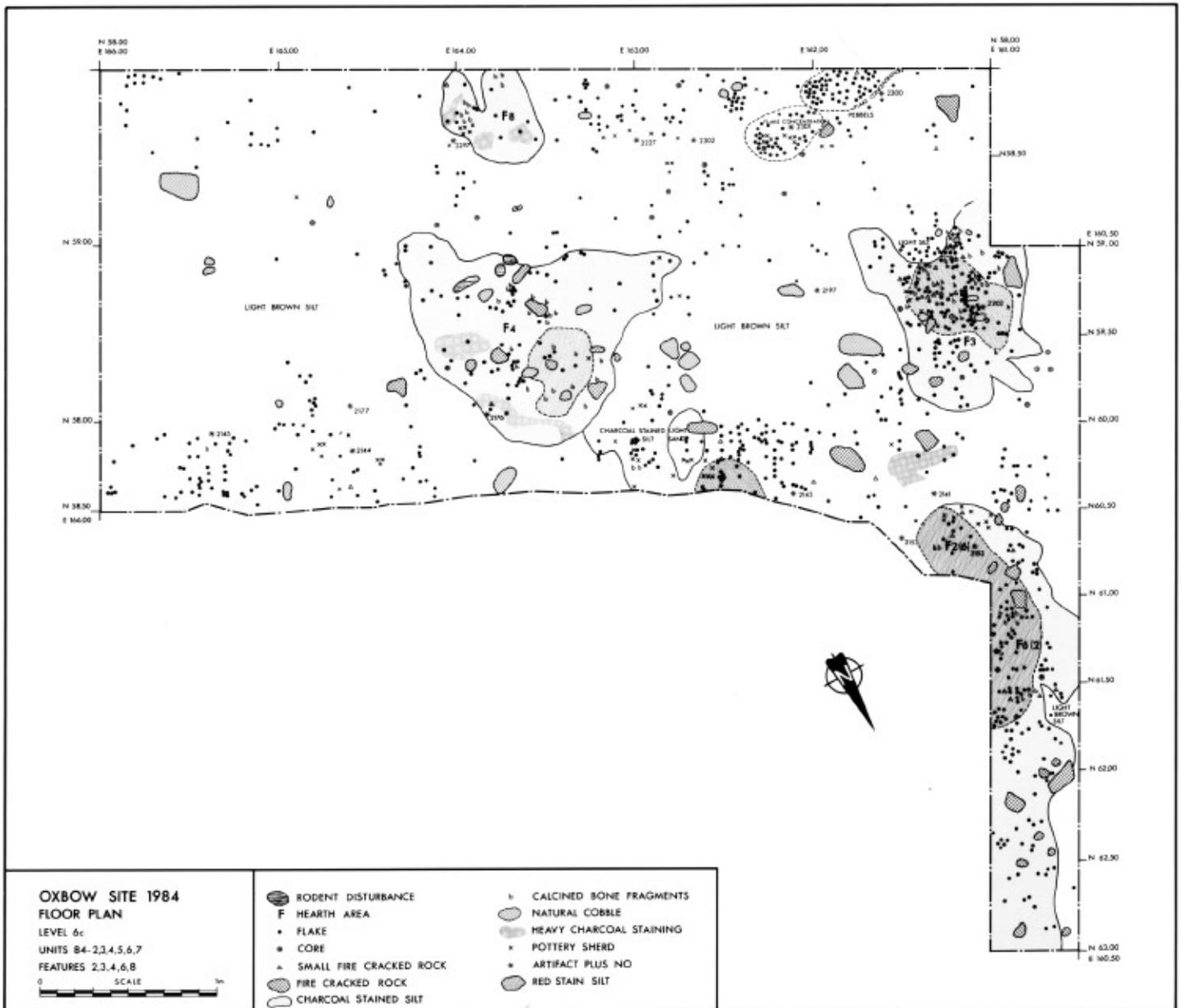


Figure 4-12. Floor Plan of Layer 6c showing artifact locations and features (Artist: Angel Gomez Miguelagez 1987).



Figure 4-13. Surface exposure of Feature 2 (6).

The bone sample included  $29 \pm$  small fragments of sturgeon scutes. Sixty-nine additional small bone fragments remained unidentified.

Soil analysis revealed that levels of phosphorus within the feature area were “very high” whereas readings from the general Layer 6c soils were only “high”. Similarly, mercury readings, although “low” (13PPB) within the hearth area, were almost double that of the surrounding soils.

Feature 3 was an oval area of approximately 100 by 50 cm. The central portion of the oval was bright red while the exterior areas were charcoal stained. In profile, this hearth had a maximum thickness of 12 cm and generally conformed to the thickness of Layer 6c (Figure 4-14). Feature 3 contained a

number of fire-cracked rocks, natural cobbles, 291 quartz flakes, two non-quartz flakes, seven quartz cores, seven organically tempered, undecorated pottery sherds and a small amount of red ochre.

In addition to about 100 calcined fish and mammal bone fragments, the hearth contained one unerupted tooth germ of a small cervid (deer or caribou) and 17 sturgeon scute fragments. Also recovered were eight carbonized spheroids, one carbonized Bulrush seed (*Scirpus* spp.), one carbonized Mountain Ash seed (*Sorbus* spp.), and one carbonized Raspberry seed (*Rubus strigosus*).

Mercury levels within Feature 3 averaged about 36PPB, which was well above the general Layer 6 reading of only 7PPB. Soil analysis also indicated a «very high» amount of phosphorus was present in the feature while the surrounding Layer 6 soils produced only a «high» reading.

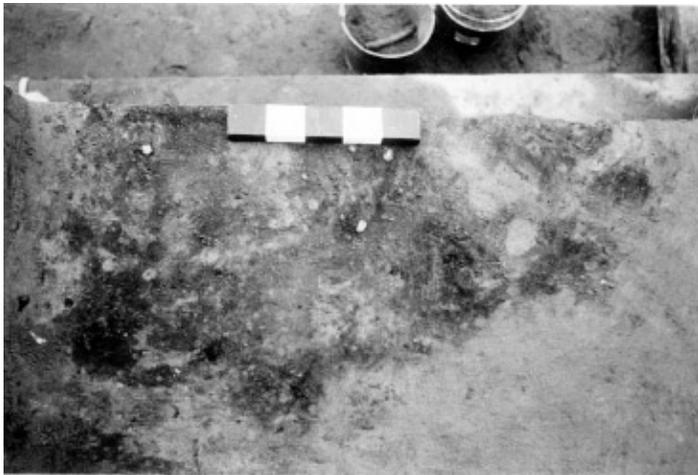


Figure 4 - 14. Surface exposure of Feature 3.

From the amount and types of burnt bone present as well as the amount of debitage, it would appear that this particular hearth had been used repeatedly as a cooking fire and that tools were made around it. Two large flake concentrations, about one meter south of Feature 3, were probably associated with either this hearth or Feature 4.

Feature 4 was initially identified as a small, fire-reddened area surrounded by a charcoal stain. As excavation proceeded, the burnt area increased to about 100 cm in diameter (Figure 4-15). In profile, the hearth was shown to be an elongated basin having a maximum depth of 15 cm (Figure 4-16).

It appeared as if this basin had been prepared by scooping a shallow depression into the surface of Layer 6c.



Figure 4 - 15. Surface exposure of Feature 4.

Besides considerable charcoal, a number of fire-cracked rocks and natural cobbles, Feature 4 produced 95 quartz flakes, one non-quartz flake, one small quartz scraper and numerous small calcined bone fragments. A concentration of cord-wrapped stick decorated pottery was also found in association with this hearth.

All of the burnt bone from Feature 4 was identified as fish. These included sturgeon scutes and a considerable number of fish-rays, which were possibly sturgeon as well. Twelve *fresh* Bulrush seeds (*Scirpus hudsonianus*) were recovered from the flotation sample associated with this feature.

The mercury content in the soil from this hearth was 19PPB or almost three times that of the mercury in the surrounding Layer 6 soil. Like the other features, the phosphorus content of this hearth was rated «very high».

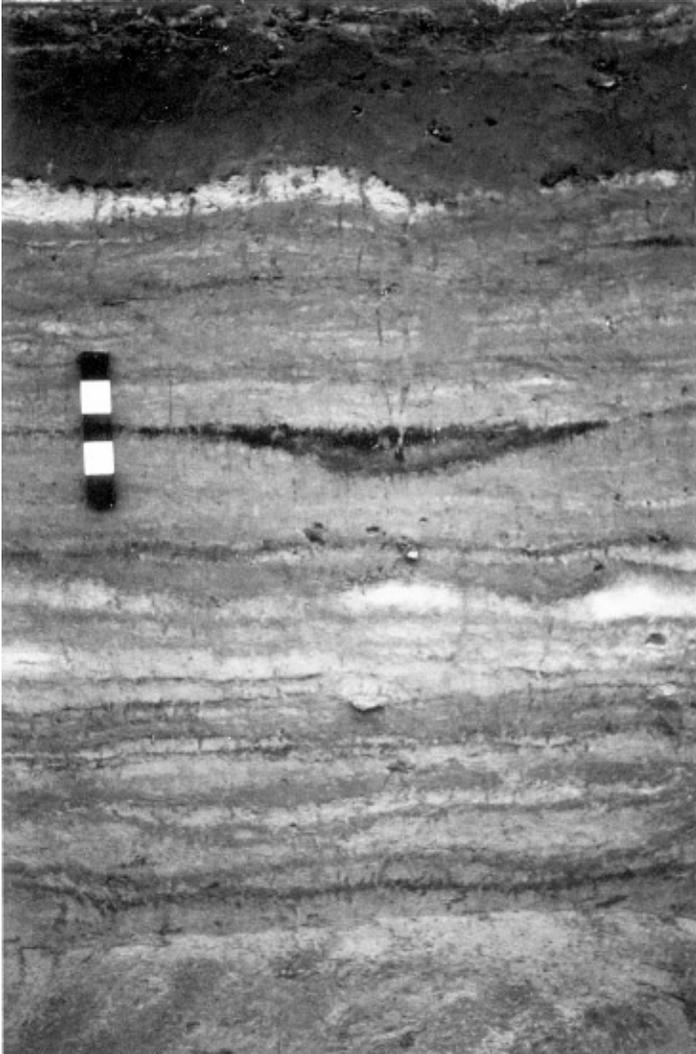


Figure 4 -16. Profile showing Feature 4.

The concentration of burnt bone and artifacts allows the supposition that Feature 4 was re-kindled a number of times. Sturgeon appears to be one of the items being cooked and the hearth appears to have been a congregation area with quartz tools being prepared nearby.

Feature 8 was a small area of charcoal-staining (Figure 4 - 12). This 50 cm diameter stain was probably the northern end of a hearth in the unexcavated area immediately south of Unit 84-7. Feature 8 contained a number of burnt bone fragments and two concentrations of pottery. The pottery included a major portion of the rim of a

cord-wrapped stick and punctate decorated (Vessel 305) as well as five plain sherds and two rocker-dentate decorated body sherds. Sherds from Vessel 305 were also found spread throughout Layer 6c and excavation Units 84-3 and 84-7.

Feature 8 also contained a few small, fire-cracked rocks and 12 quartz flakes. Among the burnt bone fragments were four sturgeon scute fragments, three unfused vertebral epiphyses of Beaver (*Castor canadensis*), one vertebral neutral arch fragment, possibly from a beaver and three vertebral transverse processes, again possibly beaver.

Soil from Feature 8 gave a mercury reading of 19PPB, a reading similar to that of the associated Feature 4, and nearly three times as great as the reading from the surrounding soils. Phosphorus content within the Feature was rated “very high”. From all appearances, Feature 8 is a northern section of an unexcavated hearth.

## Layer 7

Layer 7 was divided into three sub-layers and had fewer archaeological remains in it than the previous layer. In total, sub-Layers 7a, 7b, and 7c produced 60 quartz flakes and one small, grit-tempered, plain body sherd (Layer 7c).

## Layer 8

### Artifacts

As the Figures in Table 2 show, Layer 8 produced the most artifacts of those excavated in 1984. The vast majority of the artifacts recovered from this layer were lithics. This level produced 2,234 quartz flakes, 27 quartz cores, 4 projectile point fragments, 12 lithic artifacts and 157+ ceramic fragments.

The first projectile point (CfD11:2234) is a bi-pointed projectile point manufactured from a light green quartzite (Figure 4-17a). The specimen measures 56 mm in length, 13 mm in maximum width, and 11 mm in maximum thickness. It weighs 15.8 grams. The specimen has convex blade edges, wide rounded shoulders and a stem which contracts to a blunt tip. The tip and one adjacent blade edge of this specimen appear ground. Both the cross section and longitudinal section

of this tool are bi-convex. Although probably manufactured as a projectile point this specimen was also employed as a drill.

The second projectile point fragment (CfD11:2207) is the base and partial mid-section of a quartz projectile point (Figure 4-17c). The only blade edge present is convex with an edge angle of  $70^\circ$  and it meets the stem in a wide angled shoulder. The stem is approximately 12 mm in length and it ends in a blunt 14 mm wide base. The specimen appears to have been broken during manufacture.

Less can be said about the two remaining point pieces; the first (CfD11:2462), is a base fragment of a contracting stemmed quartz projectile point (Figure 4-17b). The upper portion of the stem is about 12 mm wide while the base is 7 mm wide and blunt. The final fragment (CfD11:2457) is the very tip of a quartz projectile point.

Three other bifaces were recovered during excavation. The first (CfD11:2228) is a small, leaf shaped, quartz biface (Figure 4-17d). The specimen is 23 mm long, 18 mm wide, and 5 mm thick; it weighs 10.9 grams.

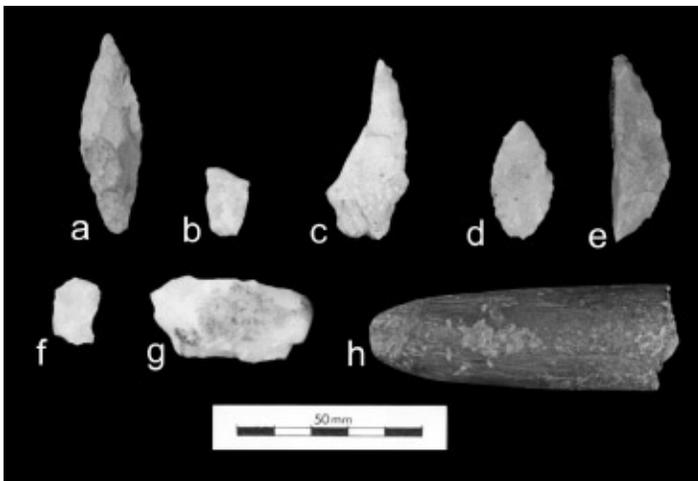


Figure 4-17. Lithic artifacts from Layer 8.

This specimen has uniform  $50^\circ$  edge angles. In cross-section, the specimen is bi-convex while the longitudinal section is bi-plano. The tip of this specimen is not especially well prepared. These characteristics suggest that this biface was a knife. However, it might have been used as a projectile point rather than as a knife.

The second biface (CfD11:2186) is a quartz fragment of a convex blade edge that has an edge angle of between  $50^\circ$  and  $60^\circ$  (Figure 4-17e). This

specimen appears to be a fragment of a much larger knife form than CfD11:2228. The third biface, (CfD11:2232), is the tip portion of a large quartz biface probably broken during manufacture.

In addition to the bifaces just described, there were two steep-edged, unifacially worked artifacts. One (CfD11:2470) (Figure 4-16f) is a small, rectangular shaped, quartz tool with a proximal striking platform and a distal working edge. This specimen has a maximum length of 12mm, a maximum width of 13 mm and a weight of 1.8 grams. The working edge is convex and has a span of 12mm, an edge height of 5mm, and a steep-edged angle of  $100^\circ$ . The specimen could be considered a thumbnail scraper.

The second specimen (CfD11:2471) (Figure 4-17g), is a thick, rectangular, cortex flake having a maximum length of 45mm, a maximum width of 23mm, a maximum thickness of 12 mm and a weight of 19.5 grams. This specimen was unifacially retouched along three straight edges. Edge angles range between  $50^\circ$  and  $70^\circ$  and edge heights vary between 4 mm and 7mm.

Not all of the artifacts found in this layer were made by flaking alone. Two fragments of ground stone were also recovered. One, CfD11:2182, is a large, light green quartzite flake that exhibits one ground and polished surface. The specimen is 33 mm long by 50 mm wide by 7 mm thick and weighs 18.7 grams. This flake appears to have been struck from a finely ground tool like an axe. The other, CfD11:2209, is a smaller flake of a darker green quartzite that exhibits polish on one surface. This specimen is 25 mm long by 48 mm wide by 8 mm thick and weighs 17.6 grams. The flake would appear to have been struck from the poll end of an axe.

Finally, there was also one ground and pecked stone. CfD11:2316 is an elongated fragment of a ground and pecked grey siltstone tool (Figure 4-17h). The specimen, broken in cross-section, has grinding striations over most of its surface. After the grinding, the specimen was battered or pecked in several places. The projecting end of the specimen is well battered. The tool probably acted both as an abrasive and as a hammer stone.

Ceramics were relatively frequent in this layer although not as numerous as Layer 6 (Table 2). Most of the 157 pieces of pottery were sorted into six vessel lots.

Vessel lot 302 (Figure 4-18, 4-19) consists of four rim sherds, 11 body sherds, and 18 body/base sherds. The makers of this vessel tempered the clay with crushed granite. The mouth diameter of this vessel is approximately 140mm. In profile, the lip of this vessel is flat and forms a right angle junction with both the interior and exterior surfaces of the vessel. The upper rim flares slightly from a point about 15 mm beneath the lip. The lip is 5 mm thick and the rim is 7 mm thick at a point 1 cm beneath the lip. Below this point, the upper rim and body sherds are between 7 mm and 9 mm thick. But near the base of the vessel, the sherds are about 10 mm thick. It is apparent that this vessel was used for cooking as carbonized food remains adhere to approximately half the sherds.

Decorations occur on both the interior and the exterior surfaces of Vessel 302. The interior surface is decorated with a row of punctates that were applied with a push/pull motion. The impressions, three per cm, are wedge-shaped and measure approximately 3 mm by 4 mm. The interior of the wedge presents shallow horizontal striations. The lip surface is decorated with right oblique impressions, which are again spaced at three per cm, and were made by a tool end that measured 4 mm by 1 mm. The impressions suggest that the tool edge was slightly notched in a pseudo-scallop form.

The exterior surface of vessel 302 is decorated with closely spaced, horizontal rows, two rows per cm, of 1 mm by 4 mm rectangular punctates that have been applied with a push/pull motion to the right. In each row, there are approximately five punctates per cm. At a point about 5 cm beneath the lip edge, the horizontal rows cease and oblique right and left rows of the same decoration form chevron motifs around the body of the vessel.

Vessel lot 306 (Figure 4-20, 4-21) consists of 31 body sherds and three rim sherds. Unfortunately, the interior or the exterior surfaces of a considerable number of these sherds have exfoliated. The vessel was tempered with a large amount of crushed granite. In profile, the lip of this vessel is flat and forms near right angle junctions with the interior and exterior vessel surfaces. The upper rim is near parallel and is just over 5 mm thick both at the lip and at a point 1 cm beneath the lip.

The interior of the vessel is decorated with horizontal rocker stamped bands of a dentate tool. The tool was 17 mm long and contained six rectangular teeth per cm. The lip of the vessel was decorated by the simple stamp application of this tool oriented obliquely to the right. On the exterior of the vessel, just beneath the lip edge, there are two rows of simple stamping. The first of these is oriented obliquely to the right and is approximately 5 mm wide. Immediately beneath this row, the dentate tool end was impressed vertically, deeper into the clay, producing a second row. This second row gives a visual impression of a thicker upper rim but actual measurements, as noted above, negate this.

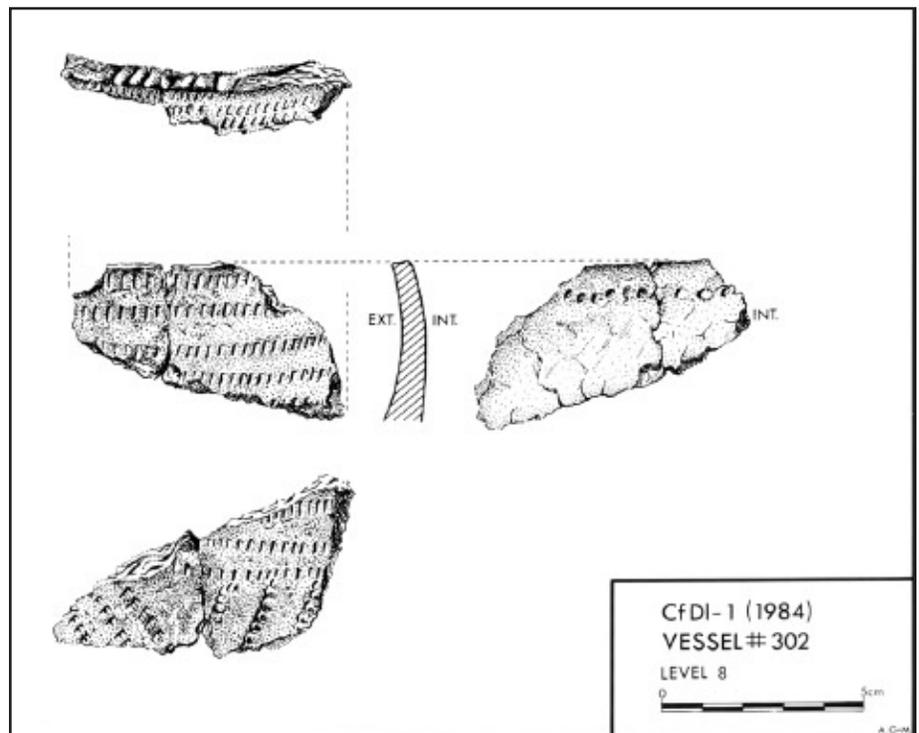


Figure 4-18. Vessel 302, Level 8. (Artist: Angel Gomez Miguelagez 1987)

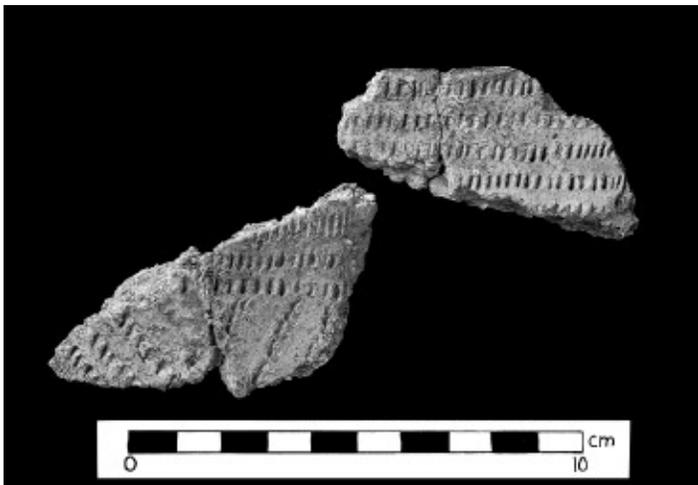


Figure 4 - 19. Vessel 302, Layer 8. (Photo: Drew Gilbert 2004).

Vessel lot 307 (Figure 4-20, 4-21) was represented by only one rim sherd. This was tempered with crushed granite. In profile, the rim lip is flat and forms a wide-angle junction with both the interior and exterior vessel surfaces.

The upper rim flares slightly outwards from a point about 1 cm beneath the lip. The lip and the upper rim are uniformly 7 mm thick. From the single rim sherd, the only available information about the pot it came from is that the very upper portions of both the interior and exterior rim surfaces were undecorated. The lip was decorated with a simple stamp application of a 3 mm wide tool edge. But

the lip decoration is obscured and thus, the configuration of the tool edge is unknown.

Vessel lot 308 (Figure 4-22a, b) contains 45 body sherds and three rim sherds. The vessel is tempered with crushed granite and portions of both the interior and exterior surfaces are caked with charred food remains, suggesting that like vessel 302, this pot was used for cooking. A cross-mend has been made between sherds of this vessel found in 1984 and sherds recovered in 1978.

In profile, the upper rim of vessel 308 contracts from about 8 mm thick at a point 1 cm beneath

the lip to 5 mm at the lip. The lip flares slightly outwards from a point about 15 mm beneath the lip. The flat lip forms a wide-angle junction with the interior wall but a right-angle junction with the exterior wall of the vessel. Approximately 20 percent of the vessel rim is present and based on this, the mouth diameter is estimated to be about 180mm. Most of the body sherds have a thickness of 9 to 10mm.

Vessel 308 is decorated just beneath the lip on the exterior surface with five horizontal rows of punctates produced by a tool with an oval end. The oval impressions are approximately 2 mm by 4 mm. Right below the rows of punctates are compact horizontal lines created by rocking a fine dentate tool. The imprints reveal that this tool had

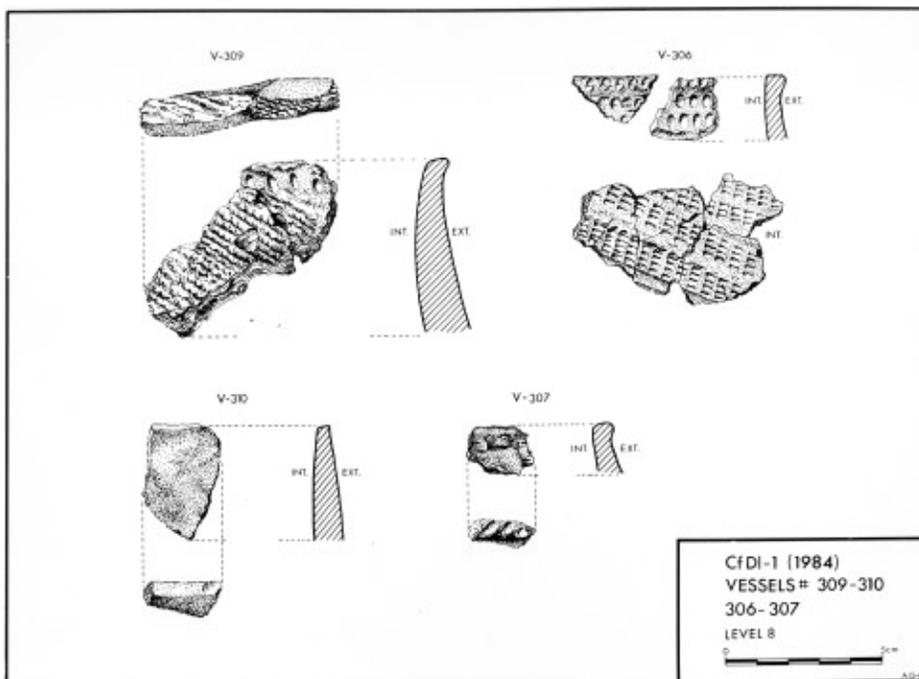


Figure 4 - 20. Vessel Lots 306, 307, 309 & 310, Level 8. (Artist: Angel Gomez Miguelagez).

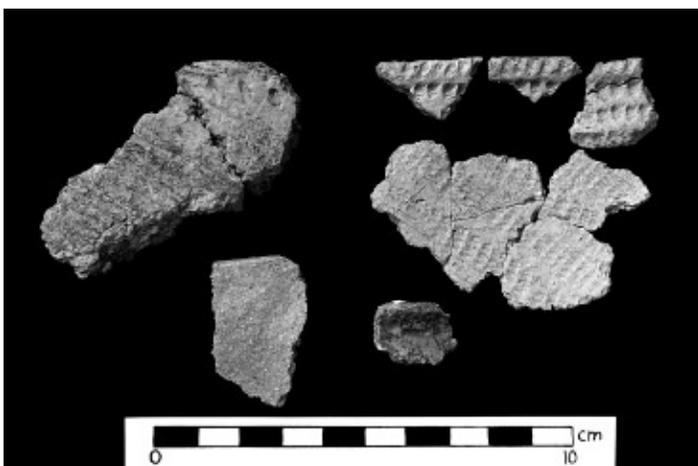


Figure 4 - 21. Vessels 306(uR), 307(iR), 309(uL), and 310(iL), Layer 8. (Photo: Drew Gilbert 2004).

10 small rectangular teeth per cm. Body sherds indicate that the same dentate tool was applied with a rocking motion to other portions of the vessel. From these body sherd decorations, the total length of the decorating tool is believed to have been 26mm.

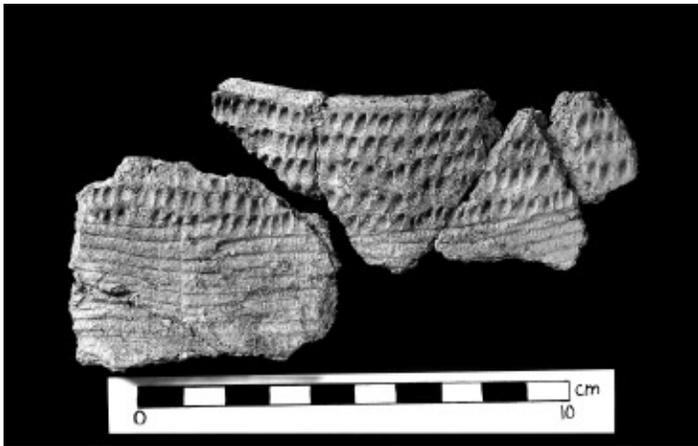


Figure 4 - 22b. Vessel 308, Layer 8. (Photo: Drew Gilbert)

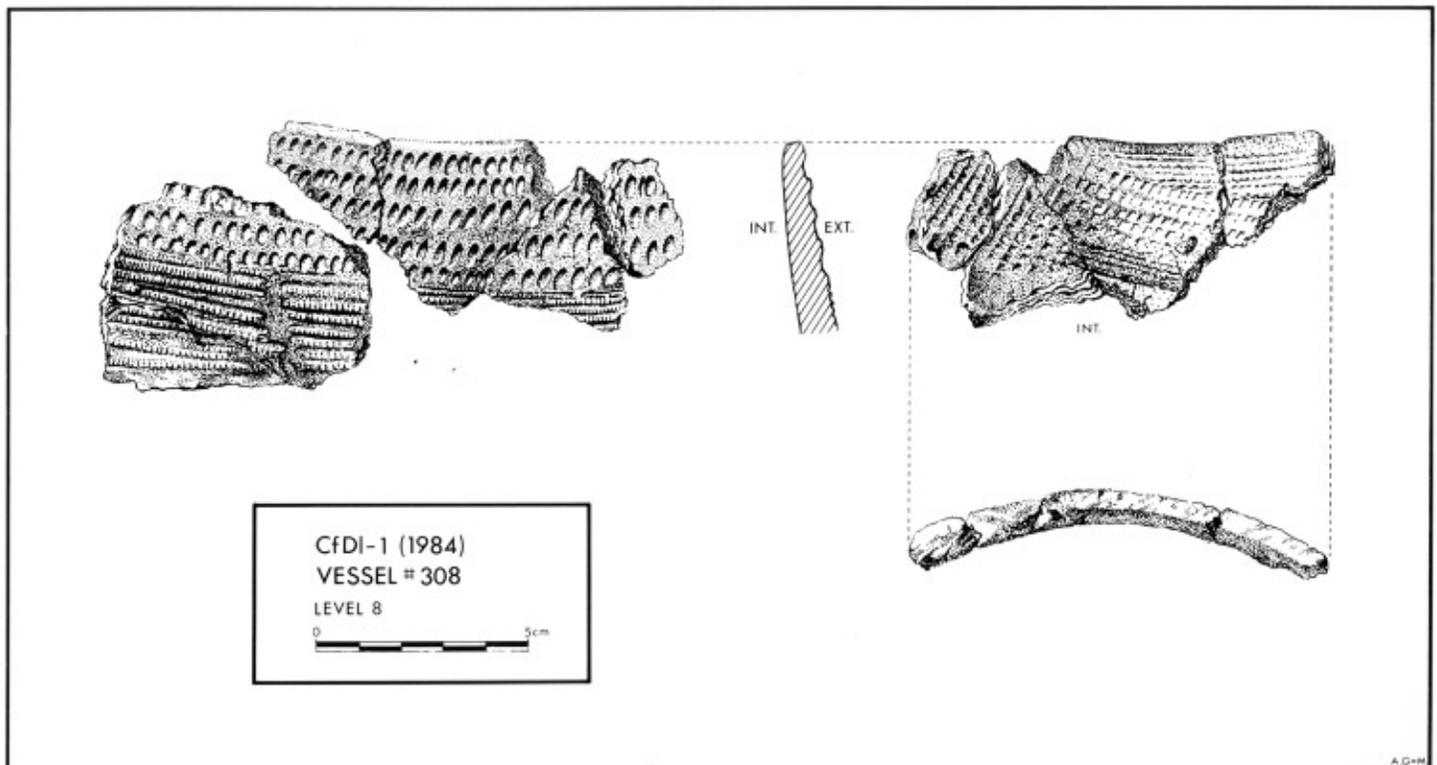
The lip surface of Vessel 308 is somewhat obscured. Impressions of an unknown tool edge were applied to the oblique right on the lip whereas the interior of the vessel was decorated with the same dentate tool as that used on the exterior. It would appear that, initially, a vertical band originating at the lip edge was applied with a rocking motion around the interior of the vessel. Following this, oblique bands

of the same decoration were applied from the lip area towards the base of the pot. This interior decoration dips to at least 35 mm beneath the lip edge.

Vessel lot 309 (Figure 4-20, 4-21) consists of 29 body sherds and one rim sherd. Most of the fragments attributed to this vessel were excavated in 1979; however, eight of the body sherds were recovered during the 1984 season. The vessel was heavily tempered with crushed granite and is poorly preserved. A few sherds have carbonized material adhering to both of their interior and exterior surfaces.

In profile, the upper rim of this vessel contracts from a thickness of 10 mm at a point 1 cm beneath the lip to 7 mm at the lip. The upper rim appears to flare slightly outwards from a point about 15 mm beneath the lip. The lip surface is flat and forms an obtuse angle with the interior wall of the vessel and a slightly less than right angle with the exterior of the vessel. Lip-flattening towards the exterior vessel surface has produced a slight, 2 mm wide, lip overhang. Body sherds of this vessel range between 10 mm and 14 mm in thickness. The single base sherd recovered is approximately 20 mm thick.

Figure 4 - 22a. Vessel lot 308, Level 8 (Artist: Angel Gomez Miguelagez 1987).



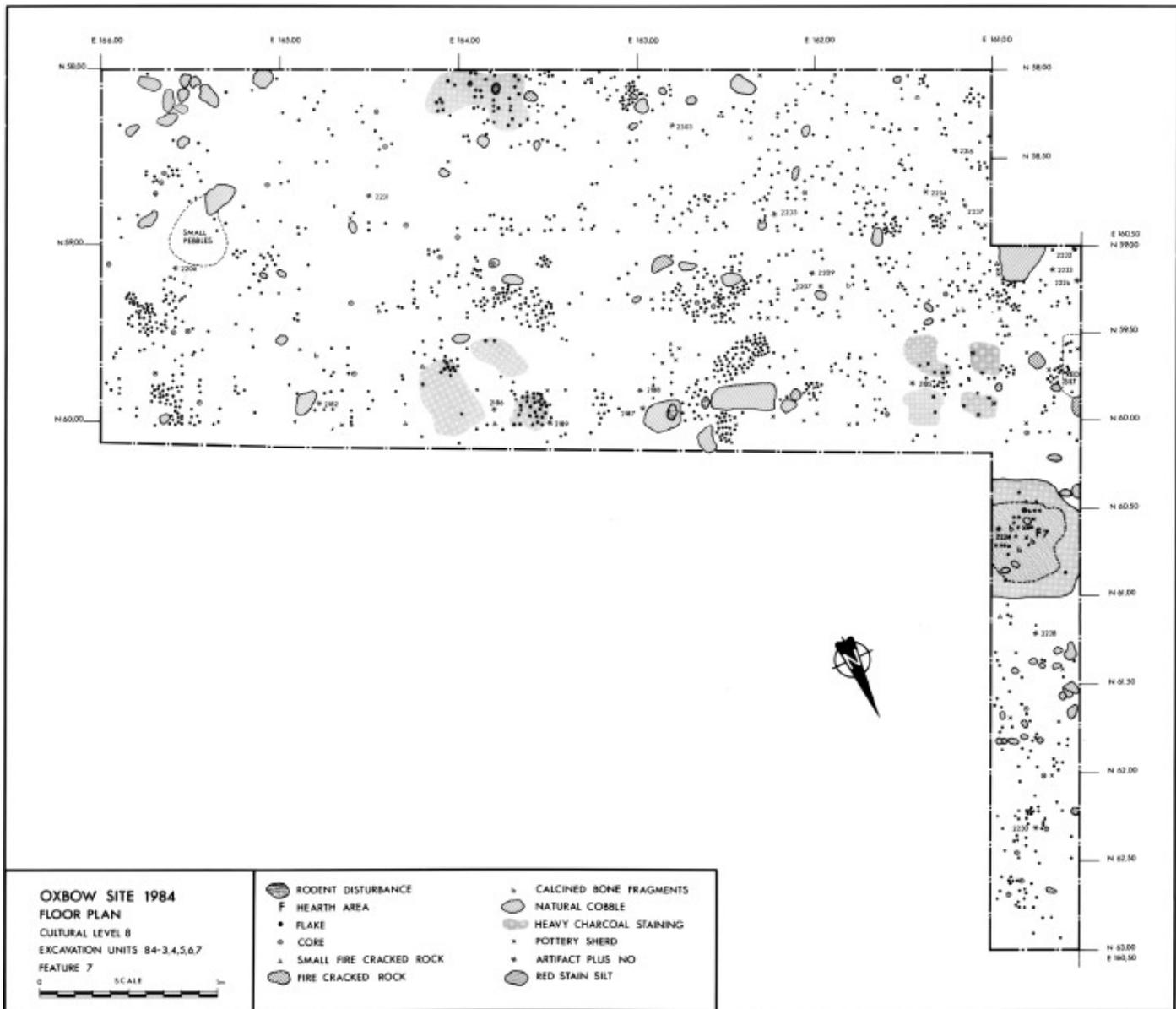


Figure 4 - 23. Floor plan for Layer 8 (Artist: Angel Gomez Miguelagez 1987).

The undecorated interior surface of Vessel 309 was smoothed clay, but it is quite irregular due to the excessive amount of crushed granite temper. The flat lip of the vessel is decorated with closely spaced applications of a pseudo-scallop tool that has been applied to the oblique left. The exterior of the vessel is decorated with a combination of punctates and impressions made with a pseudo-scallop tool. Just beneath the lip edge, a single row of punctates encircles the rim. These punctates, measuring 6 mm by 3mm, are elliptical and evenly spaced at two per cm. The punctates are superimposed upon pseudo-scallop impressions that have been applied with rocker stamping to the oblique left. The tool edge exhibits four shallow

pseudo-scallop notches per cm and was about 3 mm wide. The length of this tool is currently unknown.

Vessel lot 310 (Figure 4-20, 4-21) is represented by a solitary, grit-tempered rim sherd. The lip of the vessel is flat and forms a near right angle with both the interior and exterior surfaces of the vessel. The upper rim contracts towards the lip, being 8 mm wide at a point 1 cm beneath the lip and 5 mm wide at the lip. The upper rim of the vessel flares slightly outwards from a point about 12 mm beneath the lip. Both surfaces of this rim sherd have been smoothed but there are no decorations.

## Features

There were several areas of heavy charcoal staining within this layer, and a patch of fire-reddened silt surrounded one of these. Identified as Feature 7 (Figure 4-23), this hearth covered an area approximately 70 cm in diameter. In profile, the 5 cm thick hearth appeared as a thin, tapered lens at the base of Layer 8.

Recovered from Feature 7 were fragments of calcined bone, 35 quartz flakes, a few small pottery sherds, and some shellfish periostrachum. The burnt bone sample included one sturgeon scute and a few fragments of mammal bone.

The flotation sample from this hearth produced three carbonized Bulrush seeds (*Scirpus hudsonianus*) and one Raspberry seed (*Rubus* spp.). Other artifacts from the surrounding occupation floor include a bi-pointed projectile point and/or drill (specimen CfD11:2234 described above) as well as fragments from punctate, dentate and pseudo-scallop decorated pottery vessels.

A number of soil samples were taken from the heavily charcoal-stained areas of Layer 8 (Figure 4-25). From these samples the late Harold Hinds identified five bulrush seeds, probably (*Scirpus hudsonianus*), eight Raspberry seeds (*Rubus strigosus*), one Pin cherry seed (*Prunus pensylvanica*), one seed of Mountain Ash (*Sorbus* spp.), two Orache (*Atriplex* spp.) and over 50 carbonized spheroids (Hinds 1986). Taken in conjunction with the seeds identified from Feature 7, the carbonized botanical samples from Layer 8 indicate mid-summer to fall gathering activities.

## Layer 9

Seven quartz flakes and one small, grit-tempered, ceramic sherd were excavated from Layer 9. The fragment was not assigned a vessel lot.

## Layer 10

Layer 10 yielded 14 quartz flakes, a projectile point and some ceramics. The point (specimen CfD11:2157) is a small, quartz point with a total length of 43 mm, a maximum width of 20mm, and a maximum thickness of 6mm. The neck is 10 mm wide and the base is 11mm. wide. The point

weighs 4.2 grams (Figure 4-24). The blade edges are convex and form wide angled shoulders. These edges are uniformly sharp with edge angles of about 40°. The 13 mm long stem expands by 2 mm from the neck to the unthinned, straight base.

Vessel lot 311 consists of three grit-tempered, body sherds that fit together. This mended sherd has a uniform thickness of 9 mm. The interior is smooth

and undecorated whereas the exterior was decorated with a pseudo-scallop tool applied with a rocking motion. The tool edge was 40 mm in length and about 2 mm wide. There are four to five triangular notches per cm of tool length.

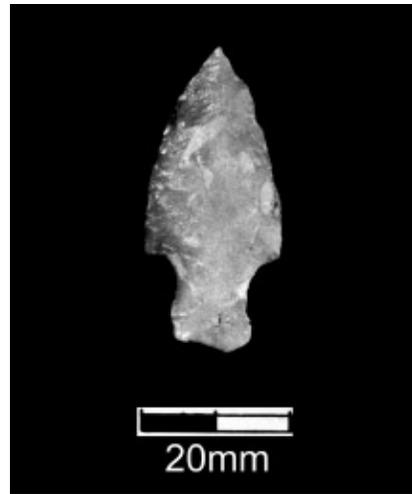


Figure 4 - 24. Projectile point recovered from Layer 10 (1984).

## Layer 11

Layer 11 produced five quartz flakes and two body sherds. One sherd (Vessel lot 312) had an average thickness of between 6 mm and 8 mm and was grit-tempered. The interior of the vessel was smooth and undecorated while the exterior was decorated with horizontal rows of a simple, stamped, pseudo-scallop tool impressions. The tool was 3 mm wide and contained approximately three notches per cm. The exterior of the sherd was encrusted with charred food remains. An additional undecorated, small sherd was found in the level but it could not be assigned to a vessel lot.

## Layers 12 to 18

Seven layers found below Layer 11 produced little or no archaeological evidence. Layer 12 produced one small quartz flake Layer 13 yielded a small, undecorated, ceramic sherd. Layers 14, 15, and 16 did not produce any cultural materials. From Layer 17, there were 15 quartz flakes and three quartz cores. Layer 18 produced no cultural materials.

## Layer 19

Unlike the previous seven layers, Layer 19 produced many flakes, lithic artifacts, ceramics (Table 2), and a hearth feature.

### Artifacts

Layer 19 had 20 quartz cores, 1,838 quartz flakes and 57 other flakes that were mostly rhyolite. The six projectile points or parts of points discovered in this layer will be described first. CfD11:2194 was the only projectile point from this layer with a full base and shoulder portion (Figure 4-26a). This point had a maximum width of 29mm, a maximum thickness of 8mm, a neck width of 15mm, and a slightly expanding base width of 17mm. Both the cross section and longitudinal section of this specimen are biconvex. The base is thinned and slightly convex while the shoulders are obtuse and right-angled. This projectile point was manufactured from a reddish brown rhyolite.



Figure 4 - 25. (Left to right) Joan Peterson and Pamela Ward collecting wood charcoal sample (1984).

The second point (CfD11:2213) is the base of a stemmed quartz projectile point that appears to have been broken during manufacture (Figure 4-27b). The specimen has a neck width of 18 mm and a base width of 15mm. The one shoulder that is present is wide angled and the base of the specimen is straight. CfD11:2394 is the base portion of a quartz projectile point (Figure 4-27c). Its convex base is 10 mm wide.

Two grey quartzite projectile point tips and one quartz tip were recovered from Layer 19 (Figures 4-26d, 4-26e, 4-26f). These specimens are all biconvex in cross section and are relatively large in size. From all appearances, they would seem to have been broken from specimens similar in form to CfD11:2194. The blade edges on all three are exceedingly sharp and have edge angles of between 50° and 60°.

In addition to those specimens already described as projectile points, seven biface fragments and one complete biface blank or preform were recovered from Layer 19. With the exception of one rhyolite specimen, these were manufactured from quartz. The first (CfD11:2381), is a rectangular shaped biface blank or preform which measures 35 mm by 40 mm and weighs 29.2 grams. The edge angles on this specimen vary between 60° and 70°. This specimen was found in association with a hearth area (Feature 5).

The second artifact (CfD11:2214) is a biface base with a blade edge angle of 50° to 70° (Figure 4-26h). The maximum width of this convex based specimen is 36mm.

Another biface (CfD11:2260) is also from a base of a large biface and this is the specimen manufactured from a mottled brownish-pink rhyolite (Figure 4-26g). This specimen has a straight base and convex blade edges. The blade edges form an angle of 40° to 60°. The probable maximum width of this specimen is near 55 mm and its probable maximum thickness is about 9mm.



Figure 4 - 26. Lithic artifacts from Layer 19.

The tip portion of a large, bifacially-chipped knife (CfD11:2190) has convex blade edges and edge angles of 50° to 70° (Figure 4-26i). Three additional biface fragments (CfD11:2159; CfD11:2196 and CfD11:2264) have edge angles of from 70° to 80°. All three are too fragmentary to determine the artifact form(s) from which they derived.

Besides the bifacially formed tools or parts thereof described above, a utilized quartz flake was recovered from Layer 19. This primary flake (CfD11:2391) exhibits a distal striking platform. The specimen is 44 mm long by 39 mm wide by 9 mm thick and has a weight of 23.3 grams. The edge of the specimen opposite the striking platform shows use-wear for about 25 mm. Although this flake does not have a deliberately prepared working edge, it displays the general attributes of the steep-edged unifaces from this layer.

Ten steep-edged unifaces (Figure 4-27) were recovered from Layer 19. All except of these were quartz, with the exception of CfD11:2261, which was made from a grey rhyolite. All of the quartz specimens had some cortex remaining on their dorsal surfaces. One of the specimens was too fragmentary to allow measurements or comments on form or function.

Following Cantwell (1976), combining the attributes of bit or working edge height, weight, and edge angle, the others were tools used for working hardwoods. Heavy, thick, steep-edged tools such as these might also have been used for

working other hard materials such as antler or bone (Cantwell 1979:6-7). Earlier studies support Cantwell's findings (Wilmsen 1968 and Hester, Giblow and Albee 1973). Table 3 summarizes the attributes of the nine intact steep-edged unifaces from this layer.

Both percussion techniques and grinding were used on one other lithic tool found in this layer. This was a complete axe manufactured from a green and yellow banded quartzite (Figure 4-26k, 4-28). With the exception of the poll, this specimen was completely ground. A few non-ground cavities on the proximal end suggest that the axe was shaped by chipping first. In its final form, this axe is 123 mm long by 48 mm wide by 29 mm thick and weighs 279.7 grams. The specimen is rectangular in longitudinal section with a bit angle of 60°. The poll of the specimen is semi-rectangular in cross section and measures 23 mm by 30 mm. The slightly convex bit of the specimen is lightly scarred from use.

Ceramics were also common in Layer 19. Nine vessel lots were recognized, of these, seven included at least one rim fragment. Four of these seven were identified on the basis of a single rim. Sixty-six body sherds could not be confidently assigned to any of the vessel lots. Of these, 22 were undecorated with smoothed surfaces; 32 were decorated with a rocking motion of a pseudo-scallop tool, and the remaining two were decorated with a rocked-dentate tool.

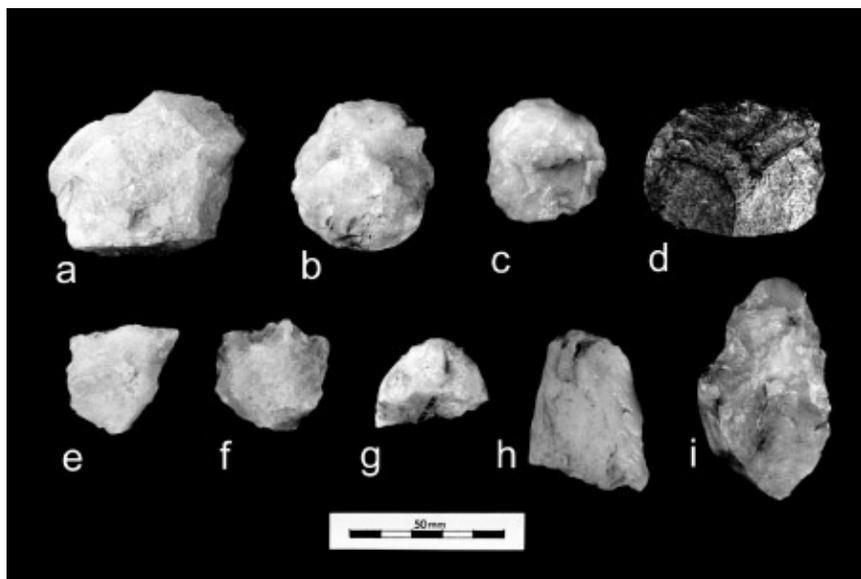


Figure 4-27. Steep-edged unifaces recovered from Layer 19.

Vessel lot 313 (Figure 4-29, 4-30) was identified on the basis of one rim sherd. In profile, this rim expands considerably from a width of 4 mm at the lip to 8 mm at 1 cm below the lip. The lip surface is flat and forms an angle with both the interior and exterior walls of the vessel. Crushed granite was added as a temper to the paste and the sherd was smoothed on both the interior and exterior surfaces, neither of which was decorated. The considerable expansion of the rim suggests the vessel likely had a globular shape.



Figure 4 - 28. Ground stone axe in situ on the surface of Layer 19.

Vessel lot 314 (Figure 4-29, 4-30) is represented by one small rim sherd and three body sherds. The rim exhibits a uniform thickness of 6 mm from the flat lip to a point 1 cm beneath the lip.

The lip forms an angle junction with both the interior and exterior vessel walls. In relation to the body of the vessel, the rim angles outwards at a point 4 mm beneath the lip. Just beneath the lip, the rim is decorated with vertical rows, spaced about 5 mm apart, which were made with a single stamp of a dentate tool edge. The teeth impressions, about six per cm, are approximately 1 mm wide. The body sherds of this vessel lot are decorated with tightly spaced rows of dentate impressions. This vessel was tempered with crushed granite.

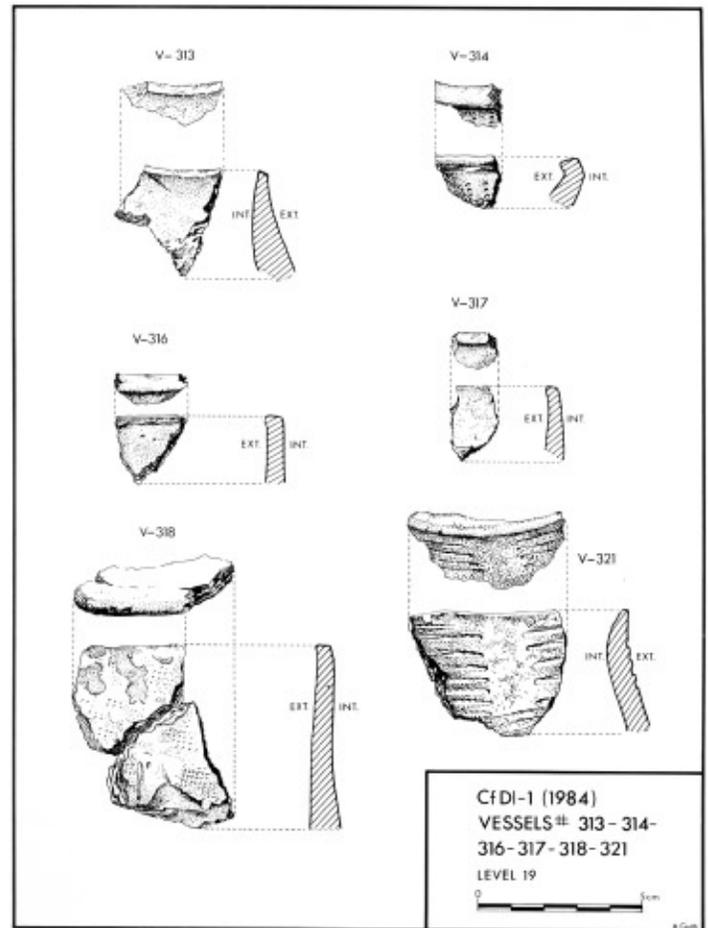


Figure 4 - 29. Vessel lots 313, 314, 316, 317, 318, 321 Layer 19 (Artist: Angel Gomez Miguélagez 1987).

**Table 3: Steep-edged Uniface Attributes - Layer 19, Oxbow Site**

Attributes	Catalogue			Number					
	2393	2389	2395	2261	2388	2265	2210	2340	2390
<b>Outline</b>	ro	uk	re	ov	ov	ro	ro	re	tr
<b>Steep Edge Retouch</b>	d	d	d	dlr	d	d	dlr	dl	d
<b>Platform Location</b>	d	uk	d	d	uk	d	uk	d	d
<b>Length (mm)</b>	39	uk	56	47	72	51	41	52	35
<b>Width (mm)</b>	37	38	39	59	47	46	40	66	33
<b>Thickness (mm)</b>	14	15	18	15	25	32	17	33	8
<b>Weight in Grams</b>	29.4	uk	49.5	50.0	82.2	88.6	38.8	136.2	18.6
<b>Edge Span - distal</b>	34	27	23	45	23	33	36	35	36
<b>Left</b>				40			20	37	
<b>Right</b>				34			27		
<b>Edge Height - distal</b>	12	9	7	8	13	10	14	22	7
<b>Left</b>				8			9	18	
<b>Right</b>					9			9	
<b>Edge Angle - distal</b>	70°	80°	80°	80°	80°	90°	90°	90°	80°
<b>Left</b>				80°			80°	70°	
<b>Right</b>				80°			80°		

Key: d = distal, ov = oval, ro = round, re = rectangular, tr = triangular, uk = unknown, l = left, r = right

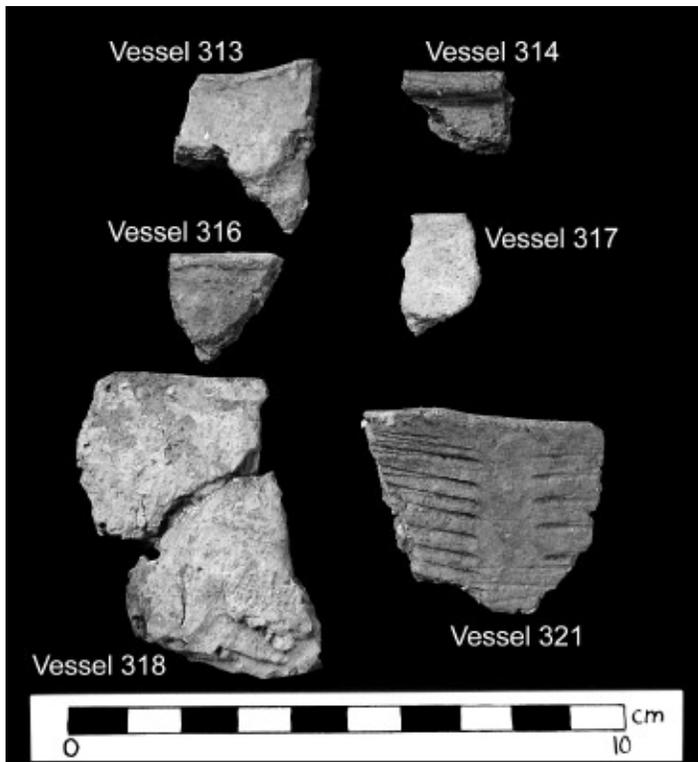


Figure 4 - 30. Vessels 313, 314, 316, 317, 318, and 321, Layer 19. (Photo: Drew Gilbert 2004).

Vessel lot 315 was identified on the basis of one small rim sherd. The flat lip surface of this rim has a width of 5 mm. The lip forms a wide rounded junction with the interior vessel wall and an acute angle with the exterior wall. As with the rim of Vessel 314, this rim appears to angle outwards just beneath the lip. This rim was tempered with fine grit.

Vessel lot 316 (Figure 4-29, 4-30) has also been identified by a single rim sherd. The flat lip of this rim forms an approximate right angle with both the interior and exterior walls of the vessel. A very slight overhang, probably created during the flattening of the lip, is visible on the exterior surface. The upper rim of this vessel is 6 mm wide at the lip and also at 1 cm beneath the lip. The interior, lip, and exterior surfaces were all smoothed but were not decorated. The vessel appears to have been tempered with finely crushed granite.

Vessel lot 317 (Figure 4-29, 4-30) is also represented by one sherd. The flat lip of this vessel forms almost right angles with both the interior and exterior vessel surfaces. The profile of the rim expands slightly from 4 mm at the lip to 6 mm at a point 1 cm beneath the lip. This undecorated rim

has been smoothed on the interior, lip, and exterior surfaces. The vessel was tempered with what appears to be crushed granite.

Vessel lot 318 (Figure 4-29, 4-30) contains seven body sherds and one rim sherd. The rim and two of the body sherds were recovered during the 1979 excavation of Layer 15 of Unit 78-12. Portions of the interior and exterior surfaces of several sherds have exfoliated. The lip portion of the rim is flat and the rim forms a wide rounded junction with the interior wall. The exterior wall junction appears at right angles but this is somewhat obscured due to the partial exfoliation of the upper rim surface.

In profile, the rim expands only slightly from 4 mm at the lip, to 6 mm at a point 1 cm beneath the lip. The body sherds have an average thickness of 6 mm. In relation to the remainder of the vessel, the rim appears almost vertical. The vessel was tempered with crushed granite. The interior and lip portions of this vessel were smoothed and not decorated. However, the exterior of the rim and four of the body sherds were decorated with a pseudo-scallop tool that was pressed into the clay with a rocking motion. This tool, of unknown length, had approximately five 1 mm wide notches per cm. The orientation of the decoration was obscured. The rim of this vessel was drilled to produce a 2 mm diameter hole about 3 cm below the lip edge. The hole occurred at a fracture line.

Vessel lot 319 consists of six undecorated body sherds that are tempered with crushed quartz. The sherds average about 5 mm in thickness.

Vessel lot 320 consists of four body sherds that average 9 mm thick. The vessel appears to have been tempered with crushed granite and both the interior and exterior surfaces of the vessel have been smoothed. One sherd has charred organic material affixed to its interior. Another sherd exhibits a post-firing perforation made with a tapered drill. The resulting hole has a 5 mm diameter on the exterior surface and breaks through the interior surface with a 2 mm diameter.

Vessel lot 321 (Figure 4-29, 4-30) includes one rim and three body sherds. This vessel was heavily tempered with crushed granite. In profile, the rim is slightly expanding from 3 mm at the lip, to 6 mm

at a point 1 cm beneath the lip. The lip is flat and forms an angle with the interior and exterior walls of the vessel. The 6 mm wide, parallel walled, rim appears almost vertical, but it flares outwards at a point about 1 cm beneath the lip.

One section of the lip is slightly raised forming a low, rolling castellation. Although they had been smoothed, both the interior and lip surfaces of this vessel present a rather rough surface. The exterior surface is decorated with blocks of horizontal impressions created with a rocked pseudo-scallop tool. Some 25 mm beneath the lip, the blocks of decoration, discrete on the upper rim, become

overlapped by horizontal impressions of the same tool. The length of this tool is undetermined but it had 5 shallow notches per cm.

**Feature**

Although there was a large quantity of lithic debitage and artifacts in Layer 19, only one hearth feature (Feature 5) was identified (Figure 4-31). This was a small area of fire-reddened silt adjacent to some heavy charcoal staining. The hearth measured approximately 100 cm by 70 cm and had a thickness of about 6 cm (Figure 4-32). In profile, Feature 5 conformed to the general depth of Layer 19.

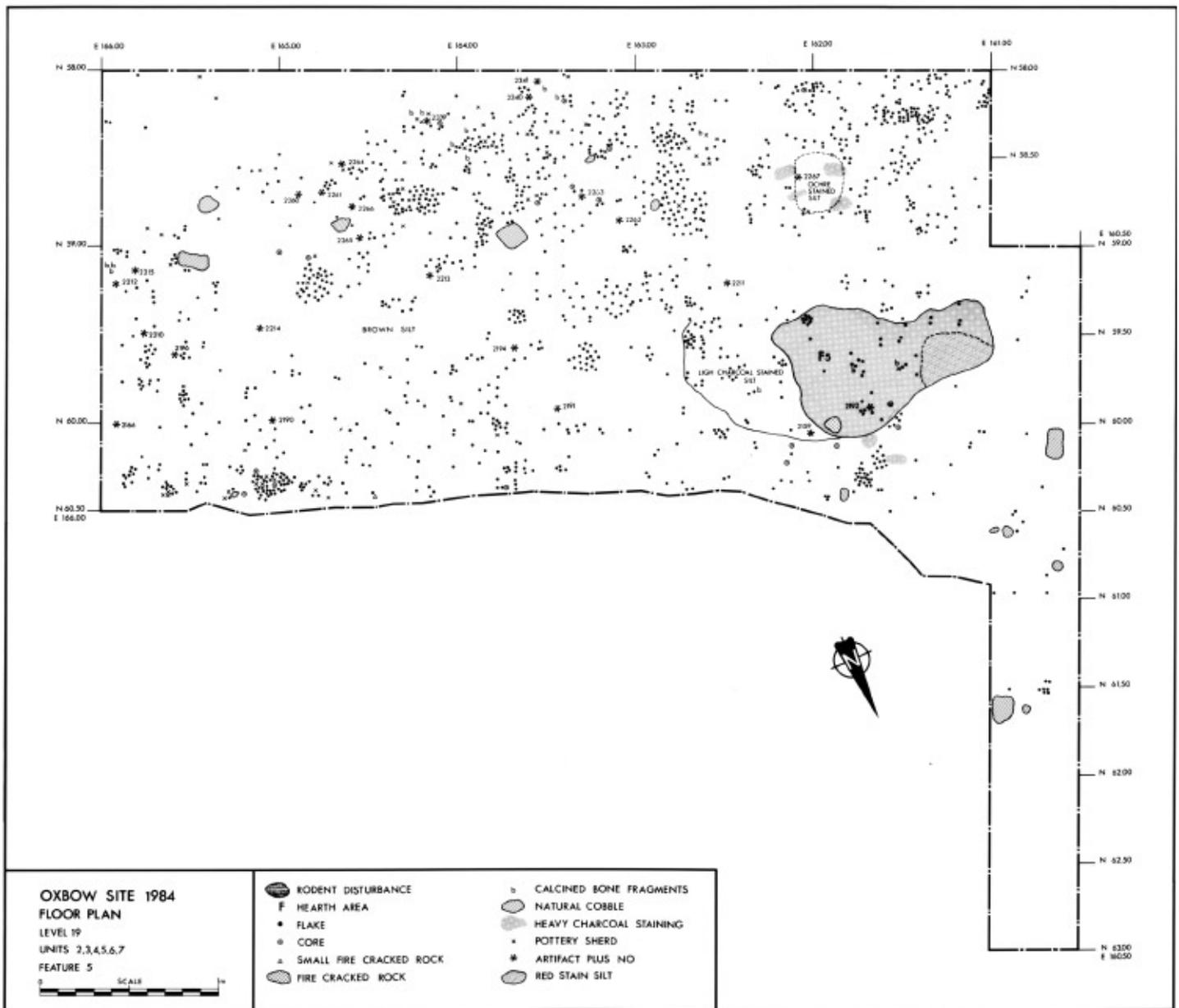


Figure 4 - 31. Floor Plan for Layer 19 (Artist: Angel Gomez Miguelagez 1987).



Figure 4 - 32. Surface exposure of Feature 5, Layer 19.

This feature contained 74 quartz flakes, three non-quartz flakes, two quartz cores, two projectile point tips, one undecorated pottery rim sherd (Vessel lot 313) (Figure 4-29, 4-30), a number of small calcined bone fragments, a few traces of red ochre, and enough carbon for a sample to be collected for radiocarbon dating. Only one fragment of fire-cracked rock was found in association with this hearth. Artifacts of significance found in the surrounding living floor included other undecorated as well as pseudo-scallop decorated pottery rim sherds, large round to oval scrapers, one medium to large, slightly expanding, stemmed projectile point and a ground stone axe. (These have been described above).

Several other analyses were undertaken on samples from this layer. With the exception of one bone fragment, a vertebral neutral arch of some small mammal, the Feature 5 bone fragments were burnt beyond identification (Speiss 1984).

Soil from the hearth registered “very high” in phosphorus content while the surrounding Layer 19 soil issued a “medium” reading. Mercury content analysis on general Layer 19 soil resulted in a low mean reading of 19PPB. Soil from Feature 5 produced a slightly higher mercury reading of 24PPB. The carbon sample collected from Feature 5 was submitted for radiocarbon dating but returned an unacceptably recent date of 2070±60 B.P. (Beta10513).

Another Layer 19 sample also returned an unacceptably recent date of 1760±90 B.P. (Beta10512). The artifact scatter and the thinness of Layer 19 gives the distinct impression that this was a single occupation, living floor. Some of the

Layer 19 matrix was floated. The floatation sample processed for Feature 5 produced one carbonized spheroid. Floatation of general level soil samples produced three carbonized Bulrush seeds (*Scirpus budsonianus*) and several more carbonized spheroids.

## Layer 20

Layer 20 held only seven quartz flakes and one body sherd (Vessel lot 322). This body sherd has an average thickness of between 5 mm and 6 mm. It was grit-tempered and decorated on the exterior with pseudo-scallop impressions. This ceramic sherd was found deeper than any other from the 1984 excavations.

## Layer 21

No cultural material was found in Layer 21.

## Layer 22

Layer 22 produced eight quartz flakes.

## Summary of the 1984 Cultural Assemblages

While most layers excavated in 1984 contained only a few lithic flakes or pottery sherds, Layers 6c, 8, and 19 produced diagnostic artifacts such as projectile points, scrapers, and ceramics in “living floor” contexts. Layers 4 and 10 provided additional diagnostic artifacts. The following summarizes the chronologically important information recovered by the 1984 project.

During the 1984 excavations, ceramics were first encountered in Layer 4. It would seem that the pottery in this level is representative of the type of ceramics manufactured by the ancestors of the Miramichi Mi’kmaq at the time of contact (Figure 4-33). All of these sherds were from the same cord-wrapped stick decorated and organically tempered vessel (Vessel lot 300) (Figure 4-1, 4-2). From this evidence, it is apparent that the people living here then made vessels with rounded lips and with parallel-sided and vertical rim. They decorated their pots with an encircling row of small punctates on the exterior upper rim and the remainder of the

exterior surface with a cord-wrapped stick that was both simple stamped and rocked over the vessel surface.



Figure 4 - 33. Artists rendering of ceramic vessel manufacturing process (Artist: Francine Ward-Francis 2003)

No projectile points were found in Layer 4 but based upon the earlier research, particularly the style of point found near the base of the plough zone in 1979 (Allen 1980a:143), it is probable that the type of projectile point in use at this time would have been a corner-notched variety.

Lower down, Layer 6c produced an abundance of lithic debitage, some stone tools, fragments of five separate vessel lots, and four closely spaced hearth areas. The only diagnostic stone tool recovered from this layer was the base of a small contracting stemmed projectile point. The one shoulder present has a wide rounded form (Figure 4-34).

Three of the five ceramic vessel lots from Layer 6c are partially organically tempered and decorated with a cord-wrapped stick. Two of these three have an encircling row of punctates in the upper rim area, cord-wrapped stick decorated lip surfaces, and interior surface channelling. The two remaining vessel lots from Layer 6c are grit-tempered and have flat and decorated lip surfaces (Figure 4-34).

One vessel exhibits a small rolling-castellation on a slightly flaring rim and was decorated with a pseudo-scallop tool applied in a rocking motion. The other vessel was decorated with rows of small crescent-shaped punctates on the exterior and with a single row of punctates on the interior.

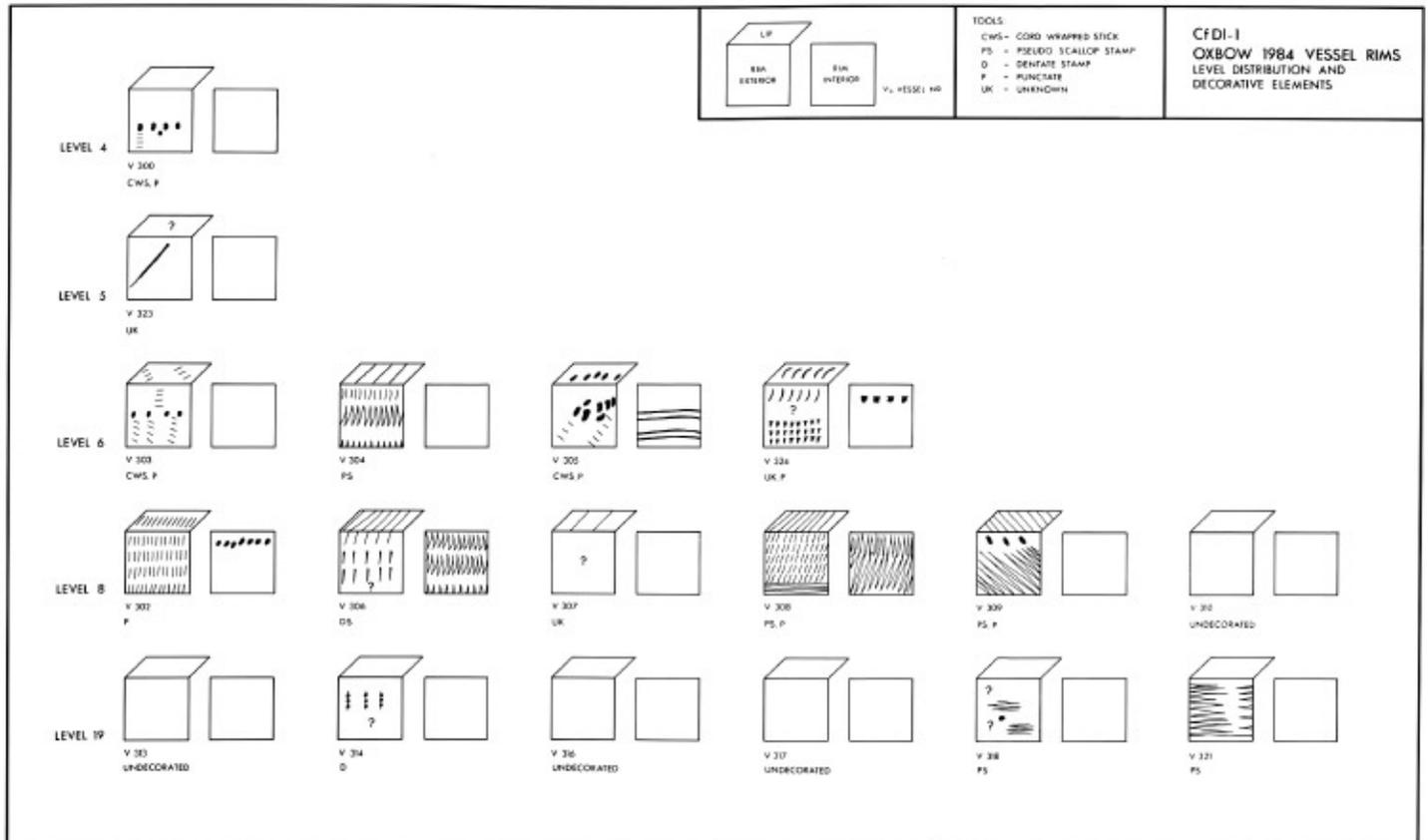


Figure 4 - 34. Sequence of vessel rim attributes (1984) (Artist: Angel Gomez Miguélagez 1987).

Thus, most of these vessels were similar to the one found at the higher layer but there were some vessels in Layer 6c that had a different tempering and different decorations to those of the more recent pot (Vessel 300). The greater number of vessels found at this depth allows the greater variation than the single pot found higher but this data also shows that some of the features of that later vessel had some time depth at this site.

The numerous hearth features of this layer reflect a heavily used living floor with food preparation and tool manufacturing areas (Figure 4:12). The majority of the burnt bone fragments recovered from the layer were fish; mostly sturgeon, with some beaver as well as a young deer or caribou. These faunal remains support the assumption based on the site's physical location that it was a late spring or early summer occupation where fishing was the major local attraction. Botanical remains from this layer also indicate a warm weather, summer to fall occupancy.

Lower down and thus further back in time, the heavily charcoal stained silt of Layer 8 contained an abundance of lithic debitage, a few stone tools, fragments of six ceramic vessels and one hearth area. Like Layer 6c, this layer represents a living floor (Figure 4-23). Unlike the points found higher up in the site, two small, contracting stemmed projectile points were recovered here. One of these points contracts to a pointed base and exhibits wide rounded shoulders (Figure 4-17a). The other, an unfinished or broken specimen, contracts to a blunt base and exhibits one wide angled shoulder (Figure 4-17b). The only small scraper recovered during 1984 was also recovered in this layer.

The six vessel lots identified from Layer 8 display a range of decorating techniques including the use of dentate, pseudo-scallop and punctate tools. All six of the vessels are grit-tempered and have flat lip surfaces that form angular junctions with the interior and exterior vessel surfaces. Five of the six have decoration on their lip surfaces and three of the six are decorated on the interior of the upper rim (Figures 4-18 - 4-22). Two of the vessels display a combination of punctate and pseudo-scallop decoration on the upper rim and a third combines

the use of punctate and dentate tools in this same area. One vessel rim is entirely undecorated and another exhibits only lip decoration.

Thus, like the vessels found at higher levels, these too have punctate decorations and were grit-tempered, but the angles of the rims to the bodies, the granite tempering of some and the decorations are different. The implement most often utilized to decorate the vessels leaves a pseudo-scallop impression. There is no evidence of a cord-wrapped stick being used to decorate the pots. Of the 1984 excavations, this is the first occurrence of dentate tool decorations. Furthermore, at this layer people occasionally chose not to decorate the rims of their vessels at all (Figure 4-34).

Although the lithic and ceramic artifacts show differences in design and techniques of decoration, the purpose and seasons of living here appear to have been the same. The one hearth area excavated from Layer 8 contained fragments of burnt sturgeon bone and some unidentified mammal bone. The sturgeon remains suggest Layer 8, like Layer 6c was occupied during late spring and/or early summer. Similarly, the botanical remains from this level indicate a warm weather occupancy.

Lower down in Layer 10b, the matrix was a dark charcoal-stained silt layer. The layer produced one small, slightly expanding stemmed quartz projectile point (Figure 4-24) and body fragments of one grit-tempered vessel. The vessel was decorated with a pseudo-scallop tool that had been applied with a rocking motion. Thus, this vessel was not unlike those in Layer 8 but the point form was different with an expanding rather than contracting-stem.

Another living floor with more artifacts was encountered in Layer 19 (Figure 4-31). This thin, slightly charcoal stained, reddish brown silt living floor contained much lithic debitage, a number of stone tools, fragments of nine ceramic vessel lots and one hearth area (Figure 4-32). Although recognized during the 1978-1979 excavations, Layer 19 had produced little prior to 1984 due, in large part, to surface scarring that had removed Layer 19 from most areas of the adjacent 1978-1979 excavation units. The scarring is visible in the east wall profile of Unit 84-5. However, the recovery of a medium-sized, straight stemmed

point in association with pottery at this level in late 1979 provided most of the impetus for the 1984 research.

The most intact projectile point recovered from Layer 19 in 1984 was medium to large in size, had a slightly expanding stem form and exhibited asymmetric angled shoulders (Figure 4-26a). The specimen was made from rhyolite. Four additional projectile point tips, all of which have a size corresponding to the base just described, were also recovered here in 1984 (Figures 4-26d-f).

In addition to the points, Layer 19 produced 10 medium to large, steep-edged unifaces. With one exception, these chunky scraping tools were made on large primary quartz flakes (Figure 4-27). One small ground and polished stone axe (Figure 4-26k) and seven biface fragments were also recovered from this layer (Figure 4-26g-j). Such lithic tools were not recovered in the higher layers.

The ceramics from Layer 19 could be assigned to nine separate vessels. Like many of those from the previous layers, all of the vessels were grit-tempered. Six included at least one rim sherd and all of these six shared flat lip surfaces but varied in rim profile (Figure 4-30). Like one rim from Layer 8, three of these six rim sherds were completely undecorated. Two were decorated on the exterior with a pseudo-scallop tool whereas the other was decorated with a dentate tool. No vessel lot was decorated on either the interior or the lip surface.

The hearth in Layer 19 contained a moderate amount of lithic debitage, some stone tool fragments, one carbonized spheroid and a small amount of burnt bone. The only bone that could be identified came from some small mammal, possibly a beaver. Flotation samples from this layer produced three carbonized bulrush seeds and more carbonized spheroids.

The stone tool assemblage recovered from this living floor was substantially different from those of the more recent deposits on the site. The heavy scrapers, axe, large projectile points, and formed bifaces could indicate greater involvement in hunting, butchering and wood, bone, or antler working. Although fishing cannot be inferred from such a tool kit, neither was it by the stone tools found in the more recent levels, all of which

did contain sturgeon scutes. None of the lithics found at this site were diagnostic of fishing. However, fish remains were found in the nearby contemporaneous Augustine Mound terrace sites (Stewart 1982), so combined with the site location, it is most probably that the earliest inhabitants of Oxbow were participating in the fishery.



## Chapter 5

### The 1984 Chronological Framework With A Comparison To The 1978-1979 Chronology

The Oxbow site with its deep stratifications presented an ideal opportunity for establishing chronological sequences for both stone tools and pottery styles for northeastern New Brunswick. As a result of the 1978-1979 research, a chronological framework was compiled for the Early, Middle and Late Maritime Maritime Woodland Period (Allen 1980a, 1981) (Figures 5-1). In 1984, the volume of earth excavated was small in comparison with that of the earlier years and as a result fewer artifacts and less general site information was recovered. However, the 1984 excavation yielded a significant amount of quality information that can be used confidently to assess the relative chronology and cultural associations that were proposed on the basis of the earlier excavations (Figures 5-1, 5-2).

Although some information was recovered from the intervening layers, analyses of the 1984 materials essentially dealt with artifacts from three distinct cultural layers. Layers 19, 8 and 6c occurred in the lowest, middle, and upper levels, respectively, and represent the Early, Middle and Late Maritime Maritime Woodland Period occupations of the site. A summary of the previously reconstructed lithic and ceramic sequences provides a base for comparison of the earlier conclusions with the 1984 results.

#### The Early Maritime Woodland Period

The deepest arbitrary levels excavated in 1978-1979 indicate that the Oxbow site had been occupied when the land was merely a low riverside bar. Although artifacts were not abundant from the lowest levels excavated in 1979, one medium to large, straight stemmed, projectile point was found in the central site area at a depth of over 1.5 metres (Figure 5-1, bottom row right). Based on its low stratigraphic position, this stemmed point form was placed earliest in the Oxbow projectile point sequence and it was suggested that its style of manufacture was probably derived from Terminal Archaic or Transitional stemmed point types (Allen 1980a:137). Excavated from the same 10cm

arbitrary level as this projectile point were sherds from an undecorated, thin-walled, ceramic vessel. A radiocarbon date of  $2,480 \pm 105$  B.P. was returned on a charcoal sample recovered 10 cm above these sherds in the same excavation unit (Allen 1980a: 141) and therefore the stemmed point and the thin, undecorated pottery pieces were deposited prior to this date.

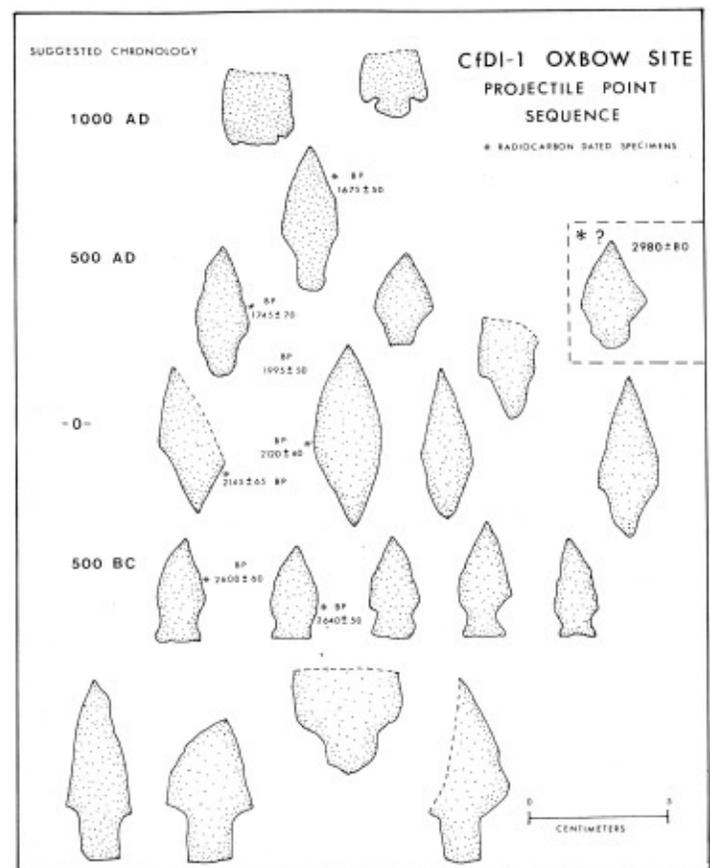
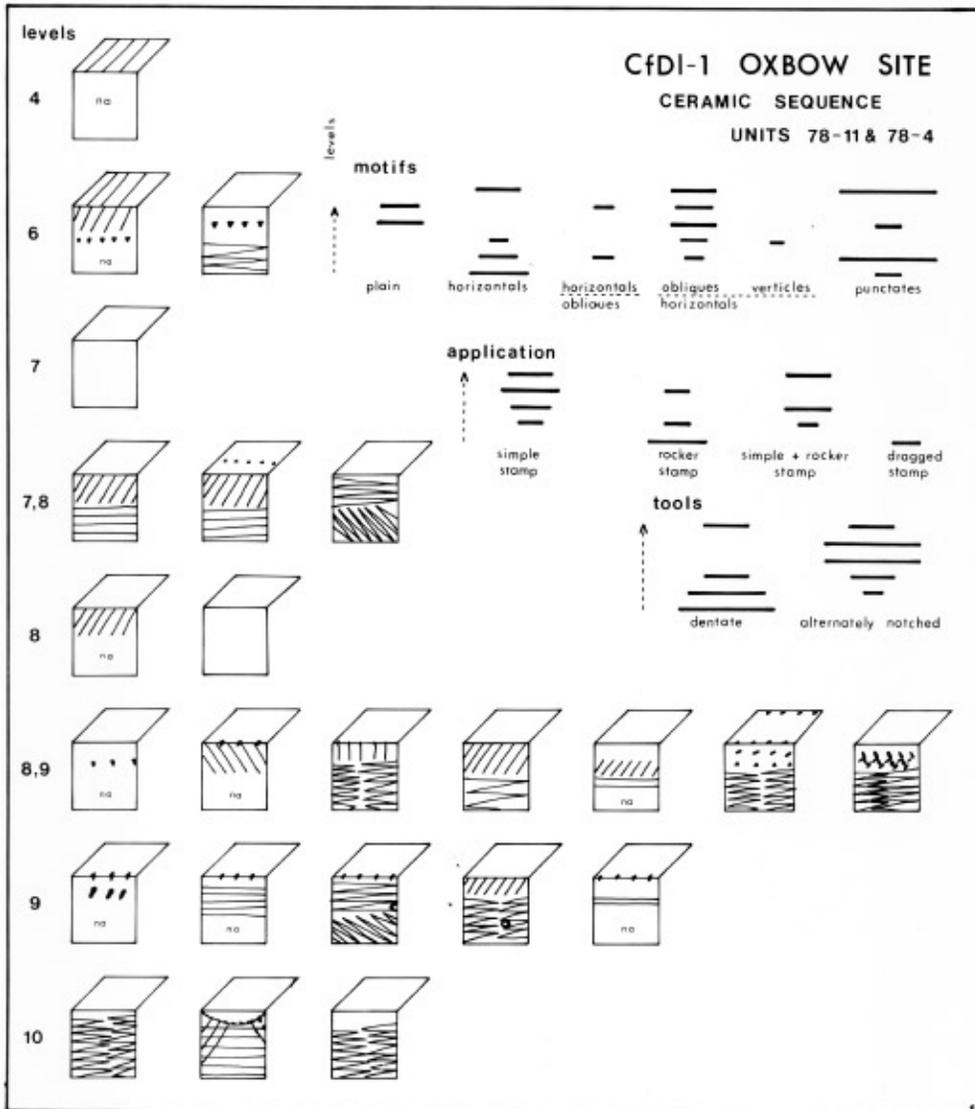


Figure 5 - 1. Oxbow Site Central Area Sequence (Allen 1980a:143).

Also in 1978-1979, from another area of the site, two small expanding stemmed projectile points were found in association with pottery, in hearths dated to  $2,640 \pm 50$  B.P. and  $2,600 \pm 60$  B.P. (Figure 5-1). The dates suggested that these point forms were slightly earlier than or perhaps contemporaneous with the larger, straight stemmed type whereas other information suggested these smaller points forms were slightly more recent (Allen 1980a:141).



The ceramic vessels from the lowest and thus the earliest levels excavated in 1978-1979 were grit-tempered and relatively thin with vertically oriented upper rims and flat lip surfaces. The vessels had no decoration on either their lip surfaces or on their interiors. The vessel exteriors were either plain or decorated with dentate or pseudo-scallop stamps that had been applied with either a simple stamp or a rocking motion (Allen 1981:12).

During 1984, although a few flakes and one pottery sherd were found deeper than any previously recorded from the Oxbow site, the larger sample from Layer 19 was representative of the Early Maritime Woodland Period at Oxbow. This layer produced a medium to large, slightly expanding, stemmed projectile point (Figure 5-5a, b) in association with a group of large, steep-edged uniface,

Figure 5 - 2. Oxbow site Ceramic Sequence (78-11 and 78-4).

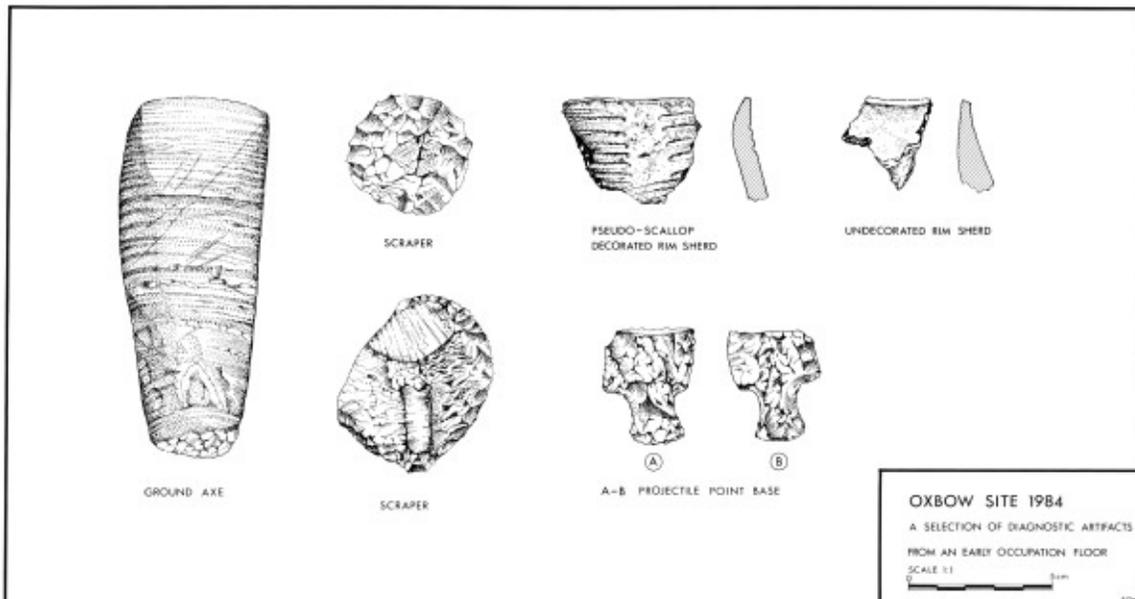


Figure 5 - 3. Artifacts recovered from earliest layers at the Oxbow site: 1984 (Artist: Angel Gomez Miguelagez 1987).

some biface fragments, a bevelled ground stone axe and fragments of plain, pseudo-scallop and dentate decorated ceramics (Figures 4-27, 4-28, 4-30, 4-31 and 5-3). The ceramic vessels were relatively thin, grit-tempered and not decorated on either their flat lip surfaces or on their interiors. Three of the six vessels for which a rim fragment was present were undecorated (Figure 4-34).

As in previous years, the 1984 dates received on wood charcoal samples submitted from the deepest cultural levels of the site are unsatisfactory. Three from the thin living floor of Layer 19 returned unacceptably recent dates of 1,745±95 B.P. (S-2551), 1,760±90 B.P. (Beta-10512), and 2,070±60 B.P. (Beta-10513). Given the contents of the Layer 19 assemblage and what is currently known about local and regional chronological indicators, even the earliest of these three 1984 dates lacks adequate antiquity.

Some 30cm to 40cm above Layer 19, in Layer 10, a small, expanding-stemmed, projectile point was found (Figures 5-5b). The attributes of this point are almost identical to those found in association with the early 2,600 B.P. dates from areas excavated in 1978-1979 (Figure 5-1). Thus, the relative placement of this point form within the Oxbow projectile point sequence has been confirmed (Allen 1980a:140).

In summary, the earliest portion of the Oxbow chronological record as outlined in previous reports has been substantiated and even expanded (Figure 5-3, 5-4). Decorated and undecorated Middle Maritime Woodland-like ceramics are definitely found in association with Late Archaic-like projectile points. A small, expanding-stemmed point form follows an earlier,

larger, stemmed form and both occur early in the Maritime Woodland Period. This smaller form, at least in the Miramichi River District of northeastern New Brunswick, is not a direct antecedent of the Late Maritime Woodland Period notched forms.

In addition to the confirmation of the projectile point and ceramic types found together, an Early Maritime Woodland Period designation has been established for another diagnostic group of tools. Large thick scrapers, hitherto considered by some archaeologists to be from the Late Archaic time period (Kingsbury and Hadlock 1951, Sanger 1971, Davis 1978, Tuck 1984), have been shown here as at least lasting into the Early Maritime Woodland Period. Also, although only one axe was recovered from Layer 19, its form, size and other attributes might well represent the Early Maritime Woodland Period ground stone industry in this region (Figure 5-3).

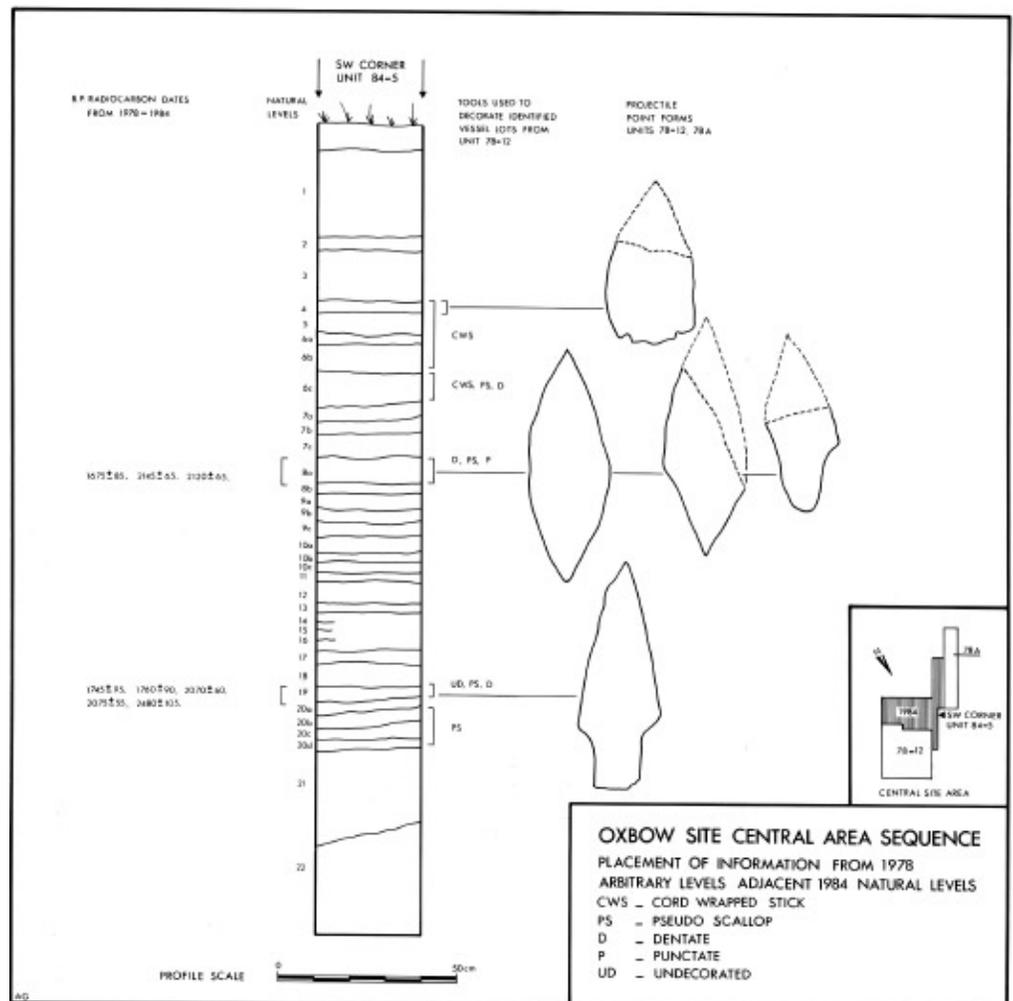


Figure 5 - 4. Oxbow site central area sequence,

Based upon the lithics and ignoring the ceramics, the Layer 19 assemblage would probably be attributed to the Late Archaic Period. The ceramics do, however, exist in association with these Archaic-style lithics. Most unfortunately, the radiocarbon dates from the central site area have been of no assistance in dating this early level. A spread of almost 300 hundred years exists between two dates returned on 1984 samples collected from adjacent areas of this thin living floor. A possible spread of over 900 hundred years exists between the most recent of these and a date returned from the same depth in 1979. Based upon stratigraphy and the two dates around 2,600 B.P. which were returned on separate samples associated with small, expanding stem points, I would suggest that the Layer 19 occupation dates within the range of 2,600 to 2,800 years ago.

### **The Middle Maritime Woodland Period**

The Middle Maritime Woodland Period at Oxbow was defined in terms of changes in both the projectile point styles and the ceramic record, based on the 1978-1979 excavations. Artifacts that exhibited these sequences were excavated from the middle arbitrary levels of the site. A number of radiocarbon dates from these levels suggested that the Middle Maritime Woodland Period existed at the site between 2,200 and 1,600 years ago (Allen 1980a:141).

According to the 1978-1979 chronology, by 2,100 years ago, a bipointed form of projectile point had replaced the small, expanding stemmed form of the earlier period (Figure 5-1). While some of the bipoints had wide angled shoulders and stems that contracted to sharp points, others had wide rounded shoulders with stems that contracted to blunt bases. Two hearth areas, each containing one of the bipointed forms, were dated to 2,145±65 and 2,120±65 B.P. Arbitrary levels directly above these dated levels, produced smaller, contracting to straight-stemmed points. Charcoal samples associated with two of these small, stemmed point forms returned dates of 1,745±70 B.P. and 1,675±50 B.P. (Allen 1980a:142). Thus, the radiocarbon dates correspond with the stratigraphic order in these samples.

The ceramic vessels recovered from these same middle arbitrary levels of the site displayed a much broader range of form and decorative techniques than those from the earlier levels. There was some consistency in that, for the most part, the vessels were still relatively thin and all were grit-tempered. Rim profiles, however, tended to show more variance of form with some outward and inward flaring. Occasionally, a castellation was present. Most lip surfaces remained flat but there were also a few rounded lips.

The Middle Maritime Woodland Period vessels found in 1978-1979 displayed a wide range of decoration on vessel exteriors (Figure 5-2). Dentate and pseudo-scallop decorating tools were almost equally popular and both were used in simple, rocker and dragged stamping applications. In addition, trailing, drawing, and punctating were popular. Both interior and exterior lip edges as well as lip surfaces usually were decorated. Decoration was also applied to the interior upper rims of a number of vessels (Allen 1982a:13).

During the 1984 excavations of the Middle Maritime Woodland Period deposits in Layer 8, one intact bipoint was found. This specimen, which might also have been employed as a drill, had wide rounded shoulders and a stem that contracted to a blunt base (Figures 5-5c). Layer 8 also produced the base portion of another contracting-stemmed point (Figure 5-5d) as well as what appears to be the base of a larger stemmed point that might have been broken during manufacture.

All of the portions of the six ceramic vessels recovered from Layer 8 in 1984 were relatively thin and grit-tempered. In profile, all of the upper rims displayed flat lip surfaces, four appear to flare slightly outwards from the body of the vessel. One vessel exterior had been decorated with a dentate stamp. Two others were decorated with a pseudo-scallop stamp as well as punctates (Figure 4-35). One vessel was decorated with punctates only and another lacked decoration. All of the five decorated vessels have lip surface and/or lip-edge decoration and three were also decorated on the interior upper rim (Figure 4-19 - 4-22).

The only charcoal sample submitted from Layer 8 returned a date of 1,675±85 B.P. (S-2550). Layer 8 was not the refuse of a single occupation but rather

it was produced by a number of occupations, most of which lacked alluvial separation. This layer, which ranged between 4 cm and 14 cm deep, was sometimes divided by an intermittent sand lens (Figure 3-12 - 3-14). A date of perhaps 2,000 B.P. is likely appropriate for the earlier Layer 8 occupations.

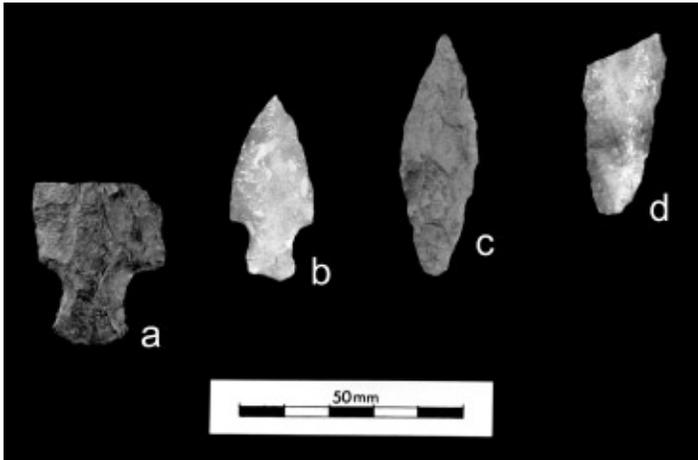


Figure 5 - 5. Bifaces recovered during 1984 excavations.

In summary, the projectile point and ceramic sequences for this Middle Maritime Woodland Period as determined on the basis of the 1984 work, substantiate those outlined in earlier Oxbow reports. The Middle Maritime Woodland Period can be defined according to the presence of bipointed and small, straight to contracting stemmed projectile points, as well as by greater variety in ceramic vessel form and decoration. The use of dentate, pseudo-scallop, and punctate tools to decorate lip edges, lip surfaces and rim interiors are indicative of the Middle Maritime Woodland Period dating between about 2,200 and 1,600 years ago in the Miramichi River District.

### The Late Maritime Woodland Period

The Late Maritime Woodland Period was represented by the uppermost arbitrary levels excavated at the Oxbow site during 1978-1979. This period was marked by the introduction of relatively thin, organically-tempered ceramics having rounded lips and either plain or cord-wrapped stick impressed surfaces. The majority of vessels decorated with the cord-wrapped stick were also decorated with a rim-encircling row of small punctates. Approximately half of the

decorated vessels from these upper levels had decorated lip surfaces and combed or channelled interiors (Allen 1980a:143).

The earliest radiocarbon date in association with such ceramics was 1,675±50 B.P. This date was also associated with a small, stemmed point form and a few pseudo-scallop decorated sherds. Another date of 1,080±90 B.P. was reported from an even more recent arbitrary level having only cord-wrapped stick decorated or plain, organically tempered pottery.

During 1978-1979, the sole projectile point found in direct association with cord-wrapped stick decorated pottery was a small, stemmed form (Figure 5-1, Point dated 1675 + 50 BP. One specimen of the corner-notched form, found in the plough zone, was also thought to be indicative of the very Late Maritime Woodland Period (Figure 5-1, uL). In the 1984 excavations, the Late Maritime Woodland Period was represented by Layer 6c where the base of one small contracting stemmed projectile point was recovered. Also associated with this layer were fragments of five ceramic vessel lots, three of which were organically-tempered and decorated with a cord-wrapped stick. Two of the three vessels also had a row of punctates in the upper rim area, cord-wrapped stick decorated lip surfaces, and interior surface channelling (Figure 4-34). Of the two remaining vessels, one was flat-lipped and decorated with a pseudo-scallop tool, and the other was decorated with punctates only. The most recent vessel lot identified in 1984 was from Layer 4. It was organically-tempered and decorated with cord-wrapped stick impressions and punctates in the upper rim area (Figures 4-1, 4-2). No radiocarbon dates were obtained for the upper levels of the 1984 excavations.

In summary, the 1984 excavations reinforced and added information to what had been reported previously as chronologically important for the Late Maritime Woodland Period in northeastern New Brunswick (Allen 1980a, b, 1981, 1982a). The 1984 findings have confirmed that small-stemmed projectile points do span the Middle and Late Maritime Woodland Periods. Use of corner and/or side-notched projectile points in this area is indeed

very late. Level 6c illustrated the previously noted overlap between ceramic decorating techniques of the Middle and Late Maritime Woodland Periods.

### Chronology Conclusions

The 1984 excavations provided quality information from three distinct cultural layers that could be used to test the chronological framework proposed on the basis of the 1978-1979 excavations. This earlier chronology was based on data retrieved via the arbitrary level excavation of a much larger area of the site. The comparison of the material from the earlier defined Early, Middle and Late Maritime Woodland Periods with that from the cultural layers excavated in 1984 (specifically Layers 19, 8, and 6c) was accomplished and the results of the comparison were more than favourable.

The 1984 research and subsequent analysis have confirmed the 1978-1979 projectile point sequence. At the base of the site, medium to large-stemmed points, reminiscent of Late Archaic or Transitional period forms, are found. These were followed by small, slightly expanding-stemmed points. This type of point, by about 2,100 years ago, was superseded by bipointed forms that, in turn, appear to develop into several varieties of late, small stemmed points that are common in the Miramichi River District (Burley 1974, Allen 1981). Most recent in the sequence are side and/or corner-notched points that were not well represented in the most recent Oxbow levels and are therefore considered to occur very late in the cultural sequence (Figure 5-6).

The 1978-1979 suggested ceramic sequence has also been verified by the ceramics excavated in 1984. The vessels found in the lowest levels of the site could be termed Early Middle Maritime Woodland. They bear no resemblance to the thick-walled cord-impressed Vinette 1 ceramics generally considered to be earliest in Northeastern ceramic sequences (Ritchie 1969, Sanger 1979, Hamilton and Yesner 1985). The middle levels of the site produced vessels exhibiting a wide variety of decorative attributes and some variance in form. The upper levels of the site confirmed the use of the cord-wrapped stick as a Maritime Woodland

Period indicator and also verified that the small point forms continued well into the most recent historic period.

In conclusion, the 1978-1979 projectile point and ceramic sequences have been tested and verified by the additional 1984 investigations at the Oxbow site. Without knowledge of their stratigraphic positions, the assemblages from the 1984 layers would have been correctly positioned temporarily using the chronological frameworks derived from the 1978 and 1979 fieldwork. With the addition of the 1984 data, the earlier chronology is confirmed and even enhanced.

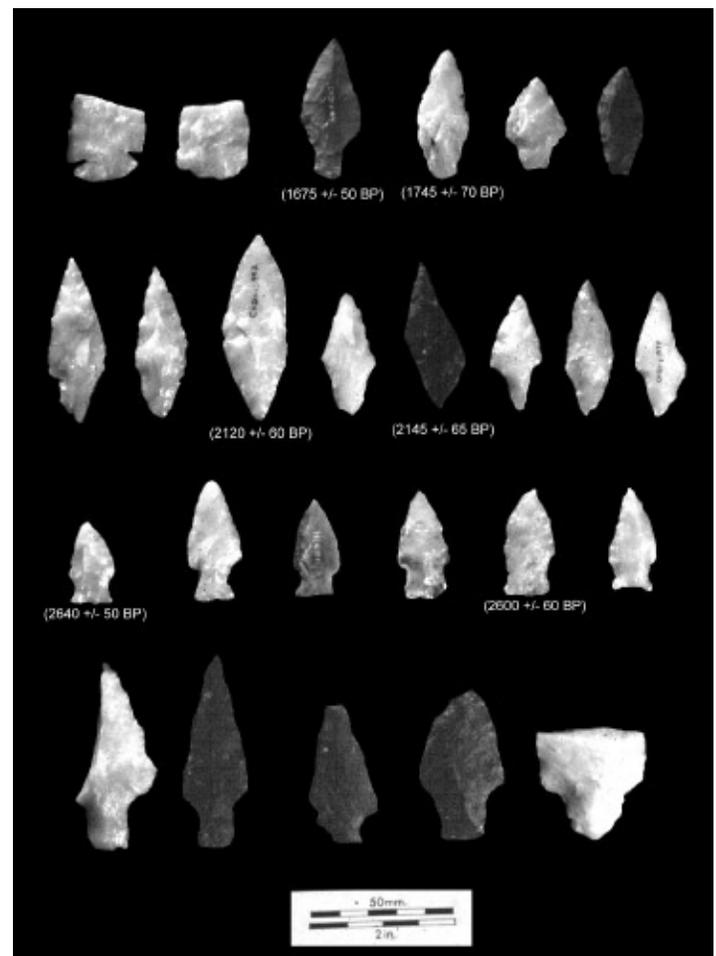


Figure 5 - 6. Projectile point sequence for the Oxbow site.

## Chapter 6

### Site Seasonality And Subsistence

Ask any modern New Brunswick Mi'kmaq who enjoys fishing and you will hear that "*Ox-a-bow*" on the Little Southwest Miramichi is "a great place for fish". Mi'kmaq from the New Brunswick communities of Burnt Church, Big Cove, Indian Island, Bouctouche and Eel Ground as well as others from Restigouche and Maria, Quebec, still come to fish at Oxbow. Just after the ice moves from the Little Southwest Miramichi, the visitors arrive to join the Red Bank residents to catch *black* Salmon (*Salmo salar*), Smelt (*Osmerus mordax*) and Sea Trout (*Salvelinus fontinalis*).

Later in the spring and throughout the summer, a few of the more enthusiastic return to fly cast for the *bright* Salmon (*Salmo salar*) (Figure 6-1) or to troll for Striped Bass (*Morone saxatilis*). Although Shad (*Alosa sapidissima*) and Gaspereau (*Alosa pseudoharengus*) appear in great numbers during their early summer spawning runs, these fish are almost completely ignored today.



Figure 6 - 1. Fly fishing for Salmon on the Little Southwest Miramichi, Upper Oxbow, just above the Oxbow site - CfDI1 (1985).

### Historical Accounts of Mi'kmaq Fishing

The importance of the salmon resources to the Miramichi Mi'kmaq is well documented. In the minutes of the Nova Scotia Privy Council, it is recorded that on "October 29, 1765, William Davidson, John Cort & Co. applied for a Township on the *Merrimichy*. They received 100,000 acres in response to their memorial, and were

also granted possession of the Salmon Fishery, with a reservation, however, to the Natives of their rights in the said fishery" (Odell 1899:93). The Government acknowledged Native fishing rights as a condition of this 1765 grant but by 1785, the first sheriff of Northumberland County, Benjamin Marston, related that the Natives above Miramichi Point were suffering due to a lack of fish. Miramichi Point, presently Wilsons Point, lies at the confluence of the Northwest and the Southwest river branches, approximately 13 miles downriver from Red Bank . Mr. Marston wrote:

*"The Salmon Fishery on this River is an object worth the attention of the Government, but unless it is attended to will be ruined by the ignorance and avarice of those concerned in it. It has failed much this season - no doubt through the impolitic methods used to catch the Fish, which are chiefly by set nets, which are so extended from each side as to leave the Fish very little room to run, and at Davidson's are extended fairly quite across the river to the utter exclusion of the poor savages above"* (Odell 1899:98).

Seven years later, a portion of a 1792 survey map depicts the location of a Native village on the Little Southwest Miramichi

(Figure 2-3). The Natives, of which Francois Julien was the head, had a "*Village*" and were making "*improvements*" on the Oxbow site. A reference to this village occurs in a letter written in 1801 by Provincial Secretary Jonathan Odell to Mr. Duffey Gillass on behalf of Governor Carleton. The Odell letter refers to concerns represented by Chief Francois Julien that Mr. Gillass was using the Red Bank Point "to set a net across this branch of the

river (the Little Southwest Miramichi), by which you (Mr. Gillass) injure the Indians that are settled on that stream" (Odell 1899:95).

Also in late 18th century, L'Abbe Rene Joyer, a French priest at Caraquet, wrote a letter concerning a dispute over the Miramichi salmon fishery. He related that during 1799, a group of Mi'kmaq, following their custom, approached one of their favourite fishing places only to find a number of English already fishing there. After some discussion, the Natives agreed to allow the English to fish for the remainder of that day but that they (the Natives) would return the following day to fish without the English in attendance. This agreement was broken when the English reappeared late the following day and demanded that the Natives give them part of their catch. The Natives refused. A fight ensued involving five Natives and 12 English. The outnumbered Natives were badly beaten with the consequence that at least one of them died. The provincial government conducted an inquiry into the incident that resulted in the imprisonment one English offender. Another Englishman barricaded himself in his home in fear of Native retaliation. Seven others fled the area (Joyer 1800:17).

The historic record shows that during the last 200 years, the Mi'kmaq of the Miramichi, and at Red Bank in particular, struggled to maintain a place in the salmon fishery. The records also show that under early European management, the once dependable resource was being depleted quickly. Today, the Red Bank First Nation has negotiated for and now successfully manages a government regulated *food fishery* (Figure 6-4). The community share the catch from each allotted net. Unfortunately for the Mi'kmaq, with the recent decline in Atlantic salmon stocks, this regulated fishery has come under attack by various groups and individuals.

### Oxbow Site Faunal Samples

With the excavation of the Oxbow site, the very long time depth of the community of Red Bank was revealed. Furthermore, the animal bones recovered and identified demonstrate a dependence on the fishery for thousands of years and not merely on salmon. In the past, the waters around the confluence of the Little Southwest

and the Northwest Miramichi Rivers provided one of the best fishing locations within the entire Miramichi River system. It appears that generations of Mi'kmaq successfully exploited the resources of this river system for over 2,500 years.

Because of acid soil conditions at Oxbow, only those bones that fell or were thrown into a fire (but not consumed by the fire) had any chance of being preserved. Most fish bones in a fire would be completely destroyed and this is especially true of the thin salmon bones. Only the most dense and durable were preserved and even the largest of these roasted fragments were in a friable state (Stewart 1981). All but a few fragments of the 1984 bone came from the hearth areas of Layers 6c or 8. The single hearth area from Layer 19 produced only one identifiable mammalian fragment (Speiss 1984). The individual bone specimens associated with the various hearths have been detailed in the previous chapter; a summary is presented here for discussion purposes.

All the hearths excavated in 1984, with the exception of the one in Layer 19, contained fish bones. The identified fish bones, mostly durable scutes and fish fin-rays, were attributed to the Atlantic Sturgeon (*Acipenser oxyrinchus*). Approximately 100 additional fish bone fragments could not be precisely identified. Identified non-fish bone fragments included vertebral epiphyses of Beaver (*Castor canadensis*), an unerupted tooth germ of a small deer or caribou, and a long bone fragment of some small bird (Speiss 1984).

From the hearth areas excavated in 1978, the most common bones identified were also from the Atlantic Sturgeon (*Acipenser oxyrinchus*). Most of the mammal bones came from Beaver (*Castor canadensis*). The second most frequently represented species was Black Bear (*Ursus americanus*), with fewer skeletal remains of Muskrat (*Ondatra zibethica*), Domestic Dog (*Canis familiaris*), and Moose (*Alces alces*). One long bone portion of a small duck (family *Anatidae*) and a few catfish (family *Ictaluridae*) bones were also identified. Numerous other bone fragments found in 1978 could be identified as "fish" only (Stewart 1981). Finally, during his study of the Oxbow

botanical samples, the late Harold Hinds noted a number of charred possible amphibian eggs and one possible salamander egg casing (Hinds 1979).

Because Atlantic Sturgeon remains dominated the archaeological fish bones, it is useful to summarize this sturgeon's physical features and life cycle. The largest Atlantic Sturgeon ever recorded was caught in New Brunswick's Saint John River in 1924. This female fish was 14 feet long and weighed 811 pounds (Scott and Crossman 1973:95). During the mid-17th century, fisherman and trader Nicholas Denys reported sturgeon coming and going on the tides through northeastern New Brunswick's Nepisiguit harbour passage. He estimated that the average length of these fish was more than six feet (Denys 1908:213). This large, anadromous fish spends much of its life in the sea but it returns to fresh water to spawn. In the northern sector of their range, which includes the Miramichi area, Atlantic sturgeon enter their spawning rivers during late May or early June. They tend to spawn in pools below fast water after which they randomly return to the sea, most doing this between September and November.



Figure 6 - 2. Sturgeon recently caught at Red Bank, Joseph Ward (left) and William Ward ca. 1980. (Photo courtesy of Miramichi Leader)

Large Atlantic Sturgeon provide tender, rich flesh, which is very suitable for smoking. In addition, the eggs make excellent caviar. A 350 pound female can yield about 90 pounds of eggs and the amount of meat from an Atlantic sturgeon is 40-50 % of its live weight.

Currently Atlantic Sturgeon almost never ascend either of the main branches of the Miramichi river. Oral histories indicate this was not always the case. The late Joseph Augustine, as an elderly Mi'kmaq resident of the Red Bank weight (Scott and Crossman 1973:94-95) community, was not completely surprised when I mentioned to him that one of the results of the faunal studies from the Oxbow site was the numerous sturgeon bones. He commented that he knew of a place on the Northwest Miramichi, about one kilometre from Oxbow, which was called DUM-GWA-DAA-GE-NEDGE.

Translated from Mi'kmaq, this means: "the place where the sturgeon are beheaded" (Joseph Augustine pers. comm. 1978.). Although he did not recall anyone having fished sturgeon in his or even his father's lifetime, he attributed considerable importance to the name of this place. The most recent sturgeon caught in Red Bank was taken by two boys tending a salmon net in the early 1980s (Figure 6-2). At the time the catch was so unusual that the local paper was called after the fish was identified by a biologist.

The following 17th century description of sturgeon fishing by the Mi'kmaq gives a picture of how the fishery might have been conducted from the shores of the Oxbow site in much earlier times (Figure 6-3).

*"...it [the sturgeon] is taken with a harpoon, which is made like a barbed rod, of eight or ten inches long, pointed at one end and with a hole in the other in which is attached a line. Then it is fastened at the end of a pole, so that it may be used as a dart. The fishery is made at night. Two Natives place themselves in a canoe; the one in the front is upright, with a harpoon in his hand, the other is behind to steer, and he holds a torch of birch bark, and allows the canoe to float with the current of the tide. When the sturgeon perceives*

*the fire, he comes and circles all around, turning from one side to the other. As soon as the harpooner sees his belly, he spears it below the scales. The fish, feeling himself struck, swims with great fury. The line is attached to the bow of the canoe, which he drags along with the speed of an arrow. It is necessary that the one in the stern shall steer exactly as the sturgeon goes, or otherwise it will overturn the canoe, as sometimes happens. It can swim well, but with all its strength it does not go with fury for more than one hundred fifty or two hundred paces. That being over, the line is drawn in, and it is brought dead against the side of the canoe. Then they pass a cord with a slip-knot over the tail, and they draw it thus to land, not being able to take it into the canoe because it is too heavy” (Denys 1908:353-354).*

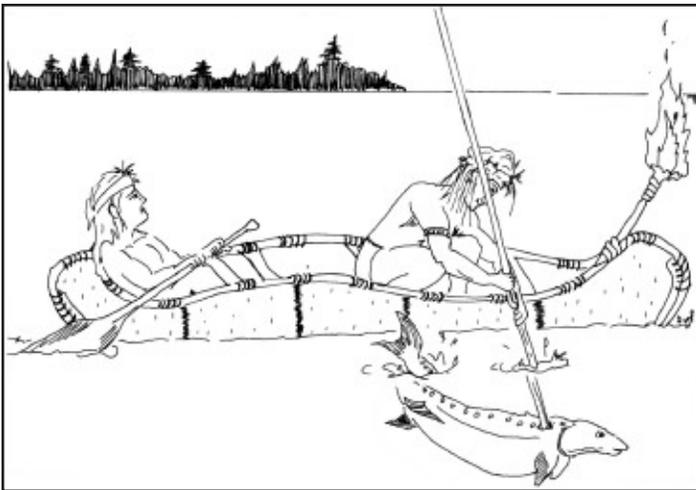


Figure 6 - 3. Artists rendering of hunting sturgeon by torchlight (Artist: Francine Ward-Francis 2003).

Denys noted that this method of taking fish by torchlight was also used for salmon fishing. In reference to the amount of salmon entering the Miramichi River, he wrote, “if the pigeons plagued us by their abundance, the salmon give us even more trouble. So large a quantity of them enters into this river that at night one is unable to sleep, so great is the noise they make in falling upon the water after having thrown or darted themselves into the air” (Denys 1908:199).

The anadromous Atlantic Salmon (*Salmo salar*) (Figure 6-4) ascend the rivers of New Brunswick with an early run in late May or early

June. An additional late run frequently occurs during September or October and spawning takes place in the rivers during the late fall (Leim and Scott 1966:111). Some salmon spend their winters under river ice and it is these fish that are referred to as the *black* salmon. They attract many sport fishermen to the Red Bank area during and just following the spring freshet (Figure 6-5).

While bones of the Atlantic Salmon were not identified in the Oxbow site faunal sample, this is most likely reflects selective preservation. Salmon bone is relatively thin and soft and, except for many small unidentified fish bone fragments, little other than the armour-hard scutes and fin rays of the sturgeon managed to survive both the burning and/or the acid soil conditions (Stewart 1981, Speiss 1984).

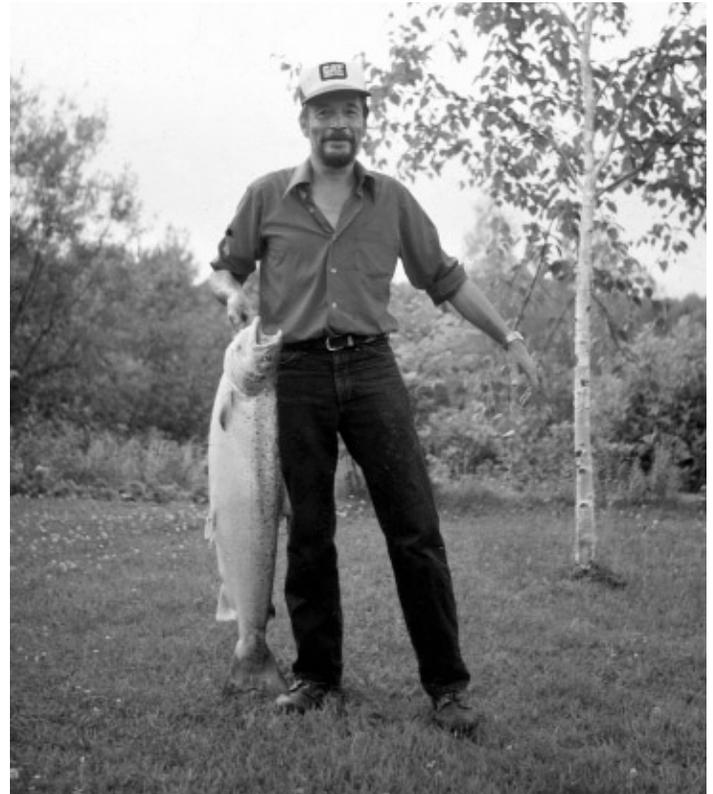


Figure 6 - 4. William John Augustine with a large Atlantic Salmon caught at Red Bank (1979).

Other nearby archaeological evidence shows that the Pre-contact Mi'kmaq at this spot exploited salmon. Approximately one km northeast of the Oxbow site lays a higher terrace that separates the Northwest and Little Southwest Miramichi drainages. The Augustine Mound site (CfDI2) is located on this higher terrace (Turnbull 1976) (Figure 1-1, 7-6). Prior to the Mound's construction,

this terrace was intensively occupied by people of the same group as those who left traces of their activities in the first cultural level of the Oxbow site (Allen 1980:137). Faunal remains from the pre-Mound campsites included not only bones from the Atlantic Sturgeon (*Acipenser oxyrinchus*) but also bones of the Atlantic Salmon (*Salmo salar*) (Stewart 1982:9).

The Oxbow site is situated at a choice location for spawning sturgeon (Scott and Crossman 1973). Therefore, it was not surprising that all but one the 1984 hearth areas and a large percentage of the 1978-1979 hearths held sturgeon bones.

Combined, these facts allow the conclusion that the Oxbow site was a warm weather fishing camp, although the fish evidence does not negate the possibility of its being used in other seasons. While it is difficult to prove that fish curing activities took place on the site, it is even more difficult to imagine that they did not. The beaver, bear, moose, muskrat and few birds represented in bones identified from the site seemingly indicate that the

Oxbow people also ate meat obtained from animals available in the immediate vicinity of the site and those relatively easily obtained.

### Oxbow Site Botanical Samples

As in the case of the faunal material, only fragments of organic material that was charred survived to offer insight into the Oxbow site seasonality and subsistence practices. While original seeds or husks often were amalgamated into lumps of charcoal, their exterior shapes and sizes usually remained intact. But their internal structures were often destroyed by burning and these are most useful for identification (Harold Hinds 1978 pers. comm.). Unfortunately, therefore, hundreds of carbonized spheroids found in the hearths could not be identified because their interior structures no longer existed.



Figure 6 - 6. Routine collecting of charcoal and burnt soil samples from Oxbow hearths provided valuable information concerning site seasonality and diet. (1984).

Most of the Oxbow site botanical samples were recovered by floatation (Figure 3-9). The soil subjected to this process was primarily from hearths although samples from heavily, charcoal-stained, living floors were processed also (Figure 6-6). Occasionally, a bulk of seeds was recognized in the field and collected as an individual sample. This was true for a large volume of Lamb's-quarters seeds (*Chenopodium* spp.) that was found spilling from a broken pot near a hearth area in 1979.



Figure 6 - 5. (From left to right) Tom Cloud (Red Bank) and Joe Augustine (Big Cove) at Red Bank ca. 1950 (Photo courtesy of Madeline Augustine).

In 1984, burnt seeds were collected from Layers 6, 8 and 19. The sample included:

- 55 Bulrush seeds, mostly of *Scirpus hudsonianus* with one more like *Scirpus maritimus*.
  - 11 Raspberry seeds (*Rubus strigosus*)
  - 7 Mountain Ash seeds (*Sorbus* sp.)
  - 5 Orache seeds (*Atriplex*) sp.
  - 1 Pin cherry seed (*Prunus pensylvanica*)
  - 100+ carbonized spheroids that could not be further identified
- (Hinds 1986)

Because the earlier fieldwork at the Oxbow site covered a much greater area, it produced a greater quantity of seeds. All of the 1978 specimens were recovered from hearth areas located within the middle and upper levels of the site. The sample included the following numbers of seeds and some other plant parts:

- 250+ Lamb's-quarters (*Chenopodium* spp).
- 24 Pin cherry (*Prunus pensylvanica*)
- 2 Wild Cherry (*Prunus* spp).
- 2 Hawthorn (*Crataegus* spp).
- 2 Squashberry (*Viburnum* spp)
- 14 Mustard (Cruciferae family)
- 24 Mustard (Cruciferae family, *Brassica* spp)
- 3 Bulrush (*Scirpus* spp)
- 1 Hogpeanut (*Amphicarpa bracteata*)
- 1 Raspberry (*Rubus* sp.)
- 1 Rush (*Juncus* spp)
- 1 possible Yellow Pond Lily seed pod (*Nuphar* sp.)
- 11 Bog Cotton seed
- 2 Hop Hornbeam (*Ostrya virginian*)
- 6 Panic Grass (*Panicum* spp.)
- 1 Sedge (*Carex* spp.)
- 3 Smartweed (*Polygonum* spp)
- 1 Bedstraw (*Galium* spp.)
- 1 fragment of a bean pod
- 1 blueberry bud
- Fragments of the outer husk of a fruit capsule

Fragments of Balsam Fir needles (*Abies balsamea*)

Parts of grass (*Bromus ciliatus*)

1 fragment of Birch scale (*Betula* spp.)

1 fragment of Grass seed (*Oryzopsis* spp.)

1 Red Spruce needle (*Picea rubens*)

4 thin cases of fruiting capsules

4 grain-like seeds

(Hinds 1979)



Figure 6 - 7. Artists rendering of peoples collecting plants and berries (Artist: Francine Ward-Francis 2003).

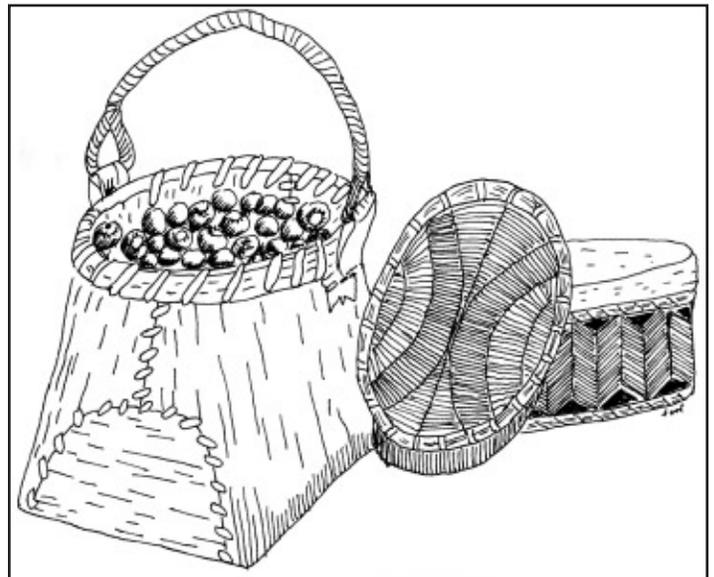


Figure 6 - 8. Artists rendering of bark and quill containers filled with berries (Artist: Francine Ward-Francis 2003).

The majority of these identified plants or plant parts could have been collected for either on site consumption and or storage (Figure 6-7 & 6-8). The following table summarizes the potential uses of the edible plants in the above list and the seasons

of their availability. This information concerning uses and seasonality was taken from a field guide to edible wild plants (Peterson 1978).

The table below includes wild fruits, grains, vegetables, nuts and seasonings that can be collected in the Miramichi River District from early spring through late fall. Considering the circumstances necessary for the preservation of any archaeological botanical specimens from the Oxbow site, the list includes quite a variety of plants. Wild plant produce probably provided a welcome and nutritionally significant addition to the Oxbow diet. The presence of such a range of plant products suggests that gathering was more than just a leisure activity. At certain times of peak abundance and ripeness, annual harvesting expeditions for specific fruit, nuts, and wild grains were no doubt under taken.

Some leafy plants used for salads or vegetables or as medicines were not and probably will never be identified from such charred archaeological samples. For example, one plant presently collected enthusiastically each spring by Red Bank Mi'kmaq is the Fiddlehead (*Metteuccia Struthiopteris*). This *Ostrich* fern sprouts on the numerous low islands at the junction of the Little Southwest and the Northwest Rivers during early spring. Black salmon and fiddleheads is a very popular, traditional spring meal in the Red Bank community and elsewhere along the Miramichi.

Boiled gruel, such as is indicated by the previously mentioned spillage of lamb's-quarters seed, if mixed with meat or fish, could have provided one version of the 17th century Mi'kmaq soup or stew described by Denys (Denys 1908:401). Denys also stated that the Mi'kmaq never ate either salt or spice (Denys 1908:403), but the identification of mustard seeds in many of the Oxbow hearths prompts the supposition that this spice might have been used as a flavouring in the cooking of sturgeon and salmon or as a preservative.

Table 4 : Edible Wild Plant Remains From the Oxbow Site

Common Name	Possible Uses	Season(s) Available
Lamb's quarters	C, F	fall-early winter
	G	summer
Orache	G	summer
Bulrush	V, S	spring
	F	summer-fall
	P	fall-early spring
Raspberry	O, B	summer
Mountain ash	O	fall-early spring
Wild cherry	O	late summer-early fall
Hawthorn	O, B	fall
Squashberry	O, B	late summer-early fall
Mustard	G, S	early spring
	V	spring-early summer
	X	summer
Hog-peanut	V	fall-early spring
Blueberry	O	summer
Yellow pond-lily	V, P	fall-early spring
	F	late summer-fall
Wild bean	V	late summer-early fall
Smartweed	V, S, N	summer-fall
Bedstraw	H	summer
Birch	F, B	all seasons

Key Table 4

- B beverage potential
- C cereal - small seeds can be used as cereals or boiled into mush.
- F flour - roots, seeds, nuts, pollen etc. can be ground into flour.
- G greens - leaves may be steamed or boiled.
- H herbs - often aromatic plants used especially in medicine or as seasoning.
- N nuts - small or large seeds that can be eaten in hand or roasted.
- O fruit - that can be eaten in hand or cooked.
- P potatoes - starchy roots, tubers etc., can be eaten as potatoes.
- S tender plant parts - can be eaten without cooking.
- V vegetables - may be boiled, baked or fried.
- X seasonings - fresh or dried roots, seeds, fruit or leaves.



Figure 6 - 9, Fiddleheads (*Metteuccia Struthiopteris*) grow in abundance on the islands at Red Bank. Photo by Pat Guest (1987). ([http://www.gnb.ca/cnb/ImageBank3/JPG\\_2000/IB2323.jpg](http://www.gnb.ca/cnb/ImageBank3/JPG_2000/IB2323.jpg))

## Food Preservation and Storage

Historical references suggest that the Mi'kmaq were quite proficient in preserving fish and game. In 1761, Gamaliel Smethurst reported entering an occupied Mi'kmaq "wigwam" on the "Pohomoosh" river on the north shore of Miramichi Bay. He wrote: "this is a very large cabin- it would hold twenty people- it was hung round with fish, cut into shreds - they preserve their fish, their geese, and their game, in a manner without salt- they take the bones out, and cut the flesh very thin; then dry it in the smoke for their winter's provision" (Smethurst 1905:372).



Figure 6 - 10. Artist rendering of the interior of a 19th Century dwelling in New Brunswick (Artist unknown - image courtesy of the New Brunswick Museum).

An earlier reference to the Mi'kmaq method of preserving comes from Father Chretien LeClerc's early 17th century *New Relations of Gaspeia*. Father LeClerc described the process of drying and smoking moose intestines.

*"She then cuts the leanest and thinnest parts into slices, and preserves them by drying in the smoke, placing them upon poles which form a kind of little staging. This is in order to prevent the meat from spoiling and rotting. It is by this means that, without the use of salt, or any other spices, they preserve it very readily for some time"* (LeClerc 1910:119).

In 1911-1912, Wallis and Wallis described a Mi'kmaq method of smoking fish for preservation and a structure built specially for this purpose. The smokehouse was about 24 feet long by four feet wide and about eight to 12 feet high.

*"Four posts were erected, with crotched top, on which were laid pieces to form the support for the roof. They were about a foot apart and extended along both sides. Both ends of the structure were open. Over the poles was put birch bark, for it allowed the heat to enter and also kept the smoke in. In time of rain it could be closed by means of two long stripes of bark... The split fish were placed on spruce-covered racks and turned frequently for a day or two"* (Wallis and Wallis 1955:61).

Following smoking, the fish were either packed in birch bark boxes or hung from sticks in rafters until needed.

Wallis and Wallis also recorded another method of drying and smoking eels for storage. In addition to smoking them as described above, on hot summer days, eels were split and dried in the sun. A fire, built near the eels, would keep flies away. This was also said to be a method for drying other fish (Wallis and Wallis 1955:63).

Evidence of both the structure mentioned above and the drying fires should be part of the archaeological record. In fact, at the Oxbow site, several large, elongated hearth areas were associated with numerous post moulds. These could well represent stages or racks for drying

and/or smoking various types of meat (Allen 1983:10) (Figure 6-11). Sun drying would leave few traces in the ground. However, ethnohistorical, ethnographical, and archaeological evidence all indicate that the Mi'kmaq preserved and stored meat. The Oxbow evidence adds that such preservation techniques have a long history.

Similarly, some of the fruits and perhaps also some of the grains identified from the Oxbow site's botanical sample could have been prepared for winter storage.

*“Cranberries, huckleberries, and blueberries are gathered, boiled three or four hours, compressed into disc-shaped cakes, and dried in the sun on pieces of birch bark. They are turned every two or three hours. The drying requires three or four days. They are put into a large birch-bark box... When dry, they do not freeze. The Mi'kmaq soak them, then boil them” (Wallis and Wallis 1955: 66).*

Madeline Augustine of the Red Bank First Nation recalled a childhood memory concerning a 20th century method of drying blueberries for the winter. One of Madeline's great aunts dried blueberries on newspapers on her porch, turning the berries in the sun until they were thoroughly shrivelled and dried. They could later be reconstituted for eating without cooking or for baking by the addition of water (Madeline Augustine pers. comm. 1978).

The recent discovery of numerous large pit features on the Augustine Mound terrace suggest that Miramichi Mi'kmaq were, at least in more recent pre-contact times, storing food on a rather grand scale (Allen 1983:13-14) (Figure 6-12). Since several radiocarbon dates from the more recent levels at the Oxbow site and from one of these excavated pit features overlap, some of these storage pits could actually have held winter provisions for some of the Oxbow residents (Allen 1986).



Figure 6 - 11. Artists rendering of a drying rack in use (Artist: Francine Ward-Francis 2003).

Early historic references to large underground storage vaults such as those found on the higher terraces surrounding Red Bank are sadly lacking (Allen 1983). Although historical references to Mi'kmaq food storage do not indicate large-scale storage, it must be remembered that at least a century of dramatic cultural change had taken place prior to the first written accounts of Mi'kmaq life ways. The economic and social changes brought about by the early European fishery and the fur trade should not be underestimated (Millar 1976, Pelletier 1980, Burley 1983). The relevant information from a number of 17th century records is that the Mi'kmaq were well acquainted with techniques for food preservation and storage (Hoffman 1956:196).



Figure 6 - 12. Pit feature excavated at the Mejipke site (1983).

## A Reconstruction of Seasonality and Subsistence at Oxbow

It is likely that just following or perhaps even during the height of the spring freshet, many Mi'kmaq arrived at Oxbow. As soon as the river was free of ice, fish were available. The *black* salmon, tired and lean from its winter under the ice, could be taken by spear or scoop net. The large spring spawning runs of different species of fish would begin with the smelt, in late April or early May. Smelt ascend the river in large schools, hugging the shoreline away from the main channel of the fast running river. Thousands of these small fish could be taken with a few scoops of a dip net. Within a few weeks, fresh spring greens, such as fiddleheads, were available in abundance.

Sometime in late May or early June, sturgeon would arrive followed soon after by the early run of *bright* salmon. At Oxbow, serious fishing efforts would begin and the camp would become an efficient fish processing station. Fish drying fire pits and perhaps even smoke huts would be constructed. Boxes might be made for storing dried fish and other meats. As well, storage pits would have been dug in the warm seasons for this purpose. Men would spear both sturgeon and salmon by torch light with toggling harpoons.

Women would process the fish into thin strips for smoking and split some for sun drying. Children would turn the fish every few hours, tend the smoke fires, and gather wood for fuel. Boiling pots and roasting racks were filled and refilled and the entire community feasted on fresh fish.

The summer months at Oxbow were, without a doubt, a time of plenty. Following the sturgeon and the *bright* salmon, the annual runs of shad, striped bass, gaspereau and sea trout (Figure 6-13) were in the river. Wild fruits and vegetables could be gathered from areas within a day's journey of the village or even closer. During periods of peak ripeness and availability, large quantities of some fruits would be gathered from more distant locations. Boiling down and drying fruit for storage took considerable effort and time, as did the gathering and preparation of clays and suitable tempering materials for pottery manufacturing. New vessels were probably made at the Oxbow



Figure 6 - 13. Mary Augustine at Red Bank ca.1950. (photo Courtesy of Madeline Augustine)

site (Allen 1981:92) even though suitable clays likely had to be carried from locations far removed from the village (Allen 1984). Similarly, there would be some trips away from Oxbow to known rock outcrops or lithic raw material gathering localities that would be snow-covered in winter.

For the Oxbow residents summer was probably also a very social time with pleasurable journeys to other villages, visiting, trading, marriages, initiation rites, burials and other such activities. Large social gatherings and political meetings were probably conducted during the warm weather months. For any given year, the summer population at the Oxbow site might have dwindled to a few elderly residents or alternatively, swelled with visitors.

During the months of September and October, the Oxbow people were likely involved with catching and preserving the remaining sturgeon and the fall run of salmon. They would continue to collect wild fruits and the many nuts and grains ripe at this time and generally prepare for the winter. Storage houses and/or pits would have to be readied for the new supplies and preserved food stuffs temporarily stored at Oxbow would have to be transported. During fall, hunting parties would leave for the coastal marshes to shoot migratory waterfowl available at this time in large flocks. Late fall is also a good time to hunt mammals, especially fur-bearers. Sometime before the first snow, the Oxbow site would be abandoned and the people would move back from the river to more favourable wintering locations.



## Chapter 7

### Other Sites On The Miramichi

#### The Nature and Distribution of Sites

Archaeological surveys have been conducted within the Miramichi estuary to the head of tide on both main river branches. Additional survey work has been carried-out above the head of tide on the Northwest branch and along the coastlines of the Inner and Outer Miramichi Bays (Martijn 1968, Keenlyside 1970, Burley 1974, Emin 1978, Allen 1981, 1982a) (Figure 7-1). Based upon these surveys, the following briefly summarizes what is in 1984 known concerning the nature and distribution of Maritime Woodland Period sites within the Miramichi River district.



Figure 7-1 - Surveying along the Mirimichi Estuary (1980).

Except within the protected estuaries of the Tracadie, Pokemouche and Tabusintac Rivers, sites along the sea coast on the north shore of Outer Miramichi Bay and the Gulf of St. Lawrence appear to be few, small, and far between (Martijn 1968, Keenlyside 1970).

Although there are some minor shellfish beds, shell middens have not been found here. Archaeological evidence along the south shore of Miramichi Bay consists of mostly solitary finds of projectile points along marsh edges (Allen 1981). One small Outer Bay site from a protected Baie Saint-Anne marsh was interpreted as a migratory bird hunting station (Allen 1984)(Figure 7-2).



Figure 7 - 2. Pointe aux Sables site (CgDf1) Baie St. Anne (CgDf1) (1982).

In general, larger sites are found farther up rivers whereas smaller sites are situated closer to the coasts, at good fishing locations (Keenlyside 1970). Along the lower reaches of the Tracadie River, David Keenlyside has excavated smaller, Maritime Woodland Period sites that he suggested were seasonal fishing camps (Figure 7-3)(Keenlyside and Keenlyside 1976). A small Late Maritime Woodland Period site at the mouth of the Bartibog River has been interpreted as a short term, fall hunting camp (Burley 1974).



Figure 7-3. David Keenlyside investigated Tracadie River sites in the 1970s. (Photo courtesy of the Canadian Museum of Civilization)

As one moves westward into the Inner Bay and the main river sector, there are a few more small sites, but most of these have been subjected to extensive erosion. One such site is at the mouth of the Napan River; another is at the mouth of the Black River, and a few others are located on marshland points along the main Miramichi River. The Wilsons Point site (CfDj33), a larger, but extensively eroded site, is located at the junction of the Northwest and the Southwest branches, just above the town of Newcastle (Allen 1982c)(Figure 7-4).

Along the main branch of the Southwest Miramichi from Newcastle westward to Renous, there are a few small, scattered campsites. At Elm Tree, just below Renous, the Davidson site (CfDk48)(Figure 7-5), a large Pre-contact Maritime Woodland Period site covers several acres of farmland (Allen 1988).



Figure 7 - 4. Tammy Prince (foreground) and Michael Nicholas at a test excavation on the Wilson's Point site (CfDj33)(1991).



Figure 7 - 5. View from upper terrace looking down on the Davidson site (CfDk48).

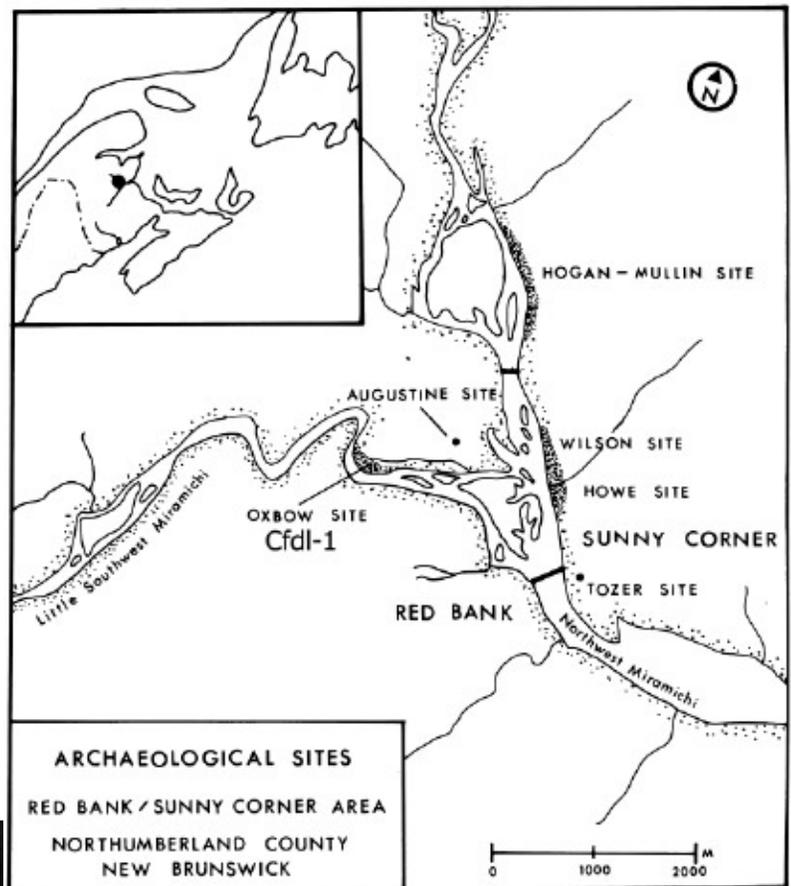


Figure 7 - 6. Map of Red Bank area, showing major archaeological sites.

At Renous, again there are a few smaller sites (Allen 1982c). Along the Northwest branch from Newcastle to Red Bank, the site distribution differs considerably. Over 30 sites dot this stretch of river. A few of these are large and appear to have been intensively occupied during the last 2,000 years. These sites form long but very narrow strips, along high banks where the river channel lies adjacent to the shore.

At Red Bank, at the confluence of the Northwest and the Little Southwest Miramichi Rivers, there is a profusion of sites. Maritime Maritime Woodland Period occupation sites, measuring anywhere from 10 to 500 metres in length, line the river shores near the best fishing pools, where the river channels cut close to the banks and at the head of tide on both branches, where the rivers are narrower and shallower. For the most part, without thorough testing, it is difficult to determine where one site ends and another begins. This is especially true for the area of the higher Augustine Mound terrace which separates the two rivers. Although not yet well recorded, the higher terraces are also

producing occupational debris, well back into farmland and forested areas, along both branches of the river.

During 1975 and 1976, excavations were conducted in the Red Bank area on three of the larger riverside campsites. The Howe (CfDk4) (Figures 7-6, 7-7), Wilson (CfDk2) (Figures 7-6, 7-9, 7-10) and Hogan-Mullin (CfDk1) sites (Figure 7-6) were all thoroughly tested and a great variety and quantity of Maritime Woodland Period artifacts were recovered. Unfortunately, none of these sites was stratified and all were badly disturbed by agriculture (Allen 1981). The locations of these sites suggest warm weather fishing communities. Therefore, when the Oxbow site was excavated and the data analyzed, it was no surprise to find evidence that this large, riverside camp was indeed a warm weather fishing village (Allen 1983).



Figure 7 - 7, Bill Cockburn (left) and Howard Augustine during the 1975 excavations at the Howe site.

In addition to the profusion of occupation sites in this area, the higher terraces surrounding Red Bank also hold a large number of subterranean pit features. Over 50 of these pits are located on the Augustine Mound terrace and at least another 12 are found on the higher terrace just south of the community of Red Bank. The 1983 excavation of one of these features, the Mejipki site (CfDl22), found near the Augustine Mound, produced little to support the proposition that these were house pits, as previously proposed by the author (Allen 1983). Rather the excavation suggested that these pits may have functioned as underground storage units during the Late Pre-contact period (Figure 7-8).



Figure 7 - 8. Mejipki site during excavation (horizontal scale 50cm) (1983).

The 1983 work also revealed that the pit depressions still visible on the surface were only a sample of what formerly might have been a much larger number of pits (Allen 1986). The possibility of these pits being “borrow-pits” for soil to build up the Mound is unlikely given their large number and their occurrence on other sites not associated with mound building.



Figure 7 - 9. Madeline Augustine excavating at the Wilson site.

The number and size of Maritime Woodland Period occupation and potential storage sites in this area are impressive. There are also four known burial sites within a kilometre of Red Bank. To date, two Adena-like burial sites, the Augustine Mound (CfDl2) and the McKinley site (suspected to have been on the Wilson Site property), have been located (Turnbull 1976, 1979, 1980).

In 1928, a Meadowood related site, Tozer (CfDk17), with two cremation burials was uncovered on a knoll overlooking the Northwest Miramichi just below Red Bank (Wintemberg 1937, Allen 1982b).

Also, an early historic copper kettle burial site, the Hogan site was discovered just upriver from Red Bank on the Northwest Miramichi (Harper 1956, Turnbull 1984). Unfortunately, of these four sites, only the Augustine Mound, was professionally and respectfully excavated (Turnbull 1976).

The above briefly summarizes what is known of the size, distribution and purposes of pre-contact sites in the Miramichi River district. With the exception of short distances up the Northwest and the Little Southwest branches, little is known about interior river use or site distribution. What is more, in the heavily eroded coastal areas of the Outer and Inner Miramichi Bay, one can only study the few coastal and riverine sites which remain and hope that these are in some way representative of former distribution and use.



Figure 7 - 10. Looking down the main Northwest Miramichi across the Wilson site (1975).

## Chapter 8

### Summary And Discussion

Researchers studying subsistence/settlement patterns in the Maine/Maritimes area have come to recognize that adaptation amongst Late pre-contact peoples was area specific (Burley 1981; Sanger 1982; Speiss et al. 1981; Nash 1980; Foulkes 1981, 1982; Allen 1983; Stewart 1989). Although similar resources are available throughout the area, these vary in abundance, according to specific localities. Therefore, interpretation of Maritime pre-contact settlement systems need to take into consideration the micro-geographical/biological environs. Depending on their locations, people belonging to the same cultural group might have practiced very similar or quite different settlement and subsistence patterns.

In a paper concerning the effects of the fur trade on the Mi'kmaq culture in northeastern New Brunswick, Burley concluded, as had Hoffman (1955:230-236) before him, that the 17th century records seemed "to be documenting a culture in a state of total disequilibrium with its environment" (Burley 1981:203). Adding the archaeological evidence reviewed above, the following interpretation of late pre-contact settlement practices in the Miramichi River district of northeastern New Brunswick suggest a balanced system of adaptation. It is based on the availability of rich resources with a knowledge for obtaining, preserving, and storing these, and, assuming the exploiters adopted a least risk, least effort for the maximum results philosophy most of the time.

Along the upper reaches of the Northwest Miramichi estuary, large, warm weather villages are located at excellent fishing locations. With few exceptions, the profusion of artifacts recovered from these larger campsites date to within the last 2,500 years.

At Oxbow, the only stratified and undisturbed campsite excavated to date, the warm weather occupations began approximately 2,600 or 2,800 years ago and continued until well into the Historic Period (Allen 1981). Judging by the identified

faunal remains and site locations, the primary focus of economic activities at these head of tide settlements appears to have been the fishery.

The types of artifacts and the numbers, sizes, and distribution of sites, suggest that during at least the last 2,000 years there was a sizable Mi'kmaq population, perhaps three or more separate groups, spending spring, summer, and at least a portion of the fall along the rivers in the Red Bank area. These people were heavily involved in the procurement of fish for both immediate consumption and storage. A large number of potential storage sites have been discovered in areas of higher elevation surrounding Red Bank (Allen 1986).

Without a doubt, during the warm weather period, Red Bank communities would have been very busy. The warm days and months were filled with many activities such as: canoe building and repairing; manufacturing and mending fishing and hunting gear; erecting drying racks and gathering wood for smoking fish and meat; collecting wild grains, fruits and vegetables; manufacturing ceramic pots, baskets, and birch bark containers; cooking, preserving, and eating; playing games; and numerous other important social and cultural activities. Short-term expeditions by groups of people would be launched from these sites to go to quarries for lithic raw materials for tool manufacturing or to spots with suitable clays for making pots or to gather special resources such as medicinal plants.

Perhaps Red Bank was a well-known, traditional, warm weather meeting spot. For a period each summer, groups from the entire Miramichi River District, and perhaps from other river or coastal districts too, could have gathered here for social/cultural events and/or political meetings. Burials, marriages, initiation rites, trading, and feasting could have take place. The intensity of interaction created by such a gathering with exchanges of news, ideas, foodstuffs, other goods and possibly people could reaffirm the social identity and overall strength of the cultural unit.

On the north shore of Outer Miramichi Bay and along the adjacent Gulf of St. Lawrence, a large number of smaller sites have been located in the lower reaches of the Tracadie, Pokemouche and Tabusintac rivers. These have been interpreted as short term, warm weather fishing camps (Keenlyside and Keenlyside 1976). Unconfirmed reports suggest that this area may have storage pits, similar to those identified in Red Bank (Manford Wasson pers. comm. 1978). Head of tide locations on these rivers, which might have larger sites, have not yet been examined.

While the Red Bank site numbers and sizes are not duplicated on the Tracadie, Pokemouche and Tabusintac rivers, the choice of good, warm weather, fishing spots is similar. In the Miramichi River district, early Mi'kmaq peoples were gathering at the best fishing locations to catch and process sturgeon, salmon and the other anadromous fish species as they ascended their spawning rivers. Summers are interpreted as a time of plenty when short periods of organized labour were interspersed with leisure times, travel, and social/cultural events.

In the late fall of the year, the large riverside camps at Red Bank appear to have been abandoned. While a move was made, the distance traveled likely was not very great. In the Red Bank area, it would be logical to remain close to the head of tide area. This is where winter provisions had been stored, where the tomcod come to spawn under the ice, and where eels winter in the muddy bottom at the confluence of the two rivers (Figure 8-1). It seems probable that the numerous and as yet unexplored sites on the higher terraces surrounding Red Bank were winter living-quarters.

Around the time of the move to the winter camps, groups of hunters would leave the home base to hunt waterfowl and the larger land mammals. Short-term fowling stations have been identified downriver in the Outer Bay marsh areas. Strategically located sites, such as the one at Pointe aux Sable (CgDf1), allowed hunters to easily exploit the migrating flocks of ducks, geese and brant (Allen 1984).

I would suggest that the hunters returned to their home areas with their canoes laden with fowl to be preserved for the winter larder. Other small sites,

such as the one at the mouth of the Bartibog River (CgDi1), have also been interpreted as base camps for fall hunting parties (Burley 1974:127).



Figure 8 - 1. Artists rendering of eel-spearing through the ice in winter (Artist: Francine Ward-Francis 2003).

Once winter arrived, the frozen rivers would offer travel routes to wintering yards of deer, moose, and caribou. Presently, a large ungulate wintering zone is located about 10 km north of Red Bank on the Northwest Miramichi. The Upper reaches of the Tracadie River have a similar large tract where ungulates winter. I would suggest that communal hunting expeditions were launched from the winter camps and that the carcasses could be transported via the frozen rivers back to the community for distribution.

I concur with Burley (1981) that the winter starvation and famine periods recorded by the early ethnographers were most probably consequences of European contact. Stored surpluses of fish, waterfowl, and other foods, combined with the availability of tomcod, the ever-available eels, and the frozen river roadways to ungulate wintering areas indicate that Red Bank was indeed an excellent place to procure food in winter. With the arrival of spring, some of the best fishing locations in the entire Miramichi River district would be only a stone's throw away.

Although the site density of the Red Bank area has not been duplicated anywhere else in the Maritimes, the settlement system reconstructed here could presumably be applied to the other major rivers of northeastern New Brunswick. The model must be flexible, however. Around lagoon-protected estuaries and along smaller salmon rivers

like the Tracadie, Pokemouche and the Tabusintac, the people might have managed their affairs in a slightly different manner. Those who lived further north along the Tetagouche and the Nepisiguit rivers probably made some use of the local clam flats, islands with nesting gulls, and the other salt water resources that were available within the Nepisiguit Basin. Further north still, I would guess that the people of the Restigouche River followed a seasonal pattern very similar to that reconstructed in this report for the Red Bank residents.

Overall, although cold and warm weather camps were not located on the same piece of ground, they were sometimes situated in the same general areas, areas where winter provisions were stored and where a relatively large population could live year round without serious food shortages.

Smaller sites within the system have been interpreted as specialized hunting or gathering camps. Perhaps the key to interpreting late pre-contact Maritime settlement and subsistence patterns lies in the understanding a specific area's resources and upon the understanding that groups organized their lives accordingly. While a rich local environment provided the Miramichi peoples with a secure base, inter-regional exchange, as demonstrated at the Augustine site, was likely another factor within this adaptive system (Turnbull 1976).

In summary, it is the opinion of the author that pre-contact Mi'kmaq of the Miramichi River District led a stable and perhaps even a comfortable existence. Group numbers and the distribution of groups within the various river systems of the district varied according to the intensity and availability of resources and by the seasons. The way of life for all, however, depended, to a large extent, on the successful exploitation and storage of anadromous fish.



## References Cited

### **Abbott, R. Tucker**

1968 *Seashells of North America*. Golden Press, New York.

### **Allain, Géraldine**

1984 Research on Clay and Other Materials in New Brunswick Appropriate to the Fabrication of Pottery. Ms. on file, Archaeological Services, Heritage Branch, Culture and Sport Secretariat, Fredericton.

### **Allen, Patricia**

1980a The Oxbow Site: An Archaeological Framework for Northeastern New Brunswick. In *Proceedings of the 1980 Conference on the Future of Archaeology in The Maritime Provinces*, edited by Daniel M. Shimabuku, 132-146. Occasional Papers in Anthropology No. 8, Saint Mary's University, Halifax.

1980b The Augustine Mound and the Oxbow Site: A Study in Possible Cultural Connections. Ms. on file, Archaeological Services, Heritage Branch, Culture and Sport Secretariat, Fredericton.

1981 *The Oxbow Site: Chronology and Prehistory in Northeastern New Brunswick*, New Brunswick Historical Resources Administration, Manuscripts in Archaeology 1, Fredericton.

1982a Ceramics From A Stratified Site in Northeastern New Brunswick. Ms. on file, Archaeological Services, Heritage Branch, Culture and Sport Secretariat, Fredericton.

1982b Meadowood in Northeastern New Brunswick. Ms. on file, Archaeological Services, Heritage Branch, Culture and Sport Secretariat, Fredericton.

1982c Miramichi Basin Estuary New Brunswick-1980 Survey. In *Archaeological Resources in the Maritimes*, edited by Christopher J. Turnbull, 25-61. Council of Maritime Premiers, Reports in Archaeology 5, Fredericton.

1983 Ceramic Period Settlement / Subsistence Practices in the Miramichi River District of Northeastern New Brunswick. Paper presented to Canadian Archaeological Association Conference, Halifax.

1984 *Point aux Sable : A Small Ceramic period Hunting Site in Baie Ste-Anne, New Brunswick*. Manuscripts in Archaeology 9E, Archaeological Services,

Heritage Branch, Culture and Sport Secretariat, Fredericton.

1986 The Mejiyki Site: An Underground Food Storage Unit at Red Bank on the Miramichi. Ms. on file, Archaeological Services, Heritage Branch, Culture and Sport Secretariat, Fredericton.

1988 Southwest Miramichi Survey and Testing Project. *Manuscripts in Archaeology* No.23E, New Brunswick Department of Tourism, Recreation and Heritage, Fredericton, New Brunswick.

### **Broster, B.E. and P. Allen and K.B.S Burke**

1993 A Multidisciplinary Assessment of Postglacial Seismic Disturbance: Miramichi Area, New Brunswick, Canada. *Quaternary International*, Vol. 20, pp. 153-161.

### **Burley, David**

1974 *A Series of Pre-contact Sites on The Miramichi River*. M.A. Thesis, Department of Anthropology, University of New Brunswick, Fredericton, New Brunswick.

1981 Proto-historic ecological effects of the fur trade on the Micmac in Northeastern New Brunswick. *Ethnohistory* 28(3).

### **Davis, Stephen A.**

1978 *Teacher's Cove*. New Brunswick Publications in Archaeology (1), Archaeology Branch, Department of Tourism, Recreation and Heritage, Fredericton.

### **Denys, Nicholas**

1908 *The Description and Natural History of The Coasts of North America*. Publications of the Champlain Society, Toronto.

### **Emin, Adele**

1978 An archaeological survey of the Augustine Mound terrace and Red Bank Native Reserve No. 7, Red Bank, Northumberland Co., New Brunswick. Ms. on file, Archaeological Services, Heritage Branch, Culture and Sport Secretariat, Fredericton.

### **Foulkes, Ellen**

1981 *Fulton Island: A Stratified Site in the Saint John River Valley of New Brunswick*. M.A. Thesis, Department of Anthropology, Trent University, Peterborough, Ontario.

1982 *Prehistory in Kouchibouguac National*

*Park and Environs*. New Brunswick Publications in Archaeology (2), Archaeological Services, Department of Tourism, Recreation and Heritage, Fredericton.

**Godfrey, W. E.**

1986 *The Birds of Canada*. Second Edition. National Museums of Canada Bulletin 203, Queen's Printer, Ottawa.

**Hamilton, Nathan D. and David R. Yesner**

1985 Early, Middle and Late Woodland Ceramic Assemblages From Great Diamond Island, Casco Bay, Maine. *Occasional Publications in Northeastern Anthropology* (9) Part II:39-72.

**Harper, Russel**

1956 Portland Point: Crossroads in New Brunswick: Preliminary Report of the 1955 Excavations. *New Brunswick Museum, Historical Studies*, No. 9, Saint John.

**Hester, Thomas Roy, Delbert Gilbow and Alan D. Albee**

1973 A functional analysis of clear fork artifacts from the Rio Grande plain, Texas. *American Antiquity* 38(1).

**Hinds, Harold**

1979 Identification of the botanical remains from the CfD11 Oxbow Site. Ms. on file, Archaeological Services, Heritage Branch, Culture and Sport Secretariat, Fredericton.

1986 Identification of the botanical remains from the 1984 excavations at the CfD11 Oxbow Site. Ms. on file, Archaeological Services, Heritage Branch, Culture and Sport Secretariat, Fredericton.

**Hoffman, Gilbert Bernard**

1956 *Historical Ethnography of the Micmac of the Sixteenth and Seventeenth Century*, Ph.D. Thesis, Department of Anthropology, University of California.

**Joyer, L'Abbe Rene**

1800 Correspondence. *Archives de Archeveche de Quebec* (AAO) N.B. VI-13.

**Keenlyside, David**

1980 Prehistory of the Gulf of Saint Lawrence «Southern Basin» Future Perspectives. In *Proceedings of the 1980 Conference on the Future of Archaeology in the Maritimes*, edited by Daniel Shimabuku, 124-131. Department of Anthropology, Saint Mary's University, Occasional Papers in Anthropology 8, Department of

Anthropology, Saint Mary's University Halifax.

1984 Maritimes Prehistory: Canada's Visual History, Volume 65, Canadian Museum of Civilization.

**Keenlyside, Judy Buxton**

1970 North Shore Survey: An Archaeological Reconnaissance of Northeastern New Brunswick. Ms. on file, Archaeological Survey of Canada, National Museum of Civilization, National Museums of Canada, Gatineau, Quebec.

**Keenlyside, David and Judy Buxton Keenlyside**

1976 La Tracadie: Etude de la prehistoire d'un reseau fluvial. *La Revue d'Histoire de la Societe Historique Nicholas-Denys IV*(2), Montreal.

**Kingsbury, Issac W. and Wendell S. Hadlock**

1951 An Early Occupation Site, Eastport, Maine. *Massachusetts Archaeological Society Bulletin XII* (2): 22-26.

**LeClercq, Father Cbretien**

1910 *New Relations of Gaspsia*, edited by W.F. Ganong. Publications of the Champlain Society, No 5, Toronto, Ontario.

**Leim, A.H. and W.B. Scott**

1966 *Fishes of the Atlantic Coast of Canada*. Bulletin 155, Fisheries Research Board of Canada, Ottawa.

**Marston, Benjamin**

1899 1784 Correspondence. *Collections of the New Brunswick Historical Society* (4):95-109, Saint John.

**Martijn, Charles**

1968 Archaeological survey of northeastern New Brunswick. Ms. on file, Archaeological Services, Heritage Branch, Culture and Sport Secretariat, Fredericton.

**Millar, Virginia P.**

1976 Aboriginal Micmac population: A review of the evidence. *Ethnohistory* 23(2):117-127.

**Mott, R.J.**

1975 Post-glacial history and environments in southwestern New Brunswick. *Environmental Change in the Maritimes*, (66-82), Nova Scotia Institute of Science, Halifax.

**Nash, Ronald**

1980 Research strategies, economic patterns and eastern Nova Scotia prehistory. In *Proceedings of the 1980 Conference on the Future of Archaeology in The Maritime Provinces*, edited by Daniel M. Shimabuku,

23-41. Occasional Papers in Anthropology No. 8, Saint Mary's University, Halifax.

**Odell, Jonathan**

1899 1801 Correspondence. In *The North Shore: Incidents in the Early History of Eastern and Northern New Brunswick*, edited by Rev. W.D. Raymond, 81-134. *Collections of the New Brunswick Historical Society*, No.4. Saint John.

**Pelletier, Gaby**

1980 The Micmac dilemma at the end of the seventeenth century *Journal of the New Brunswick Museum* 4:103-111.

**Petersen, James B. and Nathan D. Hamilton**

1984 Early Woodland Ceramic and Perishable Fiber Industries From The Northeast: A Summary and Interpretation. *Annals of the Carnegie Museum* 3(14): 413-445, Pittsburgh, Pennsylvania.

**Peterson, Lee**

1978 *A Field Guide To Edible Wild Plants of Eastern and Central North America*. Houghton Mifflin Company, Boston.

**Peterson, Randolph L.**

1966 *The Mammals of Eastern Canada*. Oxford University Press, Toronto.

**Philpott, K.**

1978 *Miramichi Channel Study*. Public Works Canada, Ottawa.

**Ritchie, William**

1969 *The Archaeology of Martha's Vineyard*. The Natural History Press, Garden City, New York.

**Rowe, J.S.**

1972 *Forest Regions of Canada*. Department of Northern Affairs and Natural Resources, Forestry Branch, Ottawa.

**Sanger, David**

1979 *Discovering Maine's Archaeological Heritage*, Maine Historic Preservation Commission, Augusta.

1971 Deadman's Pool - A Tobique complex site in northern New Brunswick, *Man in the Northeast* 2:5-22.

**Scott, W.B. and E.J. Crossman**

1973 *Freshwater Fishes of Canada*, Bulletin 184, Fisheries Research Board of Canada, Environment Canada, Ottawa.

**Scott, W.B. and M.G. Scott**

1988 *The Atlantic Fishes of Canada*. University of Toronto Press, Toronto.

**Smethurst, Gamaliel**

1905 Historical-Geographical Documents Relating to New Brunswick - Gamaliel Smertherst's Narrative of his Journey from Nepisiguit to Fort Cumberland in 1761, edited by W. F. Ganong, 363-390. *Collections of the New Brunswick Historical Society* No.6, Saint John.

**Speiss, A.E. and M. Hedden**

1983 *Kidder Point*. Maine Historic Preservation Commission, Augusta.

**Speiss, A.E.**

1984 Identification of the 1984 calcined bone sample from the CfD11 Oxbow Site. Ms. on file, Archaeological Services, Heritage Branch, Culture and Sport Secretariat, Fredericton.

**Squires, W. Austin**

1968 *The Mammals of New Brunswick*. Monographic Series No.5, The New Brunswick Museum, Saint John.

**Stewart, Frances L.**

1981 Analysis of the Faunal Sample From the CfD11 Oxbow Site, Appendix E in *The Oxbow Site: Chronology and Prehistory in Northeastern New Brunswick*, *New Brunswick Manuscripts in Archaeology Series 2, No. 1, Department of Tourism, Recreation and Heritage, Fredericton*.

1982 Faunal remains from the Augustine Mound (CfD12) of northeastern New Brunswick. Ms. On file, Archaeological Services, Heritage Branch, Culture and Sport Secretariat, Fredericton.

1989 Seasonal movements of Natives in Acadia as evidenced by historical documents and faunal remains from archaeological sites. *Man in the Northeast*, No. 38, New York.

**Tuck, James**

1984 *Maritimes Provinces Prehistory*, National Museum of Man, Ottawa.

**Turnbull, Christopher J.**

1976 The Augustine Site: A mound from the Maritimes. *Archaeology of Eastern North America* 4:50-63, Ann Arbor, Michigan.

1979 The McKinley Site - Preliminary report. Ms. on file, Archaeological Services, Heritage Branch, Culture and Sport Secretariat, Fredericton.

1980 The Augustine Mound. Ms. on file, Archaeological Services, Heritage Branch, Culture and Sport Secretariat, Fredericton.

1984 The Richibucto Burial Site (CeDf18). New Brunswick Research in 1981. New Brunswick Manuscripts in Archaeology, No. 2, Department of Historical and Cultural Resources.

**Wallis, Wilson D. and Ruth Sawtell Wallis**

1955 *The Micmac Natives of Eastern Canada*. University of Minnesota Press, Minneapolis.

**Wilmsen, Edwin N.**

1970 Lithic analysis and cultural inference: A Palaeo native case. *University of Arizona Anthropological Papers* (16) Tuscon.

**Wintemberg, William J.**

1937 Artifacts from presumed ancient graves in eastern New Brunswick. *The Royal Society of Canada Transactions*, Section 11:205-209.

**Map References**

1970a Land Capability for Wildlife - Waterfowl. Canada Land Inventory, Bathurst Sheet 21P, Department of Regional Economic Expansion, Ottawa.

1970b Land Capability for Wildlife - Ungulates. Canada Land Inventory, Bathurst Sheet 21P, Department of Regional Economic Expansion, Ottawa.

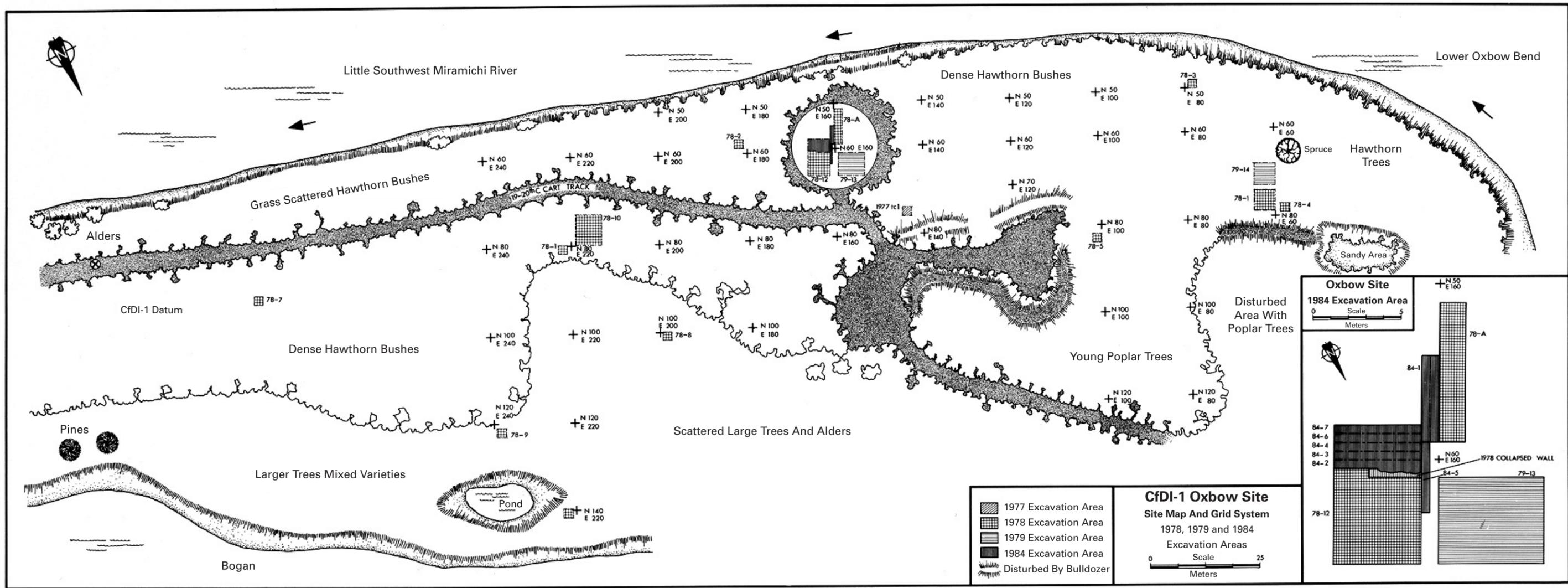


Figure 3-1. Oxbow site map showing limits of excavation