Archaeological Overview of the Mille Lacs Locality

Prepared for the

Minnesota Department of Transportation

March, 2000

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16. Abstract
This report presents an overview of the archaeology of the Mille Lacs area. It includes discussion of the environmental history and physical setting, the history of archaeological investigations, and chronological presentation of Mille Lacs archaeological phases.

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David Mather

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Loucks Associates
7200 Hemlock Lane, Suite 300
Minneapolis, MN 55369

Loucks Associates

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David Mather
Co-Principal Investigator

Cover illustration: Aerial view of Lake Ogechie and Mille Lacs Lake, courtesy of the Wilford Archaeology Laboratory, University of Minnesota.

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Figure 75. Merchandise tokens from the Ayers Trading Post, from Flaskerd (1962).

CHAPTER 1 - INTRODUCTION

When the French named Lake Mille Lacs "one thousand lakes" they recognized a special quality that all other visitors, before and after, have also felt. In a land of 10,000 lakes, Mille Lacs stands out. Its expansive waters bring a sense of openness that isn't often found in the north woods, yet it is only on the clearest days that one can see across to the opposite shore. The lake changes every day, such that the visitor or resident doesn't tire of watching the water. This is an inland sea, not as large as the Great Lakes, or even Leech or Red Lake, but big enough to be revered as a landmark. The area around Mille Lacs is a cultural landscape, a place where history and the human past are more visible than in most parts of Minnesota. The place names here conjure vivid images: Spirit Island, Cormorant Point, Wigwam Bay, Cove Bay, Wealthwood, Aquipaguetin Island, Mazomani Point, Izatys, Kathio, lakes Ogechie, Shakopee and Onamia, and others. This sense of the past is all the more remarkable because Mille Lacs remains a living, vibrant place.

Mille Lacs and its chain of lakes have been prominent in the minds of Minnesota archaeologists for over a century. The Mille Lacs Locality (Figures 1 and 2), as defined by Elden Johnson (1984; Aufderheide et al. 1994), has been identified as the ancestral home of the eastern Dakota based on the writings of Father Louis Hennepin (1938) and other early European explorers. Archaeological investigations of this connection were undertaken by pioneering archaeologists including Jacob Brower, Lloyd Wilford, Elden Johnson and others, and have culminated in designation of the Kathio National Historic Landmark. An archaeological framework representative of the area's rich cultural heritage has evolved through the course of these studies, first defined by Johnson (1984, 1985), and has been expanded upon by later researchers.

The present work attempts to bring together the mass of archaeological information about the Mille Lacs Locality. Such information can be found in the form of raw data, field notes, maps made over a hundred years ago, and of, course, artifacts. Equally important is the simple task of taking in the landscape and the marks of approximately ten thousand years of human history. The following descriptions of the landscape and natural history of Mille Lacs are presented first in hopes of conveying this sense of place on paper. The history of archaeological investigations then gives a sense of the depth of the past at Mille Lacs, as experienced during the process of discovery. This sets the stage for a procession of the archaeological periods, starting with the arrival of the Ice Age hunters and moving forward to the present day.

The Lake Onamia – Trunk Highway 169 Data Recovery Project:

This overview is part of a larger project undertaken to mitigate the effects of Trunk Highway 169 reconstruction on a series of archaeological sites located along the eastern shore of Lake Onamia. Normally, the focus of such a mitigation effort would be focused on the sites to be directly affected by the project, but the unique circumstances of Mille Lacs archaeology suggested the benefit of a different approach. Mille Lacs has seen a long history of archaeological investigation, as mentioned above, particularly during the University of

Minnesota's Mille Lacs Research Project in the 1960s and 1970s under the direction of Elden Johnson. In many ways, the archaeology of the Mille Lacs Locality was Johnson's life's work. He had made plans to publish the comprehensive findings of his decades of fieldwork at Mille Lacs, but he was sadly prevented from doing so by his premature illness and passing. He did publish numerous articles over the years with his students and colleagues, and these remain invaluable resources, but the overall framework remained incomplete.

For these reasons, it was decided that the amount of excavation at the sites within the highway corridor would be decreased approximately by half, with the remainder of the effort going toward compilation of an archaeological overview of the Mille Lacs Locality. With these dual goals in mind, an interdisciplinary team was assembled, including specialists in prehistoric and historic archaeology, geomorphology, paleoecology, ethnohistory, ceramic, lithic, groundstone analyses, as well as archaeobotany, and human and animal osteology. Due to the varied state of information relative to each of these fields, it was decided to allow each specialist to balance the dual goals of the site analyses and the overview within their respective schedule and budget. For this reason, the scope and detail of these chapters varies depending on the state of each discipline. Reference is made to the findings of these studies throughout this overview. Researchers and students of particular specialties are referred to the specialist chapters, which are presented with the individual site reports in a companion technical report for this project (Mather and Abel 2000).

A total of eight sites were the subject of excavation prior to the reconstruction project. These span the human history of the Mille Lacs Locality, ranging from a Late Paleoindian tradition camp to a Euroamerican logging site. Much of the importance of these sites lies in their landscape position and their range of occupation, viewed within the context of the previous Mille Lacs investigations undertaken by Elden Johnson and others. Some of the sites are located on the Rum River below Lake Onamia, and others are within the morainic uplands between the lake basins, both settings that have seen little archaeological investigation in the past. Furthermore, the majority of the components represented at these sites trend toward the older end of the Mille Lacs cultural framework as defined by Johnson (1984), which focused on the Late Prehistoric Period Dakota villages. The sites along the highway corridor, in contrast, date primarily to the Late Paleoindian, Archaic and Initial Woodland traditions, corresponding with Johnson's (1984) Early and Middle Prehistoric periods. Most of this period of time, up to the Late Archaic tradition, was not included in Johnson's (1984) framework due to a lack of independent data from Mille Lacs. While new phases have not been named in the present overview, this information is presented in the structure of Johnson's chronology, and contributes to the overall understanding of the human history of the Mille Lacs Locality.

Classification and Typology:

Archaeology can be an exciting process of discovery, both in the field and laboratory. Presentation of the results in a meaningful way requires a system of classification, however, and that can present problems of its own. This overview of Mille Lacs archaeology is presented within the framework defined previously by Elden Johnson (1984, 1988), with grateful acknowledgement of the foundation it provides. Johnson's chronology divides Mille Lacs

archaeology into the Early, Middle and Late Prehistoric Periods, with further subdivision into phases where possible.

The terminology used in any such system will have its advantages and disadvantages. The distinction between categories such as "prehistory" and "history" can be an imprecise distinction of time and potentially a source of confusion. Did history begin when Du Luth arrived at Mille Lacs in 1679, or Hennepin in 1680? I doubt that either they or the Dakota at Mille Lacs thought so. One could use the terms "precontact" and "postcontact" instead, but these still only focus on one moment, Du Luth's visit in this case, as a turning point for 10,000 years of human history. These are complications that Johnson (1984) also recognized. However, a century of investigations at Mille Lacs have left us with a mass of artifacts, fieldnotes, survey findings, site maps, ethnohistoric accounts and other data. Complicating matters further, much of this information has never been analyzed or even cataloged. It must be classified in some manner in order to be presented in an understandable fashion. In any case, the work of previous researchers formulated into a framework by Johnson (1984) is an incredible gift. It enables us to work within a defined universe, and to find out what fits and what doesn't. The framework and terminology should always be considered a work in progress, with the intent that it be updated and modified, just as Johnson (1984) built upon previous classifications by Wilford (1944, 1951b, 1955). Therefore, while this can never be the book that Elden would have written, it attempts to update the framework of Mille Lacs archaeology for the benefit of future researchers, of which I hope there are many.

CHAPTER 2 – LANDSCAPE AND ENVIRONMENTAL SETTING

The landscape, natural history and changing environmental conditions of a place such as Mille Lacs are crucial elements to be considered in archaeological interpretation of the past. Natural environmental processes have profound influences on human settlement and activities. These factors also directly affect site formation processes, and the preservation of the archaeological record in the intervening years since a site was inhabited. The physical setting of Mille Lacs is described first, inclusive of the region's geologic history, local soil development and geomorphic processes during the Holocene. This sets the stage for the progression of plant and animal communities since the end of the Ice Age, and provides context for the overview of human history that follows.

The Landscape:

The landscape of the Mille Lacs Locality study area is dominated by the big lake itself, and the chain of lakes Ogechie, Shakopee and Onamia with their drainages via the Rum River. These bodies of water form an ecological mosaic with the undulating topography of the Mille Lacs Moraine. This is a glacial landscape in every way, formed near the end of the last Ice Age more than 10,000 years ago. Natural resources in the Mille Lacs area are varied and plentiful as a result of this mixture of lakeshore, riverine and upland forest environments.

The Mille Lacs Locality has a complex glacial history, but the latest advances of the Rainy and Superior lobes are most prominently represented in the local landforms. Glacial drift from the Rainy Lobe is primarily overlain by deposits of the later Superior Lobe, but the effects of the former ice sheet are clearly seen in a series of tunnel valleys that cross the area, trending toward the southwest. The linear basin of Lake Ogechie follows the path of one of these valleys, providing the Rainy Lobe's most visible legacy (Anderson 1998). The Mille Lacs Moraine was created by the southernmost advance of the Superior Lobe during the Automba Phase of the Wisconsinan Glaciation, forming a natural dam along what are now the north, west and south sides of Mille Lacs lake (Figure 3). Mille Lacs Lake is essentially a giant puddle trapped behind the moraine. The lake is shallow, very large (42 square miles) and lined with fine sandy beaches (Ojakangas and Matsch 1982; Wright 1972).

The Mille Lacs Moraine is a distinctive landform, with undulating micro-topography resulting from the varying depth of the drift and the effects of former ice blocks. These have left relatively small basins within the upland surface of the moraine, now occupied by wetlands or standing water (Anderson 1998). Thus, the soils of the Mille Lacs Locality are of glacial origin, having formed from glacial drift, primarily that of the Superior Lobe in the Mille Lacs Moraine. The typical soil profile is thin and rocky, with an eluvial transition from silt to clay. A cap of windblown silt is present in much of the area immediately south of Mille Lacs Lake, derived from the open, windswept landscape of the late glacial period (Anderson 1998; Kolb 2000).

The glacial drift is also the only source for lithic raw materials suitable for stone tool manufacture. Most locally available lithic types are derived from the Superior Lobe, including

siltstone, jasper-taconite, gunflint silica, quartz and agate. Cobbles of Tongue River Silica are also found in the drift, derived from a northwestern source (Bakken 1996, 2000). These lithic materials would have primarily been accessible in erosional surfaces, such as stream cuts or beaches. The Bradbury Brook siltstone procurement site is an excellent example of the ancient use of such resources (Malik and Bakken 1993, 1999).

This surface geology holds definite implications for the archaeological record of the Mille Lacs Locality, many of them negative. Artifacts from different occupations are compressed in the thin soil profile, for example, complicating the definition of archaeological periods. The relatively stable course of the upper Rum River throughout the Holocene (Kolb 2000) significantly lessens the chances for cultural deposits to be preserved in a stratified flood plain environment. Also, the acidic soils of the Mille Lacs Moraine are not conducive to the preservation of organics, such as floral and faunal remains, hindering the interpretation of subsistence modes for all but the most recent periods.

The Rum River is the only outlet of Lake Mille Lacs, flowing 140 miles from Vineland Bay to its confluence with the Mississippi River at Anoka, falling a total of 417 feet (Figure 4). The greatest fall is immediately below the Lake Onamia outlet where the river drops 280 feet in 40 miles. Prior to the installation of dams at the outlets of Lake Ogechie and Lake Onamia, water levels of the upper lakes and particularly Mille Lacs determined the amount of flow in the river. It is not uncommon for dry periods to result in low water flows throughout autumn and winter. The water level rarely drops so low as to be unnavigable by canoe, however, or changes suddenly or drastically, as Mille Lacs acts as a natural regulator for the river. The stretch of the Rum River below the Lake Onamia outlet is relatively small, clear and rocky. The connection of the Rum River with the Mississippi is of obvious cultural significance, but it is important to note that its meandering course may have limited the extent of water navigation along the waterway (Waters 1977:179-182). Father Hennepin's (1938) captors preferred to march overland from the Mississippi to Mille Lacs, after all, despite having to wade through half-frozen waterways and swamps. Of equal or perhaps greater importance is the headwaters of the Knife and Snake river system immediately southeast of the Mille Lacs Moraine, a course which leads to the St. Croix River (Waters 1977; Ojakangas and Matsch 1982).

The natural vegetation of Mille Lacs consisted primarily of pines and northern hardwoods, with white pine forests more prevalent toward the St. Croix River and to the north. The prairie and prairie-forest ecotone were located a short distance to the west, across the Mississippi River (Figure 5). Much of the area between the south shore of Mille Lacs and Onamia is now logged off and cleared for agriculture. Remaining uncultivated land consists primarily of deciduous forest and mixed hardwoods. Dominant tree species today include sugar maple, basswood, elm and red oak (Johnson 1984).

The varied local environments of the Mille Lacs area support a wide variety of plant and animal species. Wild rice was once plentiful in Lakes Ogechie, Shakopee and Onamia but has been largely eradicated by manipulation of the lake levels by dams and an increase in roughfish populations (Jenks 1901; Johnson 1969, 1984, 1985). Other edible plant species native to the area include cattails, arrowhead and bulrushes. Open areas of the forest support species such as

Chenopodium (goosefoot) and amaranth. These are considered to be weeds today, but both are nutritious grains and were cultivated in prehistoric times (e.g. Smith 1995).

The late glacial environment of Mille Lacs presumably supported now-extinct megafauna, and a former resident of Kathio State Park has reported finding mammoth teeth near Lake Ogechie (Hanson 1999). The identification of these remains has not been confirmed, however, and no finds have been at Mille Lacs to date of Pleistocene megafauna in association with cultural materials. The prominent large mammals at Mille Lacs since the historic period are white-tailed deer and black bear. Elk and wolves were once present as well. Mille Lacs is also at the southern limit of the historic range of moose. Bison probably never grazed at Mille Lacs itself, but their range would have extended much closer, throughout the Anoka Sand Plain, for example, during the middle Holocene. Small mammals such as raccoon and squirrel are common. Muskrats and herons are found in marsh environments, with the pluvial habitats supporting beaver, otter and a variety of waterfowl. (Johnson 1984:19, 1985; Emery 1980; Whelan 1990; Hazard 1982; Tester 1995).

Mille Lacs is revered for its walleye populations, but other species are also important. The richness of the Mille Lacs fishery is evident in Jacob Brower's observations from nearly a century ago. "From an enormous school of maskalonge observed at Outlet Bay, in April 1901, during the spawning season, more than 600 were speared, some of which measured four feet in length, and they were hauled away in wagon load quantities" (Brower 1901:48). Northern pike, bass and panfish are also prevalent in the big lake, and in times of sufficient water flow, these species are also found in the Rum River to the south of the Lake Onamia outlet. Many of these species of fish would have colonized the Mille Lacs waterways almost immediately after retreat of the glacial ice (Eddy and Underhill 1974; Waters 1977; Pielou 1991).

The Changing Environment:

It really doesn't need to be said to many Minnesotans, but local environmental conditions, especially the climate and temperature, can have a major effect on our daily lives. The climate controls everything about the natural world around us –the temperature, the floral and faunal communities, and the abundance of each. To study the archaeology of a place, we need to know what resources would have been available in the past. This provides a gauge for understanding past behavior – what did people use and why? What was there that people didn't use? Why again? These types of questions can eventually lead us in a circle, as archaeology teaches us of resources people used long ago that we wouldn't think of today. It helps to start by assessing the natural environment at the time of the first Euroamerican[1] explorations. We can do this in part through historical records.

Historical documents are important, but they can also be misleading. They can provide a wealth of information, but they leave out even more. Records that tell of the past environment include explorers' journals and the maps they made. These often focus on lakes, rivers and water

[1] In terms of archaeology, there is a blurred line between the European explorers and fur traders (French, British) and the first technically American explorers and settlers. For simplicity, the term "Euroamerican" refers generally to all non-American Indian residents and visitors.

navigation, speaking of people, plants and animals in only a general sense. In later accounts, such as logging records, the focus is on timber harvests and river flow volumes. The United States General Land Office Surveys provide an excellent source of environmental information, but Mille Lacs was not surveyed until relatively late, in the first decades of the 1900s (Trygg 1969). The area had undergone nearly a century of lumbering by that time, and logging dams had already affected the local hydrology.

Mille Lacs was at the southern edge of the great pine forests when the first French explorers arrived here 300 years ago. Old growth white and red pine covered much of the area, interspersed with stands of maples and other deciduous trees (Marschner 1974). The vegetation wasn't always this way, however. Centuries of climatic variation since the end of the Ice age saw great shifts in the patterns of the natural environment. The best record we have of these changes at Mille Lacs is provided by pollen accumulated in the bottom of Lake Ogechie.

Pollen is shed by plants all the time. It floats in the air and eventually comes to rest on the ground, or the surface of the water. It settles with the silt, organic material and whatever else builds up at the bottom of a lake. This happens constantly, with the older pollen getting buried deeper and deeper. A cool, wet place like the bottom of a lake preserves the pollen grains, sometimes for thousands of years. In the late 1960s, John McAndrews took samples from the bottom of Lake Ogechie though long geologic cores, thereby collecting the sediment and pollen that had collected on the lake bottom since the end of the Ice Age. Through identification and counting of the individual pollen grains, changes in the local vegetation can be tracked through time[2]. This record is a major benefit to the local archaeology, and even better, McAndrews (2000) has recently re-analyzed the cores. This latest examination was to pin down the expansion of wild rice in the lake, and to provide radiocarbon dates for the major changes (Figure 6).

The following description of the vegetational history of the Mille Lacs Locality is summarized from McAndrews (2000), with the context of broader climatic trends from Anfinson and Wright (1990). The sequence is interpreted from the varying proportions of pollen types (Figure 6), divided into zones considered diagnostic of particular plant communities. The vegetation history of Mille Lacs begins with an open forest of jack or red pine in a cool, dry climate. Other trees included spruce, birch and elm. This zone lasted from 10,000 to 7,800 years ago. Tundra vegetation would have been present earlier, as the glaciers were melting, but the pollen core doesn't extend that far back in time. The next zone, from 7,800 to 4,000 years ago, is an oak savanna reflecting the local effects of the Hypsithermal interval, the warming trend of the middle Holocene[3]. The prairie advanced up to 70 miles north and east of its present border during this period, but low counts of grass pollen from Lake Ogechie show that Mille Lacs wasn't within the true prairie even at that time. Oak was also the primary tree of the next zone, along with ironwood, from 4,000 to 2,300 years ago, indicating a gradual trend toward a cooler and wetter climate. Sugar maple and basswood were other important species that became more prevalent at this time. Of major significance to the regional archaeology is aquatic grass pollen,

[2] Pollen grains are microscopic, but they have different shapes. Pine pollen looks different than oak pollen. Identifying pollen grains is like identifying a tree by its leaves, but on a smaller scale.

[3] The Holocene is the climatic period that includes the present day. It began approximately 10,000 years ago with the retreat of the glaciers.

probably derived from wild rice, which becomes more prevalent in Lake Ogechie during this period. A cooler climate during the next zone, from 2,300 to 125 years ago, brings establishment of the white pine forest and thick stands of wild rice known at Mille Lacs during the early historic period. The final zone, 125 years ago to the present, is defined by disturbance to the natural environment by logging and farming practices.

It is important to note that the calendar years of the pollen zonation summarized above are derived from radiocarbon dates. The time scale has been shifted forward by 400 years from the uncorrected dates by McAndrews (2000), however, based on his interpretation of the palynological data. This is most significant for the zones of wild rice expansion and historic disturbance, as the shift is based on the *Ambrosia* (ragweed) rise, which McAndrews (2000) correlates with the onset of Euroamerican logging. This issue is also discussed in Chapter 3. It is mentioned here because, while the basic structure of the pollen sequence remains sound, this shift has definite effects on the interpretation of the human history at the Mille Lacs Locality. Specifically, if the radiocarbon dates are accepted at face value, the *Ambrosia* rise falls in the Shakopee Phase, the time of the Late Prehistoric Dakota fortified villages on Lake Ogechie, which seems to be an equally plausible interpretation for the anthropogenic disturbance.

While the vegetational sequence outlined above depicts dramatic changes in the local landscape from the end of the glacial period to the present, it also reflects continuities. Most significant of these is the constant position of the Mille Lacs Locality a short distance east, and perhaps north, of the prairie-forest border. Mille Lacs is, and has always been, at the meeting of the Northeastern Plains and the Eastern Woodlands. The effects of this location are apparent in both the natural and human histories of the Locality, and will be further defined with future efforts in environmental archaeology. One area that holds particular promise is the analysis of food residues from Woodland tradition ceramic vessels. Phytolith assemblages from such sources tell of plant resources from a secure cultural context (Thompson 2000), and it is expected that other techniques hold promise for reconstruction of water chemistry, starches and perhaps sugars.

CHAPTER 3 - HISTORY OF ARCHAEOLOGICAL INVESTIGATIONS

A long history of American Indian presence in the Mille Lacs region has resulted in a rich cultural and archaeological heritage. Archaeological and ethnographic investigations were begun in this area a century ago with the studies of Jacob Brower and David Bushnell, Jr., while investigations involving modern archaeological excavation have been conducted mainly within the last sixty years. Early archaeological testing of regional sites by Brower, Jenks, Wilford and others often focused on the large lakeshore sites associated with groups of burial mounds. The most intensive period of archaeological investigation occurred during the 1960s and 1970s through the University of Minnesota's Mille Lacs Research Project, under the direction of Elden Johnson. That project set out to fulfill a primary research goal of Johnson's predecessors, the ancestral origins of the eastern Dakota people.

Much of the Mille Lacs Research Project was undertaken within Kathio State Park, which encompasses Lakes Ogechie and Shakopee and the northwest portion of Lake Onamia. These efforts have resulted in the establishment of the Kathio National Historic Landmark (Johnson 1984; Streiff 1987), and set the stage for later cultural resource management studies such as the current project. At the same time, archaeological research within the Kathio National Historic Landmark has also been revived, through the efforts of the Archaeological Computing Laboratory of St. Cloud State University, working in concert with the Mille Lacs Tribal Historic Preservation Office and Kathio State Park.

Early Explorations:

Archaeological interest in the Mille Lacs locality started a century ago, with the work of Jacob Brower. He had a great interest in Mille Lacs and its identification as ancient Kathio, the ancestral homeland of the Dakota people.

> Kathio was the name of the great town of the Nadouessioux which Du Luth visited, in 1679, mistranslating the name, or misstating its true pronunciation, and also omitting to describe its actual location, omissions which have required critical and attentive inquiry to resupply (Brower 1901:xv).

Brower visited Mille Lacs repeatedly, making archaeological and ethnographic collections, and mapping earthworks and other cultural features (Figures 7 and 8). He wrote extensively of these travels in his journals, which are a delight to read. Published accounts include the volumes *Mille Lac* and *Kathio* in his *Memoirs of Explorations in the Valley of the Mississippi* (Brower and Bushnell 1900; Brower 1901).

Brower's *Archaeologic Chart of Mille Lac* (Brower and Bushnell 1900) is a primary reference for any student of the area's archaeology, recording much data that would have otherwise been lost (Figure 7). Many of the earthworks he mapped, for example, have since been obscured by regional development. Such mound groups include those at Wigwam Bay and at Eliason Run, immediately south of Garrison. Survey in the vicinity of the latter group determined that the mounds were most likely removed or covered by reconstruction of T.H. 169

by C.C.C. workers in the 1930s (Mather et al. 1995). Brower and Bushnell traveled by water counterclockwise around the lake. Their camps were marked by inscriptions on trees, and the locations noted on the *Archaeologic Chart*. It was during this tour of Mille Lacs that David Bushnell most likely convinced Brower that the Mound Builders were American Indians, rather than a lost race (Birk 1986:12).

Theodore Lewis and Jacob Brower also collected many artifacts from the Mille Lacs region. These collections are now curated at the Minnesota Historical Society. Some of Brower's ethnographic collections have been repatriated under the terms of the Native American Graves Protection and Repatriation Act of 1990, including numerous Ojibwe carved wooden *O-do-daim-un* (grave markers). He had quite a fascination with these objects, and was frustrated that many of the Mille Lacs Ojibwe opposed his attempts to acquire them. He was successful in building a collection, however, at one point purchasing 21 *O-do-daim-un* for four dollars (Brower 1900)[1]. Brower was also an advocate for the Mille Lacs Ojibwe, however, and his journals reflect genuine distress over attempts to remove them from their lands.

Antiquarian Collections:

In the 1930s, the Mille Lacs Locality drew the attention of members of the newly formed Minnesota Archaeological Society. This group was comprised largely of artifact collectors, who published their finds in their journal, *The Minnesota Archaeologist*. We are fortunate that the individuals who came to Mille Lacs were willing to describe the locations of the sites they found, in contrast to many collectors of that era. Dr. Wesley Hiller (1936) describes a series of sites in his "Reminiscences of Two Mille Lacs Trips." At the first, "along the left bank of Lake Kathio [Ogechie], we picked up a large number of sherds, a few scrapers, and three or four triangular arrow heads." He notes a large mound, and describes the site as half a mile in extent (Hiller 1936:8). It is difficult to be certain, but the site is probably the Cooper (21 ML 9/16), Wilford (21 ML 12), or Griffin (21 ML 18) site, or perhaps a combination thereof. The Moore Farm (Petaga Point) was visited next, where the Moore collection of copper artifacts was highly praised. Hiller was disappointed that permission to collect the site was denied.

Hiller's (1936:9) third site was "on the left bank of the Rum River where it flows into Shakopee Lake. A couple of small cultivated parcels yielded a few pot rims, four or five arrow points and a large scraper." No designated site fits this description. The Old Shakopee Bridge site (21 ML 20) is on the right bank of the inlet, provided one is moving downstream. The Shakopee-Rum Point site (21 ML 19) is on the left bank going upstream into the outlet of Lake Shakopee. It seems likely that the party was moving downstream, however, as the last stop was at Aquapaguetin Island (21 ML 2), called by Hiller the Father Hennepin site, following Brower. At that time approximately 20 mounds were noted around the path leading to the site, presumably on the shore of Lake Onamia. Hiller (1936:9), was apparently quite taken with the place:

[1] In an ironic turn of events, recent NAGPRA consultation with the Mille Lacs elders revealed that some of these objects, presumably some of those purchased, were not authentic grave markers (the position of the clan animal symbol was reversed). They suggested that these be retained in the Minnesota Historical Society collections as non-funerary objects (C. Diesen, personal communication, 1997).

> This year, at our advent on May 24th, the woods were carpeted with the large-flowered trillium, each individual vieing to outdo the next in size and grandeur of blossom. They billowed over the hills, crowded the gullies, and unfurled their petals to the very edges of the marsh. They were as legion as their red skin Santee neighbors must have been in Hennepin's time.

He continues:

> At this site we found five triangular arrow points, two large fragments of arrow shaft polishers, and plenty of shards, including various rim designs. The arrow points varied from an equilateral triangle in shape to a long drawn out triangle. Practically all the points we found up that way were of the three-cornered, unnotched type. All pottery found on the four sites corresponded as to culture (Hiller 1936:9).

A later discovery, by a Minnesota Archaeological Society member, was a painted animal effigy head eroding from a probable burial mound near the Rum River. A natural cleavage plane in the rock (described as graywacke) formed the mouth of the object (Gates and Jacobson 1967).

Lloyd Wilford and the Mille Lacs Aspect:

The first archaeological investigations of Mille Lacs by the University of Minnesota were undertaken in 1933 by Alfred Jenks and his assistant, Lloyd A. Wilford. As part of their investigations statewide, they excavated areas of the Brower (21 ML 1), Aquapaguetin Island (21 ML 2), Crace (21 ML 3), Vineland Bay (21 ML 7), Petaga Point (21 ML 11), and Wilford (21 ML 12) sites (Caine 1983:257-260; Streiff 1987). Many of these sites did not receive their current names until much later. Early data from these sites were ultimately the basis of Wilford's definition of the Mille Lacs Aspect, containing the Malmo and Kathio foci. The latter focus was first described in Wilford's (1937) Ph.D. dissertation at Harvard University, *Minnesota Archaeology with Special Reference to the Mound Area*. Brower's influence, particularly his identification of Kathio as the ancient home of the Dakota, is readily apparent in Wilford's interpretations.

> Brower shows several village and mound sites in this area, though Warren, in his account of the Battle of Kathio, mentions only three villages, one at Cormorant Point northeast of the outlet, one at the outlet, and the third on the west side of the river at its entrance into Lake Onamia (Wilford 1937:96).

The Kathio Culture was defined primarily from Jenks and Wilford's investigation of Aquapaguetin Island, and supplemented by mound excavations at the other sites. Working back from Brower's interpretations and the historical accounts of Hennepin, Carver, and others, the artifacts found at 21 ML 2 were assumed to have been left by the Dakota inhabitants.

> Since the excavation at Aquipaguetin Island was undertaken solely because Kathio is the best identified Dakota site in the state, it is obvious that the Kathio

> focus represents the culture of the Dakota, at least of the Santee Dakota, if the identification is correct (Wilford 1937:276).

Wilford did, however, note the complexity of the Mille Lacs archaeological record, and clearly anticipated more precise identifications with future research. For example, he initially included the Howard Lake site in the Kathio Focus, while noting its differences and Hopewellian influences. He also noted the apparent differences in the sherds from mound fill at the Malmo site (21 AK 1), excavated by a W.P.A. crew in 1936, under the direction of Jenks (Wilford 1937:108).

Like many after him, Wilford repeatedly returned to Mille Lacs, and undertook another phase of major excavations in the 1940s. These included testing at the Brower (21 ML 1), Aquapaguetin Island (21 ML 2 – Figure 9), Indian School (21 ML 6), Vineland Bay (21 ML 7), and Garrison Creek (21 CW 5). The site data were the subject of a comparative analysis (Wilford 1949), and added to definition of the Mille Lacs Aspect (Wilford 1944, 1951a, 1951b). He was a guest of the Ayers family while digging at the Indian School site, also known as the Robbins Mound Group (21 ML 6). Ayers was well acquainted with the local archaeology, directing Wilford to the copper artifacts found at the Moore farm (Petaga Point), and suggesting that a mound there should be excavated before it was destroyed. Construction of T.H. 169 was underway on another trip to visit Ayers, but Wilford noted that archaeological observations were not feasible.

> Saw Mr. and Mrs. Ayers at the Indian Trading Post. A new highway is being constructed through this area and the Ayers have removed all the cottages formerly west of the highway. The construction is on such a grand scale that nothing is being recovered if anything was there (Wilford 1952).

Elden Johnson and the Mille Lacs Research Project:

The Fall 1965 *Minnesota Archaeological Newsletter* announced:

> A site survey and testing program in the vicinity of Mille Lacs lake will be conducted by Professor Leland R. Cooper of Hamline University, assisted by Professor Claude Stipe of Bethel College, and a small crew of University of Minnesota and Hamline University Students. The survey work will concentrate on the area of the new Mille Lacs-Kathio State Park but will be extended if time permits. An intensive excavation program for 1966 at Mille Lacs will be based on the survey results and will concentrate on late prehistoric and proto-historic village sites in an effort to document Eastern Dakota habitations.

The Mille Lacs Research Project grew out of Leland Cooper's survey of the newly established Kathio State Park in 1965 (Figure 10). For the next decade, University of Minnesota students worked at more than twenty sites in and around the park. This work involved numerous faculty and graduate students of the Anthropology Department, under the direction of Elden Johnson (Johnson 1984; Streiff 1981, 1987).

> When most of the archaeological sites in this Historic District were being nominated for Landmark status in the 1970s, this was the most active archaeological research area in the state of Minnesota. Certainly work was going on north at the Rainy River on the Canadian border and south on the Mississippi River at Red Wing, but the continued, year after year research was being conducted at Mille Lacs. It was the pivot for the University of Minnesota's archaeological projects and the area that Elden Johnson, UM Professor and then State Archaeologist, felt would yield the answers to the question of Dakota ancestry (Streiff 1987:1).

Cooper (1965) presented the preliminary results of the survey, which included investigation of the Petaga Point (21 ML 11), Cooper[2] (21 ML 9/16) and Wilford (21 ML 12) sites, and continued analysis of the site data in 1966. The first of many University of Minnesota field schools at Kathio was held in 1966, directed by Elden Johnson (Figure 11). "MORRC sponsored field archaeology programs will include intensive excavations of sites in Mille Lacs-Kathio State Park. Crews under the direction of Professor Leland Cooper and Peter Bleed will work in this area" (*Minnesota Archaeological Newsletter* 10, 1966).

Site 21 ML 9 was named in honor of Leland Cooper that same year, following Elden Johnson's excavations there. The field school found "at least three house patterns, many ricing pits, and one burial." The midden was identified on the slope leading to Lake Ogechie (Watrall 1966). A palisade at the site had previously been identified by Cooper (1965).

While the University of Minnesota excavations progressed in Kathio State Park, Cooper himself went on to find the Vach and Stumne Mound sites in Pine County. The Vach sites consisted of nine separate village and mound sites identified through the collections of Mrs. Vach. These collections were donated to the University of Minnesota at that time. Cooper excavated two of the mounds in the Stumne group (Cooper 1967; Johnson 1973; *Minnesota Archaeological Newsletter* 11, 1966).

Excavations at the Cooper and Petaga Point sites continued in 1967, including excavation of a Late Woodland house floor at the latter site as mitigation for a swimming pool planned for that location (Johnson 1968). "One corner of this floor was discovered in the waning moments of the 1966 field season by Peter Bleed who excavated that site. The rectangular house had burned, leaving ash and charred logs in position outlining the house dimensions" (*Minnesota Archaeological Newsletter* 12, 1967). Johnson (1971a) later argued that the house shares affinity with the Plains Village cultures to the west. Bleed's investigation of Petaga Point were presented in his Master's Thesis, later published by the Minnesota Historical Society (Bleed 1967, 1969).

Johnson's excitement about the excavation results at Mille Lacs is evident in his writing in the 1967 *Minnesota Archaeological Newsletter*:

> Work continued on the Cooper site (21 ML 9) with the stripping of large surface areas continuing. The wealth of very late prehistoric materials continues, with the sherd count now approaching 100,000. The final work on the site will begin

[2] Elden Johnson named the site in honor of Cooper the following year.

early next summer when we hope to finish stripping a large enough area to expose several large rectangular house floors.

The summer of 1967 was indeed a busy time for Mille Lacs archaeology. In addition to the Petaga Point and Cooper Village excavations, Gordon Lothson (1972) excavated one of the Cooper mounds (21 ML 16). Also, Dennis Dickinson (1968) expanded on Wilford's excavations at Vineland Bay (21 ML 7), after co-directing the Cooper site fieldwork. Leland Cooper, by then Professor Emeritus at Hamline University, conducted a survey of the Snake River above Pine City with Robert Keyser and Carla Norquist (*Minnesota Archaeological Newsletter* 12, 1967). That survey resulted in identification of the Winter (21 PN 17) site, where Cooper directed excavation of pit houses in 1968 (Johnson 1968, 1993). During this period, Christy Caine undertook an archaeological overview of the Snake River Valley (Caine 1968, 1969, 1973, 1974).

Integration of archaeology and paleoecology began at Mille Lacs in 1968, when John McAndrews took pollen cores from Lake Ogechie, Lake Onamia and Black Bass Lake. This important development presented an independent line of evidence for analysis of local environment and resource procurement, and connected to Johnson's archaeological research goals. Preliminary pollen spectra from Mille Lacs cores, although unpublished, have contributed to the further study of wild rice (e.g. Yourd 1988). The Lake Ogechie cores provide a full Holocene environmental sequence. McAndrews (2000) presents a re-analysis of those cores with radiocarbon dates for the pollen zonation as part of the current Lake Onamia – Trunk Highway 169 Data Recovery Project.

The final season of major excavation at the Cooper site was completed in 1969. Two burial mounds (Mounds 2 and 3) in the Cooper mound group were excavated by Jan Streiff. Mound 3 was determined to be older than Mound 1 (Lothson 1972), with associated St. Croix ceramics. Earlier in the year, Charles Watrall directed survey at Savanna Portage, Aitkin County, including testing at Battle Island, and historic logging and Ojibwe sugarbush sites (*Minnesota Archaeological Newsletter* 14, 1969; Aufderheide et al. 1994: Watrall 1969).

No excavations were undertaken at Mille Lacs in 1970, as the University of Minnesota concentrated its efforts on the Rainy River. Elden Johnson (1993) led excavations at the Winter site (21 PN 17) and the Vach site (21 PN 8) in 1971. Site 21 ML 18, later named the Bromley Griffin site by Jan Streiff (1987), was tested by Daniel Webster (*Minnesota Archaeological Newsletter* 16, 1971).

University of Minnesota archaeologists returned to Mille Lacs in 1972 under the direction of Guy Gibbon. In addition to regional survey work, excavations were conducted at the Brower (21 ML 1), Crace (21 ML 3) and Old Shakopee Bridge (21 ML 20) sites. The Crace site excavations provided an interesting perspective on the Late Woodland period, with the discovery of a feature containing hundreds of fragments of burned bear cranial bones. The Brower site excavations may have been in an area of plowed down burial mounds. One burial was found, but not removed from the site (Gibbon 1975a, 1975b, 1976).

In 1974, Professor Janet Spector directed survey and excavation at the Lutheran Camp site, the Lichty site, the Konze-Warren site, and the Scott site (21 CW 9). Her crew also

conducted new testing at the Cooper site, in order to better determine the site limits. Elden Johnson directed the first season of excavation at the Wilford site (21 ML 12), which ...

> proved the site to be a late prehistoric and protohistoric habitation site with early French contact material (two Jesuit rings, for example) in direct association with an assemblage dominated by Sandy Lake and Ogechie ceramics. The site has both trench and post and semi-subterranean house types, numerous shallow basin-shaped pits, and significant faunal/botanical remains (*Minnesota Archaeological Newsletter* 20, 1974).

A film, *Archaeological Field School*, was made by Stephen Church featuring the 1974 excavations at the Wilford site and Gull Lake area sites. Spector and Johnson returned to the Wilford site in 1975. Johnson completed excavation at Wilford in 1976, while Spector led testing at the Griffin site. New survey was also conducted within Kathio State Park (*Minnesota Archaeological Newsletter* 22 and 24, 1975 and 1976).

During the course of the Mille Lacs Research Project, Elden Johnson gradually formulated a cultural chronology specific to the region. It consists of a series of phases, named for local place names, within a framework of the Early, Middle and Late Prehistoric periods. This system was also presented in his statewide overview, *The Prehistoric Peoples of Minnesota* (Johnson 1988). The Mille Lacs chronology starts with the Petaga Phase, correlated with the Late Archaic. It progresses through the Initial and Terminal Woodland periods, and culminates with the protohistoric Bradbury Phase, representative of the Eastern Dakota Mille Lacs villages (Johnson 1984, 1985; Birk and Johnson 1992). The Mille Lacs chronology is summarized in Table 1. The dates ascribed in the table are from Streiff (1987). Johnson's (1984:16-18) original table is much more detailed, and not duplicated in full here. It is an important reference, including summary descriptions of ceramics, lithic/metal artifacts, small features, structures, burial mode, settlement pattern, subsistence pattern and trends/major changes/comments.

It is possible to reconstruct, in part, the evolution of the Mille Lacs chronology through the course of the Mille Lacs Research Project. Elden Johnson's early working definitions of the Mille Lacs ceramic types are summarized in Bleed's (1969) report on Petaga Point. In a classroom presentation to his 1976 field school, the phases are defined primarily by ceramic types, with notes of projectile point types and "special features" such as "strong Oneota resemblances" for the time later named the Shakopee Phase. The few named phases were all changed by the time the chronology was published, but the basic structure was complete. Johnson included the Vach sites with Petaga Point in the first phase at this time. Later presentations of this phase are limited to Petaga Point and the Scott site (21 CW 9), perhaps indicating a narrowing of scope (S. Anfinson notes). By 1979, most phases had been named. The influence of Wilford's Mille Lacs Aspect is seen in the correlation of phases with the Malmo and Kathio cultures (e.g. Streiff 1987:10).

It could be argued that this tight focus has been both a help and a hindrance to continuing research. The protohistoric Bradbury Phase (Birk and Johnson 1992), for example, is truly a local expression of French contact with the Mdwakanton Dakota. Other phases, however, are less clearly unique to the locality. An example is the Petaga Phase of the Early Prehistoric Period, defined as the Late Archaic "Old Copper" manifestation at Mille Lacs. It is clear that

Johnson took care to not push the Mille Lacs chronology too far, as he did not name or define phases older than Petaga, even though he was aware that older Archaic sites, and presumably Paleoindian sites, were present in the region.

Table 1. Summary of Johnson's (1984) Mille Lacs Cultural Chronology

PHASE	DATE	TRAITS
LATE PREHISTORIC PERIOD Bradbury Phase	A.D. 1680-1750	French trade goods Ogechie ceramics Conical mounds
Shakopee Phase	A.D. 1300-1680	Sandy Lake ceramics Oneota influence Groundstone Triangular points trench and post houses ricing and midden features conical mounds
Wahkon Phase	A.D. 1000-1300	Kathio ceramics Triangular points Ricing and midden features Semi-subt. House Conical mounds
Vineland Phase	A.D. 800-1000	Onamia and Kathio ceramics Small side-notched Triangular points Ricing and midden features Semi-subt. House Conical mounds
Isle Phase	A.D. 500-800	St. Croix ceramics Small side notched points Semi-subt. House Linear and conical mounds
MIDDLE PREHISTORIC PERIOD Rum River Phase	200 B.C.-A.D.500	Malmo ceramics Stemmed/side notched points Copper awls Conical mounds/burned logs
EARLY PREHISTORIC PERIOD Petaga Phase	Pre-500 B.C.	Old Copper

The Kathio sites were registered as a National Historic Landmark in the 1970s, and a summary of the extant site data has been compiled by Streiff (1987). This also is a primary reference of Mille Lacs archaeology, providing vital information such as site-specific excavation histories, accession numbers, map references, photo station locations, and assessments of past disturbance and current threats.

Elden Johnson planned to publish the cumulative results of the Mille Lacs Research Project. In the late 1980s, he obtained a grant from the Northwest Area Foundation to fund completion of the artifact analyses and prepare reports of the results. That effort included a multi-disciplinary team, with specialists in ceramics, lithics, human osteology, zooarchaeology, historical archaeology and paleoecology. Sadly, with the premature illness and death of Johnson, the work did not appear, as planned, as a volume in the *Prehistoric Archaeology Series* published by the Minnesota Historical Society (Elden Johnson files). Some of the individual analyses have been presented elsewhere, however. These include a Mille Lacs mortuary synthesis by Aufderheide et al. (1994), a comparison of Mille Lacs Late Woodland and historic Dakota subsistence patterns (Whelan 1990) and definition of French contacts in the Bradbury Phase (Birk and Johnson 1992).

Notably absent from the published works is a detailed analysis of the Mille Lacs ceramic sequence, with the exception of Caine's (1983) focus on the St. Croix and Onamia wares. Reams of attribute data were recorded over many years from the Mille Lacs sites, and remain on file at the Wilford Archaeological Laboratory. With hundreds of thousands of sherds and masses of data in a disorganized state (more than 100,000 sherds from the Cooper site alone), this situation presents a nearly insurmountable obstacle to Mille Lacs archaeology. None of the defining sites in Johnson's (1984) framework have been the subject of comprehensive or detailed ceramic analyses, for example. The separation of Woodland tradition components at the Cooper, Wilford and Petaga Point sites, most notably, and comparative analyses of houses and other features relies on provenience-specific ceramic identifications. Reconstruction of these sites from the extant artifacts and documentation, while a formidable task, would be a contribution to the regional archaeology greater than that provided by most subsequent excavations.

Cultural Resource Management:

It could be argued that much of the excavation conducted during the Mille Lacs Research Project marked the first integration of archaeology and publicly funded cultural resource management. Many of the site excavations in Kathio State Park were directed, for example, by proposals for construction of camp grounds and other park facilities, and the work was funded by the Department of Natural Resources. Most notable of these were the excavations at Petaga Point (Bleed 1969), which were conducted in response to redevelopment plans for a swimming beach, interpretive center and improved parking facilities. New surveys were also undertaken by the University of Minnesota in response to proposals for trail development within the State Park. The results of this work largely confirmed previous assumptions that the preponderance of sites within the park are located in proximity to the Mille Lacs waterways (Streiff 1981). Other survey work conducted on behalf of the Bureau of Indian Affairs documented historic sites near

Vineland Bay, including a logging camp with visible berms, and the historic destruction of Ojibwe cemetery along the bay south of Cormorant Point (Streiff 1983).

More recent CRM-directed investigations have focused on highway and public water access developments. As it winds north through the Mille Lacs area, the route of Trunk Highway 169 passes through one of the richest archaeological districts in the state. The early establishment of this highway caused inadvertent impacts to many undiscovered archaeological and burial sites. Since that time, however, plans for reconstruction of various segments of this roadway have resulted in numerous archaeological studies, which in turn have greatly increased our understanding of Mille Lacs archaeology.

The most intensive phase of archaeological investigation along the highway began in 1988 by the Minnesota Trunk Highway Archaeological Reconnaissance Survey of the Minnesota Historical Society. That survey resulted in the discovery of the Old Onamia Beach I (21 ML 36), Van Grinsven I (21 ML 37), Van Grinsven II (21 ML 38), Onamia View (21 ML 39), Black Brook (21 ML 40) and Ben & Fern Larson (21 ML 41) sites. In addition, habitation components were identified associated with the previously known mound groups at Portage Bay (21 ML 31) and Crosier Cemetery (21 ML 33). Further survey in 1989 resulted in discovery of the Old Onamia Beach II (21 ML 43), Onamia Portage I (21 ML 44) and Onamia Portage II (21 ML 45) sites. The Bradbury Brook site (21 ML 42) was discovered during a concurrent investigation a short distance to the south (Peterson et al. 1989:101-111, 1990:85-101; Malik and Bakken 1993; Mather 1991, 1994).

The discovery of the Bradbury Brook site (21 ML 42) in 1989 was an event of major significance to Mille Lacs archaeology. The site was identified as a lithic scatter in a plowed field, within which the preponderance of siltstone debitage was immediately noted. Controlled surface collection and excavation of two formal test units were completed at that time. No diagnostic artifacts were found, and the artifacts appeared to be contained within the plowzone. Examination of the farmer's field stone pile revealed the presence of many unmodified cobbles of poor quality siltstone, along with large pieces that appeared to be modified.

Due to the unique nature of this site, Phase III data recovery excavations were carried out the following year. The goal of the excavation was to salvage a representative sample of debitage from the plowzone. All soil was waterscreened on site, recovering a range of debitage classes representative of initial reduction of the siltstone cobbles. During the course of this operation, a small area of intact site was discovered beneath the plowzone. Hand excavation of this area documented the presence of separate knapping stations, with anvil stones and associated debitage in primary context. One feature was also identified in this area, which produced the base of an Alberta point and an associated radiocarbon date of 9220+/-75 B.P. (Malik and Bakken 1993, 1999).

Bradbury Brook is the oldest radiometrically dated site in Minnesota, and provides a unique perspective on the Late Paleoindian period in the Mille Lacs area. This was the first of several such discoveries. It had been previously assumed that Paleoindian sites were present in the Mille Lacs area based on correlation with the surrounding areas (e.g. Caine 1968, 1974), but

the oldest previously known sites were Petaga Point (21 ML 11) and the Scott site (21 CW 9), both of which have Late Archaic components (Johnson 1984).

During 1990, five proposed borrow pits were surveyed in the vicinity of the Rum River south of Lake Onamia (Peterson et al. 1991:76-81; Mather 1991:36-37). Archaeological sites were discovered at two of the five. The Konfheir Pit site (21 ML 46) is a small lithic scatter located approximately one mile south of the Ben & Fern Larson site on the Rum River. The site was cleared following close interval shovel testing and excavation of one formal test unit. The only artifacts recovered were lithic flakes of Gunflint Silica, Knife River Flint, basalt and chalcedony. No diagnostic materials were present. The Rum River Pit site (21 ML 47) produced better results, however, including an apparent affinity to the Bradbury Brook site, located one half mile to the south. A synthesis of the 1988 through 1990 survey data by Mather (1991) correlated the newly discovered sites with Johnson's (1984) cultural sequence for Mille Lacs (Table 2).

Additional studies of the sites identified along the highway corridor have since been completed by All Nations Cultural Resource Preservation, Inc. (Westover 1996) and the Leech Lake Heritage Sites Program (Kluth and Kluth 1996). The Leech Lake crew also conducted survey of new T.H. 169 alternate alignments to re-route the highway away from the Portage Bay Mounds (21 ML 31). One of the sites recorded during that survey included a complete Late Paleoindian projectile point. This is 21 ML 55, the Upper South Harbor Site (Kluth and Kluth 1996).

Concurrent with those investigations, Phase I survey to the south of Garrison, in Crow Wing County, located a siltstone Paleoindian projectile point and an associated habitation site. The site was designated the Pike Point Summit site for its geographic position overlooking Mille Lacs Lake. Shovel testing of two adjacent sites did not produce diagnostic artifacts, but did find lithic debitage potentially consistent with the Late Paleoindian K-Pattern (Bakken 2000). The Garrison survey unfortunately found no trace of the Eliason Run Mounds, recorded by Brower and Bushnell (1900) at that location. The survey also delineated the archaeological boundaries of C.C.C. camp SP-15 (Mather et al. 1995).

Cultural resource management also remains a primary concern in Kathio State Park. Recent surveys in the park have been undertaken in concert with in plans to move the campground away from the Cooper site (21 ML 9/16), particularly the area of the burial mounds. The mounds are currently fenced but remain in the midst of access roads and camping spurs. The area proposed for the relocated campground is to the east of the Rum River, a short distance south of the outlet of Lake Ogechie. Archaeological survey of the area resulted in identification of the Rum River Terrace site (21 ML 63), and later evaluation studies defined Paleoindian and Woodland components. The latter occupation is most prevalent at the site, and is defined by the presence of Kathio ceramics. The Paleoindian component was identified through the recovery of two lanceolate point bases from the north side of the site. The first is a jasper basal fragment. The second is a basally ground point base of banded rhyolite. This lithic material appears to be exotic to the Mille Lacs area, but its source has not been determined. The Rum River Terrace site is an important addition to a growing body of Paleoindian sites at the Mille Lacs Locality (Radford and George 1992:171-177).

Table 2. Correlation of T.H. 169 Sites with Johnson's Mille Lacs Cultural Sequence (updated from Mather 1991).

DATE	MILLE LACS SEQUENCE (Johnson 1984; Caine 1983; Streiff 1987)	T.H. 169 SITES
ca. 7000 B.C.	Late Paleoindian Tradition (Malik and Bakken 1993)	Crosier Rum River Pit
pre-500 B.C.	Archaic Tradition – possibly – EARLY PREHISTORIC PERIOD Petaga Phase	Onamia View Ben & Fern Larson Crosier Van Grinsven Rum River Pit
500/200 B.C. – A.D. 500	MIDDLE PREHISTORIC PERIOD Rum River Phase	Black Brook Van Grinsven Onamia View?
500-800 A.D.	Isle Phase	Crosier Black Brook Van Grinsven Portage Bay
800-1000 A.D.	LATE PREHISTORIC PERIOD Vineland Phase	Crosier Van Grinsven Rum River Pit?
1000-1300 A.D.	Wahkon Phase	Crosier Cemetery
1300-1680 A.D.	Shakopee Phase	Crosier Cemetery
1680-1750 A.D.	Bradbury Phase	Crosier Cemetery
post-ca. 1750 A.D.	Ojibwe	Crosier Van Grinsven
post-ca. 1850	Euroamerican	Ben & Fern Larson

Radiocarbon Dates:

The discovery of radiometric dating techniques was a revolutionary development for archaeology, paleontology and other fields of study. Among the various techniques, radiocarbon dating is most widely used in archaeology. While it is important to remember the flaws and limitations of the method, radiocarbon dating provides an absolute measure of age. Prior to its availability, sites and artifacts could only be dated by relative comparisons of type frequency and landscape position. It is a credit to early archaeologists such as Lloyd Wilford that they were able to correctly construct the framework of the Mille Lacs cultural sequence without this tool that we now take for granted.

The first Mille Lacs material to be dated was a sample of a charred log from the Anderson Mound at the Brower site (21 ML 1). The date was derived from a sample collected by Jenks in 1933, long before the invention of radiocarbon dating would have been imagined. It was sent for dating with a group of other materials from a cross-section of Minnesota archaeological sites, with the intention of providing absolute dates for Wilford's (1955) cultural framework. The novelty of the technique is evident in Elden Johnson's title of his article presenting the results, "Twenty New Radiocarbon Dates from Minnesota Archaeological Sites" (Johnson 1964). Only one radiocarbon date from Minnesota had been reported prior to that time. A summary of radiocarbon dates from the Mille Lacs Locality is presented in Table 3.

Recent Developments:

Other advances in the study and management of cultural sites have occurred in recent years. These include the establishment of the Mille Lacs Tribal Historic Preservation Office. Elden Johnson (1984) felt strongly that Indian people should have greater involvement in the archaeology of the Mille Lacs region, and incorporated the Mille Lacs Band history (Buffalohead and Buffalohead 1985) in definition of the Mille Lacs cultural chronology. Also, the early explorations of the Mille Lacs area, particularly the burial mound excavations, have been revisited due to the Native American Graves Protection and Repatriation Act (NAGPRA). Completion of inventories by museums and institutions has resulted in the first comprehensive study of many of the regional collections (e.g. Hohman-Caine and Goltz 1997; Mather 1998; Mather et al. 2000). Future reconsideration of the extant Mille Lacs collections and data will provide further contributions to the regional archaeology.

Another significant development is the renaissance of archaeological research within Kathio State Park. Undertaken by the Archaeological Computing Laboratory of St. Cloud State University, new investigations have been initiated focusing on the historical archaeology of the Wilford site and other abandoned farmsteads (e.g. Hanson 1999). A regional archaeological database utilizing Geographical Information System (GIS) and Global Positioning System (GPS) technology is also underway (Rothaus et al. 1999; Richard Rothaus, personal communication, 1997-1999). These developments will continue to lead Mille Lacs archaeology in new directions, while continuing to revisit the extant information.

A final note should be made regarding the Lake Onamia / Trunk Highway 169 Data Recovery Project, of which this overview is a part. This project was designed as mitigation of the effects of new construction of T.H. 169 in the vicinity of Lake Onamia. It had a dual focus: first, to conduct Phase III excavations at seven archaeological sites, and second, to assemble the largely unpublished data relevant to Mille Lacs archaeology to the greatest extent possible. The sites in question are the Ben & Fern Larson site (21 ML 41), the Black Brook site (21 ML 40), the Crosier/Littke site (21 ML 33/49), the Onamia View site (21 ML 39), the Van Grinsven site (21 ML 39), the Old Onamia Beach I site (21 ML 36) and the Old Onamia Beach II site (21 ML 43). For purposes of the site specific and regional research objectives, a multi-disciplinary team of specialists was assembled, including the fields of geomorphology (Kolb 2000), palynology/paleoecology (McAndrews 2000; Ollendorf 2000), archaeobotany (Valppu 2000), phytolith analysis (Thompson 2000), human osteology (Nelson 2000), lithic and ceramic studies

(Bakken 2000; Thomas 2000), groundstone artifacts (Halloran et al. 2000), zooarchaeology (Mather et al. 2000), ethnohistory (White 2000) and historical archaeology (Abel and Mather 2000). Documentation of private artifact collections from the Cunz (21 ML 20) and Scott (21 CW 9) site was also accomplished (Halloran 2000). These analyses form chapters along with individual site reports in the technical report of investigations for the project (Mather and Abel 2000).

Table 3. Radiocarbon dates from the Mille Lacs Locality.

PHASE	SITE	CONTEXT	RADIOCARBON AGE AND SOURCE	CALIBRATED AGES BC/AD (BP)	CAL AD/BC & CAL BP AGE RANGES TWO SIGMA (95.4), AND PROBABILITY, METHOD B
unnamed (Lt. Paleoindian)	Bradbury Brook (21ML42)	Wood Charcoal Hearth Feature	9220±75 (Malik and Bakken 1993)	cal BC 8449, 8386, 8385, 8367, 8363, 8348, 8341 (cal BP 10398, 10335, 10334, 10316, 10312, 10297, 10290)	cal BC 8612-8277 (cal BP 10561-10226); 1.000
*unnamed (Paleoindian/ Archaic)	Lake Ogechie Pine – Oak transition	Pollen Zone Boundary	8140±180 BGS-1986	cal BC 7106, 7105, 7080 (cal BP 9055, 9054, 9029)	cal BC 7527-6652 (cal BP 9476-8601); 1.000
*unnamed (Archaic)	Lake Ogechie Oak-herb trans.	Pollen Zone Boundary	4325±100 BGS-1985	cal BC 2914 (cal BP 4863)	cal BC 3338-3204 (cal BP 5287-5153); .126 cal BC 3197-2837 (cal BP 5146-4786); .718 cal BC 2819-2666 (cal BP 4768-4615); .150 cal BC 2643-2634 (cal BP 4592-4583); .005
*Petaga	Lake Ogechie Wild Rice Expansion	Pollen Zone Boundary	3030±105 BGS-1984	cal BC 1293, 1277, 1264 (cal BP 3242, 3226, 3213)	cal BC 1510-993 (cal BP 3459-2942); 1.000
Petaga/Rum River	21AK71	Hearth Feature	2430±40 Beta-97662 (Mulholland et al. 1997b)	cal BC 498, 493, 483, 465, 449, 441, 426, 424, 413 (cal BP 2447, 2442, 2432, 2414, 2398, 2390, 2375, 2373, 2362)	cal BC 760-679 (cal BP 2709-2628); .260 cal BC 670-616 (cal BP 2619-2565); .092 cal BC 593-566 (cal BP 2542-2515); .033 cal BC 565-402 (cal BP 2514-2351); .615
Rum River	(21ML1) Anderson Mound	Wood Charcoal, Logs Covering Burial Pit	2150±180 I 786 (Johnson 1964)	cal BC 197, 190, 176 (cal BP 2146, 2139, 2125)	cal BC 760-681 (cal BP 2709-2630); .034 cal BC 666-631 (cal BP 2615-2580); .014 cal BC 591-577 (cal BP 2540-2526); .003 cal BC 558-cal AD 235 (cal BP 2507-1715; .949
Rum River	(21ML1) Vanderbloom Mound	Wood Charcoal - Burial Area.	1800±100 I-3382 (Lass 1980)	cal AD 238 (cal BP 1712)	cal BC 14-12 (cal BP 1963-1961); .004 cal AD 1-436 (cal BP 1949-1514); .996
*Rum River	Malmo (21AK1)	Residue from Malmo vessel (UM 154-56)	1620±50 Beta-115295	cal AD 425 (cal BP 1525)	cal AD 260-278 (cal BP 1690-1672); .023 cal AD 328-559 (cal BP 1622-1391); .977
*Rum River	Malmo (21 AK 1)	Residue from Malmo vessel (UM 154-80)	1560±40 Beta-115294	cal AD 533 (cal BP 1417)	cal AD 423-594 (cal BP 1527-1356); 1.000
* unnamed (Isle)	Fort Poualak	Residue from St. Croix vessel	1380±40 Beta-115296	cal AD 658 (cal BP 1292)	cal AD 598-714 (cal BP 1352-1236); .981 cal AD 751-762 (cal BP 1199-1188); .019
Wahkon	Onamia View (21ML39)	Wood Charcoal	930±130 (Westover 1996)	cal AD 1043, 1091, 1119, 1140, 1155 (cal BP 907, 859, 831, 810, 795)	cal AD 785-789 (cal BP 1165-1161); .004 cal AD 824-842 (cal BP 1126-1108); .009 cal AD 862-1299 (cal BP 1088-651); .987

Table 3. Radiocarbon dates from the Mille Lacs Locality (continued).

unnamed (Wahkon)	Christensen Mound I (21SH1/16)	Bear Mandible	740±70 Beta-133841 (Mather and McFarlane 1999)	cal AD 1280 (cal BP 670)	cal AD 1159-1399 (cal BP 791-551); 1.000
*Shakopee/Bradbury	Cooper (21ML9/16)	Residue from Ogechie vessel	600±40 Beta-115293	cal AD 1327, 1346, 1393 (cal BP 623, 604, 557)	cal AD 1299-1408 (cal BP 651-542); 1.000
Shakopee	Crosier (21ML3)	Wood Charcoal Sandy Lake vessel	540±110 Beta-35179 (Mather 1991, 1994)	cal AD 1409 (cal BP 541)	cal AD 1271-1529 (cal BP 679-421); .905 cal AD 1549-1633 (cal BP 401-317); .095
*Shakopee (or Historic?)	Lake Ogechie *Ambrosia* Rise	Pollen Zone Beginning	505±35 BGS-1983	cal AD 1423 (cal BP 527)	cal AD 1329-1344 (cal BP 621-606); .070 cal AD 1394-1450 (cal BP 556-500); .930
unnamed (Wahkon/Shakopee)	Triangle Island (21KA29))	Clam River	390±70 WIS-1502 (Hendrickson 1983)	cal AD 1476 (cal BP 474)	cal AD 1423-1643 (cal BP 527-307); 1.000
Shakopee/Bradbury	Elders' (21ML68) Bear Feature	Wood Charcoal from Bear Feature	340±60 Beta-133838 (Mather and McFarlane 1999)	cal AD 1519, 1594, 1622 (cal BP 431, 356, 328)	cal AD 1448-1650 (cal BP 502-300); 1.000
Shakopee/Bradbury	Elders' (21ML68) Bear Feature	Wood Charcoal from post next to Bear Feature	290±70 Beta-133839 (Mather and McFarlane 1999)	cal AD 1640 (cal BP 310	cal AD 1444-1684 (cal BP 506-266); .873 cal AD 1734-1808 (cal BP 216-142); .107 cal AD 1928-1941 (cal BP 22-9); .020
*Bradbury/Historic	Crosier (21ML33)	Charred Wild Rice	140±50 Beta-115602	cal AD 1685, 1732, 1808, 1926, 1948 (cal BP 265, 218, 142, 24, 2)	cal AD 1669-1782 (cal BP 281-168); .434 cal AD 1794-1896 (cal BP 156-54); .380 cal AD 1897-1947 (cal BP 53-3); .185
*Bradbury/Historic	Crosier (21ML33)	Charred *Chenopodium*	90±50 Beta-115603	cal AD 1890, 1908, 1950 (cal BP 60, 42, 0)	cal AD 1673-1775 (cal BP 277-175); .342 cal AD 1799-1943 (cal BP 151-7); .658
*Bradbury/Historic	Crosier (21ML33)	Charred *Chenopodium*	70±100 Beta-115601	cal AD 1951 (cal BP 0)	cal AD 1658-1950 (cal BP 292-0); 1.000
*Bradbury/Historic	Van Grinsven (21ML37)	Charred *Chenopodium*	40±50 Beta-115604	cal AD 1953 (cal BP 0)	cal AD 1678-1746 (cal BP 272-204); .254 cal AD 1750-1758 (cal BP 200-192); .008 cal AD 1803-1955 (cal BP 147-0); .738

* Denotes radiocarbon dates derived from the Lake Onamia – Trunk Highway 169 Data Recovery Project.

( ) Denotes site not located within the Mille Lacs Locality proper, but directly relevant to the archaeological overview.

Comments: Radiocarbon dates calibrated with Calib Version 4.1.2 (Stuiver and Reimer 1993).

CHAPTER 4 - THE EARLY PREHISTORIC PERIOD

The first people we know of at Mille Lacs lived during the Early Prehistoric Period, as defined by Johnson (1984, 1988). This corresponds with the Paleoindian and Archaic traditions, which far predate pottery, burial mounds and other more visible aspects of Minnesota archaeology. Relatively little is known about these periods, primarily because of their great antiquity. Collectively, this is a period extending from approximately 10,000 years to 2,500 years ago. As such, it accounts for close to three-quarters of the known human history of the state. Only the very end of this period is defined as a phase specific to the Mille Lacs Locality. The Petaga Phase corresponds to the Middle or Late Archaic tradition (see below), and is the beginning of Johnson's (1984) Mille Lacs cultural chronology. Its defining characteristic is distinctive "Old Copper Culture" artifacts. Johnson recognized that older components (Paleoindian, Early Archaic and Middle Archaic) were also present at Mille Lacs, but they were not understood sufficiently to define as phases in their own right. New discoveries have been made since the development of Johnson's framework, particularly related to the Paleoindian tradition, but the temptation to define new phases at this time remains premature.

The First People:

No one knows for sure when the first people entered the North American continent. It is commonly believed among archaeologists that peopling of the New World occurred via the Bering land bridge, connecting Siberia and Alaska, at the end of the Wisconsin Glaciation. However, an increasing body of data suggests that humans may have entered the Americas much earlier (e.g. Dixon 1993). As interesting as this debate may be, however, it is all rather a moot point in reference to Mille Lacs. Our area was covered by ice late into the Wisconsin Glaciation, the last of many glacial ice advances lasting thousands of years. The Mille Lacs Locality itself, since it is defined by the big lake and other features of the landscape we know today, did not exist prior to the end of the last Ice Age approximately 10,000 years ago. If the area was occupied prior to that time, evidence of such presence would presumably have been destroyed by the glaciers.

Limitations of the Current Data:

Relative to later time periods, consideration of the Early Prehistoric Period is hindered by a restricted body of archaeological information. Not surprisingly, stone tools and debitage (chipping debris) are the primary artifact types known for this time. No burials have been found at Mille Lacs dating to the Paleoindian or Archaic periods. Likewise, no subsistence data are known, either floral or faunal. The paucity of known sites from these periods also hinders discussion of settlement patterns. The known sites do seem oriented toward the current bodies of water, but it should be remembered that these are the areas that have seen the majority of archaeological survey at Mille Lacs. These known sites should not be presumed to represent the actual settlement patterns of the Paleoindian and Archaic periods.

The Paleoindian Tradition:

Entering Minnesota during the waning centuries of the Wisconsin Glaciation, the first Paleoindian peoples to probably visit Mille Lacs lived in a subarctic environment. No archaeological evidence of Early Paleoindian people (ca. 12,000 to 10,000 B.P.) has been documented thus far at the Mille Lacs Locality proper, but it can be expected that such a discovery (such as of a fluted spear point, for example) will be made in time. There is no direct parallel in the modern world for the vegetation of the late glacial environment, but the setting of the Mille Lacs area at that time can be approximated as tundra, with open, wind-swept vistas (McAndrews 2000; Pielou 1991). The Lake was newly formed from meltwater of the wasting Superior Lobe, the advance of which had created the natural dam of the Mille Lacs Moraine. A major difference in the local hydrology during the late glacial period was an outlet on the southern shore of Mille Lacs, in the vicinity of Murray Beach. That breach of the moraine connected with the northeastern arm of the Lake Onamia basin (Anderson 1998). It is not known what animals lived here at that time, but it can be assumed that mammoths, giant bison and other now-extinct megafauna were present in the general vicinity. Fish would have been present in the big lake and the Rum River soon after the establishment of open water (e.g. Pielou 1991) but it is not known to what extent Paleoindian people utilized this resource.

Paleoindian people are traditionally thought to have been nomadic big-game hunters, an interpretation derived from the dramatic and defining finds of lanceolate points at megafauna kill sites in the American southwest. These now-famous discoveries at places such as Blackwater Draw and Folsom in New Mexico initially established the antiquity of the Paleoindian tradition with their unambiguous association of Clovis and Folsom points, respectively, with mammoths and other extinct animals.

> However, as eastern fluted point sites were found and investigated, and dramatic kill sites eluded discovery notwithstanding the hundreds of mammoth and mastodon skeletons accidentally unearthed in eastern North America over the last century, enthusiasm for this idea waned. Because most Paleo-Indian sites east of the Mississippi are unaccompanied by preserved bones, it is now a popular notion that big-game hunting was a western specialization not indulged in by the easterners. But just as it is difficult to argue one way in the absence of evidence, so is it difficult to argue the other way (Mason 1981:97).

While paleontological finds of extinct megafauna have been made in Minnesota, none to date have been found to have associated cultural materials[1]. The closest known megafauna kill (or possibly scavenging) sites are in Wisconsin, including several on beach ridges of Glacial Lake Michigan. The Boaz Mammoth in southwestern Wisconsin is closer still, but its cultural association cannot be proved due to the circumstances of the find. That discovery was made in the late nineteenth century, but an association of the mammoth with a Hixton orthoquartzite fluted point seems probable (e.g. Overstreet 1993, 1996; Mason 1981, 1997:83).

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[1] An exception is an extinct bison type, *Bison occidentalis*, which survived into the middle Holocene (e.g. Hall 1972) and is found at the Archaic-age Itasca Bison Kill site (Shay 1971).

At Mille Lacs itself, a recent oral history interview with a former resident of Kathio State Park indicates that a mammoth may be present at the Buck Moore Dam[2] site (21 ML 17), although the report would have to be characterized as anecdotal. In an interview with St. Cloud State graduate student Sara Markoe Hanson, Frances Bartlett recalled her discoveries in the 1920s across the river from Petaga Point:

> ... But here's the thing that really intrigued me. I don't know how I came to do it, but I dug the shovel down about this far (holds hands about 1 foot apart) down over there I dug up just the most mammoth teeth you ever saw in your life. Nothing around here had teeth like that anymore. And no matter where I dug around about that far into the sod around there, there were those teeth...the main ones seemed to be, oh, they were long teeth. I bet they were that long (4-6 inches). We stuck them around the flower beds. It made you wonder what animals they were, you know. And I've wondered since about it. I suppose it's there yet if you knew where to dig (Hanson 1999:129).

The earliest commonly accepted artifacts in the Americas are Clovis points. These spearpoints are lanceolate in shape, and have a distinctive flute on both faces. Fluted points (including Clovis, Folsom and Gainey forms) are the defining artifact trait of the Early Paleoindian tradition. Clovis and, to a lesser extent, Folsom points are very rare in Minnesota, but isolated finds have been made through much of the Prairie-Lake Region (Anfinson 1997:28-30) and near the Mississippi River in Minneapolis (Steinbring 1974). A pattern noted in Wisconsin suggests the preponderance of fluted points in the southern portion of the state, presumably in relation to the former position of the glacial ice (Mason 1997:87). A few other isolated finds of fluted points have been reported in the general vicinity of Mille Lacs. One Gunflint Silica point from northeastern Minnesota and a quartz point from the Whitefish chain of lakes demonstrate use of locally available raw materials during this period (Romano and Johnson 1990; Jalbert 1997). These isolated finds are in themselves important contributions to the archaeology of the Early Paleoindians, but it is unfortunate that no other site data are available.

Late Paleoindian:

Late Paleoindian points are more frequently found in Minnesota, probably reflecting increasing population levels from the immediately post-glacial era. Collectively referred to as Plano, these points retain the lanceolate shape of Clovis and Folsom but lack the distinctive flute. An unprovenienced Plano point is present in the Jacob Brower collection from Mille Lacs County (Florin 1996). Plano points, including the Browns Valley and Scottsbluff types, and Cody knives have also been documented in Snake River Valley (Caine 1968, 1969, 1974 – Figure 12), and at the Cedar Creek site on the southern beach ridge of Glacial Lake Aitkin (Allan 1993). The discovery of a Knife River Flint Alberta point in Pine City adds to this growing body of data (Romano 1992a).

[2] This is the correct spelling of the site name, according to Mrs. Bartlett. She noted to Hanson (1999) in the same interview that one of her relatives was upset about the incorrect spelling (Buckmore) in the archaeological documentation.

Plano points are the oldest artifacts recovered thus far at the Mille Lacs Locality, with finds at Bradbury Brook (a tributary of the Rum River), on the eastern shore of Lake Onamia, in Kathio State Park, and at St. Alban's Bay of Mille Lacs Lake (Figure 13). The Lake Onamia point is made of Swan River Chert, indicating an origin to the west of Mille Lacs. It is identified as a Browns Valley point by Kluth and Kluth (1996:34, 38), although Bakken (2000) has argued that it does not fit the type description (Jenks 1937), particularly in reference to the flaking pattern. It does appear very similar to the shape and general appearance of a Browns Valley point, however, and so it is perhaps appropriate to describe it as Browns Valley-like. The Kathio point is a fragmented lanceolate base, and has not been ascribed to a type. It is fashioned from banded rhyolite, a lithic material not noted for other artifacts from Mille Lacs (Radford and George 1989; Bakken 2000).

We are fortunate that one of the best documented Paleoindian sites in the state is located within the Mille Lacs Locality. This is Bradbury Brook, a late Paleoindian lithic procurement and initial reduction site associated with the Alberta Complex (Malik and Bakken 1993, 1999). The Alberta Complex appears to center on the Plains, with Bradbury Brook near its eastern perimeter and dates to approximately 10,000 to 9,000 B.P. (Malik and Bakken 1993:88). Regional context for this specialized site is provided by other extensively investigated Paleoindian sites in central and northeastern Minnesota, including Cedar Creek on southern beach ridge of Glacial Lake Aitkin (Allan 1993), the East Terrace site in St. Cloud (BRW, Inc. 1994) and the sites of the Reservoir Lakes Complex (Harrison et al. 1995).

The East Terrace site is described as a variation on Plano that is perhaps unique among the majority of documented sites, in that it represents an intermittently occupied location with extensive curation and re-use of points and other lithic tools. Diagnostic points recovered at East Terrace include Hell Gap, Alberta and Scottsbluff. The lithic assemblage of this site represents the opposite end of the spectrum began at procurement sites such as Bradbury Brook, with late stage bifacial reduction flakes at East Terrace representative of tool sharpening and maintenance. It has been suggested that the transitory nature of Late Paleoindian occupations at East Terrace is a result of the site's location on the Mississippi, with more intensive occupations to be expected elsewhere (BRW, Inc. 1994).

The Reservoir Lakes Complex (Harrison et al. 1995; Steinbring 1974) of northeastern Minnesota spans the Late Paleoindian to Early Archaic transition. While the extant data for this area are derived from surface collections, thus preventing the separation of individual components, it is noteworthy that these periods appear to overlap elsewhere in the northern Great Lakes (e.g. Mason 1981, 1997; Mulholland et al. 1997a).

Within the Mille Lacs Locality proper, the Late Paleoindian tradition generally, and the Alberta Complex specifically, are best represented by the Bradbury Brook quarry site (Malik and Bakken 1993, 1999). The Cody Complex is potentially represented at the Pike Point Summit site, keeping in mind that investigations there have not progressed beyond the reconnaissance level (Mather et al. 1995). The Alberta Complex appears to be slightly older that the Cody Complex, and may be directly ancestral to it. Alberta points alone are considered diagnostic of the former, although Cody knives are occasionally found in Alberta contexts. The Cody Complex includes Scottsbluff and Eden points, in addition to Cody knives. These points

continue the stemmed-lanceolate tradition of Alberta points (Malik and Bakken 1993:88-90; BRW, Inc. 1994). The siltstone Scottsbluff-like point from the Pike Point Summit site (Figure 13) is very interesting in light of the apparent Alberta-Cody relationship, as the material and its patinated surface fit very well with the lithics of the Bradbury Brook site.

Lithic Technology:

Lithic use during the Late Paleoindian tradition at the Mille Lacs Locality has been characterized the K-Pattern by Bakken (2000). This is derived from intensive use of Knife Lake siltstone, as first identified at the Bradbury Brook site (Malik and Bakken 1993, 1999). Bakken suggests that the geographic extent of the K-Pattern includes much of east-central and northeastern Minnesota. It is evident in the debitage of the Reservoir Lakes Complex, which also suggests its continuation into the Early Archaic tradition. A preponderance of siltstone debitage was noted at the East Terrace site near the discoveries of two Hell Gap points (BRW, Inc. 1994:4.145).

The use of bifacial reduction technology is evident at K-Pattern sites in the patterned Plano points themselves, and in lithic debitage at habitation components such as Crosier, Pike Point Terrace and the East Terrace site (Bakken 2000; Mather and Nicholas 2000b; Mather et al. 1995; BRW, Inc. 1994). The K-Pattern can be provisionally contrasted with Paleoindian lithic material use in Wisconsin, which appears to rely heavily on Hixton orthoquartzite (Mason 1997; Meinholz and Kuehn 1996). This is particularly interesting considering the far superior qualities of the latter stone.

Copper:

Paleoindian sites are known typically by their lithic assemblages. Most copper artifacts, as will be further described below, are generally ascribed to Archaic components. One copper tool type is suggestive of Plano lanceolate points in its form, however, and Jack Steinbring (1970, 1975; Gibbon 1998) has suggested that it is a contemporary Late Paleoindian artifact type. If this is correct, McCreary points are the oldest known copper tools in the region at large, and far predate the classic "Old Copper" assemblages. Steinbring (1975) describes a copper McCreary point from Aitkin County as illustrated by Winchell (1911:498), although the artifact in that plate most similar to the type is from Polk County (Brower Collection No. 1217). No copper implements of this type have been recovered to date at the Mille Lacs Locality proper, although their presence would not be unexpected.

Subsistence:

As mentioned previously, subsistence interpretations for the Paleoindian tradition are often overwhelmed by the subject of big-game hunting, with a particular emphasis on extinct megafauna. While hunting strategies in the late glacial period presumably did include these animals, and others no longer present such as caribou, it has been demonstrated that subsistence

strategies in the western Great Lakes were relatively diverse by at least the Late Paleoindian tradition. Kuehn (1998) documents the utilization of an essentially modern fauna in northern Wisconsin during this period. Independent assessment of Paleoindian subsistence data from Mille Lacs must await more intensive study of habitation sites dating to this time.

Known Mille Lacs Sites:

It is unfortunate to say that relatively little is known of the Paleoindian period at Mille Lacs itself, but it is true. Nevertheless, great strides have been made in the last decade, starting with the discovery of the Bradbury Brook site (21 ML 42) in 1989 (Malik and Bakken 1993, 1999). Prior to that point, the Mille Lacs cultural sequence began with the late Archaic Petaga Phase (Johnson 1984), although it was assumed that older sites remained undiscovered. Known Paleoindian sites of the Mille Lacs Locality are shown in Figure 14.

Bradbury Brook:

The Bradbury Brook site (21 ML 42) is one of the most intensively excavated sites in the Mille Lacs area, and it is the oldest radiometrically dated site in Minnesota. Artifacts from Bradbury Brook are displayed at the Minnesota History Center in the "Minnesota A to Z" and "Minnesota Almanac" exhibits. This site was a quarry area utilized during the Late Paleoindian period, with a focus on the procurement of siltstone for stone tool manufacture (Figures 14 and 15). An undisturbed, sub-plowzone area of the site produced evidence of separate knapping stations with anvils, the basal fragment of an Alberta point, and a radiocarbon date of 9,220+/-75 B.P. Calibration of that date (see Table 3) suggests that Bradbury Brook may be 1,000 years older. This finding is consistent with other early Holocene radiocarbon dates throughout the Great Plains which have been found to fall up to 2,000 years too young (Eighmy and LaBelle 1996).

The great age of the site is evident in the stone itself, because some surfaces have developed a light gray colored, weathered patina. The natural color of the siltstone is dark gray to almost black. Many artifacts from Bradbury Brook have both surface colors. The best example is the Alberta point base (Figures 17 and 18). The point base was a fortunate but unusual find. The remainder of the artifact assemblage consists of broken stone fragments, most abandoned in various stages of manufacture. The goal of the people who used the Bradbury Brook quarry was to obtain easily transportable "blanks" of flakable stone, which would be valuable resources for a nomadic people. The stone blank could be worked into a tool when necessary or probably traded for other necessary items. Examples of bifacially flaked blanks that were broken during manufacture are shown in Figure 19.

Consideration of the Bradbury Brook data has allowed preliminary definition of a pattern of lithic use diagnostic of the Late Paleoindian period at Mille Lacs. Kent Bakken (2000) has defined this as the K-Pattern, signifying the intensive use of Knife Lake Siltstone. The pattern is evident at other sites in the region, including the Rum River Pit site, the Rum River Terrace site, the Pike Point Summit site and the Crosier Cemetery site (Bakken 2000; Mather 1991; Mather et

al. 1995; Mather and Nicholas 2000b; Radford and George 1989). As mentioned previously, it also extends to the north and northeast from the Mille Lacs Locality (Bakken 2000).

Rum River Pit Site:

The Rum River Pit site (21 ML 47) is located in an agricultural field on a small rise overlooking the Rum River. A total of 162 lithic artifacts were piece plotted within the field. Although the site was found to occupy the entire 10 acre field, the majority of the artifacts (83%) were found in two discrete clusters near the river. Both areas contained concentrations of siltstone debitage that are virtually identical to that from the Bradbury Brook site. A white chert point was found near to one of the areas, although it was not considered to be necessarily associated. It has a heavily ground bifurcate base and appears similar to some points of the Middle to Late Archaic tradition. The remainder of the Rum River Pit lithic assemblage is comprised primarily of chert and quartz flakes, which were thinly scattered over a large portion of the field. One side-notched projectile point, possibly dating to the Late Woodland Tradition, was recovered in this part of the site (Bakken 1999; Mather 1991; Peterson et al. 1991:80-81).

Rum River Terrace Site:

The Rum River Terrace site (21 ML 63) is located within Kathio State Park, a short distance from Petaga Point. The Paleoindian component of the site was discovered during Phase II formal excavation. It is best represented by the base of a Plano projectile point (Figure 13). A later, Woodland Tradition component is also present (Radford and George 1989).

Pike Point Summit Site:

This site, 21 CW 139, is located on a prominent knoll overlooking the northwest shore of Mille Lacs a short distance south of Garrison (Figure 19). It is known from reconnaissance level investigation of a proposed Mn/DOT right-of-way reconveyance to the west of T.H. 169, but it is assumed that the site continues on the DNR property to the east, between the highway and Lake Mille Lacs. The shovel testing of this relatively small area produced an assemblage of siltstone and basalt debitage and one Scottsbluff-like lanceolate spearpoint (Figure 13). The point is siltstone, with the same heavily patinated surface seen in the Bradbury Brook assemblage. The debitage here and at two adjacent sites appears to reflect Bakken's (2000) K-Pattern, and a possible hearth feature was also encountered by a shovel test. These findings suggest that this area possesses considerable research potential (Mather et al. 1995).

Upper South Harbor Site:

This site, 21 ML 55, is located on the northeastern shore of Lake Onamia, and again was identified through the recovery of a Late Paleoindian spearpoint from a shovel test (Figure 13). This point is made of Swan River Chert, and is similar to the Browns Valley type (Bakken 2000;

Kluth and Kluth 1996). This site is particularly interesting relative to the former, late glacial outlet of Mille Lacs, leading from Murray Beach to the northeast arm of the Lake Onamia basin (Anderson 1998). It cannot be said at this time if there is any relationship between the two, but this is a topic which certainly deserved further attention.

Cunz and Scott Collections:

Other Paleoindian sites within the Mille Lacs area remain to be discovered or fully explored. Lanceolate points are evident in photodocumentation of the private collections from the Cunz (Figure 21) and Scott (Figure 22) sites. The former point is quartz, and appears similar to the Browns Valley type. The Scott point may be siltstone. It is a longer, parallel sided form, similar in outline to the Agate basin type (Halloran 2000). This suggests the presence of Paleoindian components at these site locations, but little more can be said at this time. Excavations were conducted at the Scott site by the University of Minnesota to investigate the Petaga Phase component, which unfortunately produced poor results (Streiff 1987). Both the Cunz and Scott collections merit further study. The former is well provenienced, being from the garden outside the Cunz residence on Lake Shakopee. This is designated the Cunz site (21 ML 21). The Scott collection is also all from the location designated the Scott site (21 CW 9), and it includes a wealth of material from many time periods. Mrs. Scott notes, however, that her late husband regularly gave points away to visitors at their resort (Halloran 2000), so the contents of the collection may not accurately represent the components present at the site.

The Archaic Tradition and the Petaga Phase:

Although the Archaic tradition is perhaps the longest cultural period in the Upper Midwest, it is also one of the least known. In the Mille Lacs region, for instance, little is known of Archaic peoples prior to the Petaga Phase, the local manifestation of the "Old Copper Culture" as defined by Elden Johnson (1984). It is possible that the transition to the Archaic (or perhaps after the Early Archaic) at Mille Lacs involved a shift in population, either in whole or in part. This suggestion is made based on the combined implications of artifacts and environmental data.

The climatic shifts at the end of the Ice Age caused the glaciers to recede north, with vegetation and landscape changes following at a slower pace. These changes were reflected in the changing material culture of the Late Paleoindian tradition, as was discussed above. By approximately 8,000 years ago this pattern of environmental change had roughly stabilized. This does not mean that the environment had ceased to change, but that the changes were no longer a direct result of the melting glaciers. The Alberta Phase people who quarried siltstone at Bradbury Brook were nomadic hunters at home in the tundra environment near to the melting ice masses. As the ice slowly moved north, it is natural to assume that many people accustomed to that environment did so as well. It has been suggested, for example, that the distribution of Agate Basin point finds in the western Great Lakes represents hunting peoples following the glacial ice within a corridor between Glacial Lake Agassiz on the west and Lake Superior on the east. J. V. Wright has concluded (e.g. 1995; Schlesier 1987) that these people are ancestral to the Shield Archaic hunter-gatherers, who ultimately stayed in the boreal forests of central Canada

after the Holocene finally caught up with them. While much research is needed at Mille Lacs before such a conclusion can be reached independently, local support for this pattern might be seen in the northeastern orientation of Late Paleoindian K-Pattern lithic utilization as described by Bakken (2000), and its contrast with increased Archaic utilization of quartz and Tongue River Silica (the QKT-Pattern).

So, although all Archaic populations were ultimately derived from Plano predecessors, it seems possible that a population displacement occurred at Mille Lacs in the Paleoindian to Archaic transition. This may, in part, explain the paucity of known sites dating to the Early Archaic. It seems more likely that other factors are the true cause, however, such as past survey bias in the history of Mille Lacs archaeological investigations. With such a rich archaeological record on both sides of the Early Archaic, it is hard to imagine the region being essentially unpopulated for thousands of years in the Middle Archaic.

The Archaic Tradition is often characterized by what it is not, rather than what it is (e.g. Stoltman 1997). For example, the beginning of the Archaic is noted by the lack of lanceolate spear points and megafauna. The end is marked by the appearance of burial mounds, ceramics and horticulture. What is left? We are left with this question not because of a lack of merit on the part of Archaic sites or the people who created them, but rather because we as archaeologists have not been able to find them. Or perhaps it's just that we haven't been able to recognize them. Mille Lacs is surrounded by Archaic sites, after all, if one just looks far enough afield. Much study of Archaic sites has occurred on the Great Plains and prairies to the west, and a thorough framework has been established in Wisconsin (Stoltman 1997).

Studies of the Archaic tradition at Mille Lacs are still in their infancy, notwithstanding Bleed's (1966, 1969) work at Petaga Point. It can, however, be suggested that Mille Lacs during the Archaic represents a meeting of the eastern woodlands and the western prairies, a pattern that continues through the Woodland tradition. Copper, as a defining aspect of the "Old Copper Culture" is indicative of a strong eastern connection for Petaga Point, but an increasing number of Archaic sites, such as the Onamia View and the Ben & Fern Larson sites, are found without copper. Furthermore, poorly defined Archaic components are suggested at Vineland Bay and the Cooper site through the presence of large stemmed or side-notched points, but little to no copper.

The classic, and first, definition of the Archaic was from the Lamoka Culture (ca. 2,500 B.C.) of western New York, and includes traits such as a diversified resource base, roasting pits for nuts, groundstone tools and rectangular houses (Mason 1981:147; Ritchie 1965). Further research identified a more generalized Archaic pattern throughout much of the eastern Great Lakes, which became known as the Laurentian Archaic. Spanning approximately 2,000 years and a wide geographic area, it was defined almost in contrast to the clear archaeological signature of Lamoka. Common elements of the Laurentian Archaic include a diversified hunting – fishing – gathering economy, large side-notched points, hafted scrapers, bone tools, ground slate, and groundstone bannerstones. The slate is more prevalent to the east, and gives way to copper in the west with some overlap in tool forms (Mason 1981:160-162).

Other Great Lakes Archaic groupings include the Shield Archaic to the north, and most relevant to Mille Lacs, the Old Copper Culture of the western Great Lakes (Mason 1981:131;

Wright 1995). Old Copper is notably concentrated in eastern Wisconsin, along the Lake Michigan shore. Known finds rapidly decrease in density to the west, but have been recorded as far away as Alberta (Steinbring 1970, 1975; Stoltman 1997; Gibbon 1998). The concept of a unified Old Copper "culture" has long been disputed, however, in favor of consideration of Old Copper as a technological tradition.

> It should also be noted that "Old Copper" spearpoints, knives, awls, fishhooks, and so on have been found just north of Lakes Superior and Huron in Shield Archaic contexts, and south of the lakes in still others. So just as there is more to Laurentian than was first imagined, there is more to the form and distribution of copper artifacts than an invoked Old Copper Culture (Mason 1981:166).

This poorly defined complexity is seen in the Mille Lacs Archaic tradition in the sporadic presence of "Old Copper" and copper working (Bleed 1969), western projectile point forms and lithic raw materials (Gibbon 1998), and intriguingly, a ground slate gorget from the Cunz site (Halloran 2000), raising the possibility of Laurentian connections to the east.

Studies of Archaic rockshelter sites in Wisconsin have provided a much needed framework for Archaic sites in the Upper Midwest. The stratigraphic separation of components at these sites has allowed subdivision of the Archaic tradition, a situation that is unparalleled in the vicinity of the Mille Lacs Locality. Stoltman (1997), for example, describes large (>5 cm) side-notched projectile points or knives as a defining artifact type of the Middle Archaic (ca. 6000/4000 B.C. – 1500/1200 B.C.). Of greatest consequence to Mille Lacs archaeology is Stoltman's (1997) inclusion of Old Copper artifacts in the Middle Archaic. This placement is the result of recent, albeit controversial, AMS dates that have pushed the date of copper use in the Upper Peninsula of Michigan back to ca. 5000 B.C. The dates were obtained from organic materials preserved through their contact with copper artifacts, including wood within a copper spear haft from northeastern Wisconsin, and string attached to a copper bead at the Oconto site (Stoltman 1997:131). Placement of Old Copper in the Middle Archaic necessitates re-evaluation of the Mille Lacs chronology, where the Petaga Phase is defined on the basis of Old Copper alone (Johnson 1984), and was placed in the Late Archaic following the chronology as understood at that time (e.g. Mason 1981). While this redefinition is not an entirely semantic question, it is also important to note that that Mason's (1981:141) estimate of 3,500 B.C. for the Middle/Late Archaic transition falls in the middle of Stoltman's (1997) Middle Archaic period. Johnson (1984) may have envisioned a dual division of the Archaic at Mille Lacs (Early/Late as opposed to Early/Middle/Late) but in any case, he describes the Petaga Phase simply as "pre-500 B.C."

Stoltman (1997:133) notes a decline in copper during the Late Archaic (1,500/1,200 – 500/100 B.C. in Wisconsin. This period is characterized by the use of small stemmed and notched points, including Preston and Durst types, both of which were defined from rockshelter excavations in southwestern Wisconsin. Stoltman's (1997:136) identification of the Durst Phase (ca. 1,000 to 500 B.C.) is of interest to Mille Lacs archaeology, as Durst points have been recovered at the Van Grinsven site (Mather and Nicholas 1998c), and most significantly, Petaga Point (Bleed 1969).

The Petaga Phase is poorly defined within Johnson's (1984) Mille Lacs chronology. Its primary characteristic is copper, specifically that related to the "Old Copper Culture" of the Great Lakes. Petaga Point (21 ML 11) is the type site, and Bleed's (1969) focus on the preceramic component there gives the best glimpse of other aspects of Petaga Phase material culture. Archaic projectile points from Petaga Point (Figure 23) include Durst stemmed and Raddatz side-notched forms, suggestive of links with western Wisconsin. These associations are also noted by Caine (1969, 1974) for sites in the Snake River Valley. These types have been associated with copper artifacts at the Wisconsin rockshelter sites (Bleed 1969). Western and southern influences are also seen at Petaga Point, however, in the presence of eared (similar to Oxbow) and Table Rock points (Bleed 1969:32). Links to the west are emphasized by Oxbow points fashioned of Knife River Flint (Gibbon 1998:39-40).

Other lithics include flake end- and side-scrapers, and gravers. Bleed (1969:33) notes that these tools are also found at the Raddatz and Durst rockshelters in Wisconsin, but that his Class D asymmetrical stemmed knives seem unique to Petaga Point. Stone choppers are an interesting and enigmatic find from Petaga Point. Bleed (1969:30) places three types of choppers with the Archaic component, although Elden Johnson (personal communication 1990) cautioned that they were present in later periods as well. This position is supported by Bakken (2000). Two of Bleed's Class C choppers were found in an aceramic area of the Crosier site in association with a QKT-Pattern lithic assemblage (Figure 24), and large chopping tools are present at the Onamia View site, although it should be noted that the associations at these sites are not sufficient at this point to resolve the question (Mather and Nicholas 2000b; Mather 2000).

Lithic Resource Use:

Siltstone remains a lithic raw material of choice during the Archaic tradition at Mille Lacs, but it is balanced by intensive use of quartz and Tongue River Silica as well. The latter stone, while not the most numerous, is the defining characteristic of this pattern, differentiating it from the preceding K-Pattern (Late Paleoindian) and the later Q-Pattern (Woodland). Quartz is dominant, ranging from 40 to 60 percent of the debitage in QKT-Pattern assemblages, with either of the two other stone types next most abundant. This lithic resource pattern appears to be associated with stemmed and notched projectile points, and large chopping tools. Scrapers and other flake tools are also present. Both bifacial and bipolar reduction technologies are evident in site assemblages. Bakken (2000) suggests a time range of 8,000 to 3,000/2,500 B.P. for the QKT-Pattern, but stresses that this should be considered a preliminary estimate. Quartz, siltstone and Tongue River Silica are all locally available. The geographic extent of the pattern beyond the Mille Lacs Locality has not been determined. It should be noted, however, that a Middle/Late Archaic component (Area D) at the East Terrace site in St. Cloud is characterized by Tongue River Silica debitage, and the investigators there describe note the Archaic use of this material in the Mississippi Headwaters area (BRW, Inc. 1994:4.135).

Subsistence:

Archaic peoples in general are thought to be generalized hunters and gatherers. They are believed to have utilized a diverse resource base within the early to middle Holocene, but with specific adaptations to local environments. If this is true, it is conceivable that a subsistence pattern specific to the Mille Lacs Locality may one day be defined. At present, however, no such data are available for Mille Lacs, where the acidic soils are not conducive to faunal and floral preservation.

One issue of particular interest in regard to Archaic subsistence, and the later adoption of horticulture, is the spread of the squash *Cucurbita pepo* from eastern North America. Perkl (1998) documents the presence of this plant at King Coulee in southeastern Minnesota during the Late Archaic. Again, no independent subsistence data are currently available for the Archaic tradition at the Mille Lacs Locality. However, the King Coulee date, in the context of earlier dates from eastern North America (Fritz 1999), suggests that this plant may have reached Mille Lacs at a comparable time. We do know that it was cultivated here much later, in the Late Woodland tradition (Johnson 1985). If *Cucurbita* was present at Mille Lacs during the Archaic tradition, however, it does not necessarily represent a first step toward horticulture. Fritz (1999) suggests that consumption of this squash was not its primary use, and instead suggests that its spread may have been for utilization as net floats. This suggestion is intriguing in regard to the well known fish resources of Mille Lacs, but mainly, it emphasizes how far we have to go in formulation of even a basic model of Archaic subsistence for the Mille Lacs Locality.

Copper:

The distribution of copper artifacts in the Upper Midwest shows a clear orientation toward the western Great Lakes, the inferred geologic source for much of the copper found on archaeological sites (Mason 1981). In Wisconsin, for example, copper finds are concentrated along the Lake Michigan shore and Lake Winnebago, and gradually lessen as one moves west toward Minnesota (Stoltman 1997:127-131; Gibbon 1998:35-36). Copper is also found in the glacial drift in Minnesota and Wisconsin, as secondary deposits whose origin lies to the northeast. These nodules would have provided much workable material, with some weighing more than a ton (Steinbring and Sanders 1996). The Pine City area in east-central Minnesota seems to have a notable concentration of drift copper and copper artifacts, and is located in close proximity to the Mille Lacs area (Rapp et al. 1990; Whittaker and Romano 1996). Artifacts from the Neubauer Collection (Caine 1969) include copper nuggets suggestive of the manufacture of copper implements (Figure 25).

A wide variety of copper objects are known, including points, crescents, knives, awls and beads. It appears that some variation in the types of these objects has the potential to tell of the expansion and distribution of copper use, but such analyses are hindered by the discovery of most copper artifacts as surface or metal detector finds. Jack Steinbring (1975) presents minor revisions to Wittry's classic Old Copper typology, and this is made more accessible through Gibbon's (1998) overview of copper in Minnesota.

Known Mille Lacs Sites:

Little can be said of Petaga Phase or general Archaic settlement patterns because so few sites are known. These are all located in prominent geographical locations, on high ground in proximity to water (Figure 26). A description of individual sites follows.

Petaga Point (21 ML 11):

Petaga Point (21 ML 11) is the type site for the Petaga Phase in the Mille Lacs region. The site was known through the collection of the Moore family (Figure 27), who farmed the site area for many years. That collection was sold to a collector in the 1930s, but was photographed by Monroe Killy. Additional copper artifacts were found during Peter Bleed's (1969) excavations in the 1960s (Figure 28). Bleed's work at Petaga Point with Elden Johnson was also instrumental in early definition of the Mille Lacs cultural sequence.

The "point" of Petaga Point is formed by the outlet of the Rum River from Lake Ogechie. This is an area of relatively level, high ground with easy access to both the river and the lake. It is in close proximity to other cultural sites related to both the prehistoric and historic periods. These include the Rum River Terrace site (21 ML 55) and the Buck Moore Dam site (21 ML 17). Petaga Point is the current location of the Kathio State Park interpretive center, with an extensive parking lot and swimming area.

The Archaic, or preceramic, component of Petaga Point was the subject of Bleed's M.A. Thesis and publication (Bleed 1967, 1969). It is the copper that has received the most attention, as a defining feature of the Petaga Phase, but Bleed's work documents much more of the archaeology of this component. Beginning with the copper, however, Petaga Point has produced an interesting assemblage of artifacts, including conical points, an ulu knife, and an assortment of square and round awls (Bleed 1967, 1969). It has recently been proposed that at least some copper "awl" forms were actually pressure flaking tools (Whittaker and Romano 1996). Within the Petaga Point copper assemblage, there is an assortment of socketed points and copper spuds in the Moore collection that is not paralleled by the formal excavations. A final important aspect of the Petaga Point copper assemblage is the presence of worked copper nuggets, demonstrating that copper tools were actually manufactured here (Bleed 1967, 1969). Drift copper is not available at Petaga Point or elsewhere in the Mille Lacs Locality. The origin of this material is probably the Pine River area, which is the closest source of copper to the east (e.g. Caine 1974; Rapp et al. 1990).

Lithics from the Petaga Point Archaic component include eared side-notched points and Durst Stemmed points. End scrapers and gravers manufactured from lithic flakes are present. Bleed notes that the asymmetrical stemmed knives from Petaga Point (his Class D) are not known from other Archaic sites. Also, large bifacially flaked choppers made from stone cobbles are identified in this component. These are made from poorer quality stone than the smaller patterned tools (Bleed 1967, 1969).

Johnson (1984:6) suggests that a circular rock concentration documented by Cooper (1965) and Bleed (1969) at Petaga Point may be the remains of a structure. He writes, "it seems probable that it represents a house floor where the rock was covered with a sand floor and the floor itself depressed below the ground surface as in the later semi-subterranean winter houses known from the larger region." The feature was partially excavated by Cooper during the initial testing of Petaga Point, and full documentation of the area was one goal of Bleed's later excavations. Bleed notes that the photographs and description provided by Cooper do suggest a house, because the rock placement seems symmetrical and the soil matrix appears different inside the feature. The findings of the full excavation were more ambiguous, however (Figure 29). A few flakes and pieces of copper scrap were found, appearing to confirm an Archaic association. Regarding the rock concentration, however, "its function is not known, although it seems safe to say that the feature was not a 'house' or living floor" (Bleed 1969:10).

Vineland Bay (21 ML 7):

A few copper artifacts and Archaic point types are known from the Vineland Bay site. Of the copper, a conical point is the only definite indication of the Petaga Phase. One of three "problematic" artifacts is blunt on one end, and split on the other. The shaft is square (Dickenson 1968:68-70). While it is difficult to be certain, this object sounds similar to copper pressure-flaking tools as identified by Whittaker and Romano (1996). Use of these tools is not limited to the Archaic tradition, however. The remainder of the copper assemblage from Vineland Bay appears to be derived from the Ojibwe burials encountered by the excavations. The projectile point assemblage includes stemmed and notched forms, some similar to Pelican Lake and Raddatz. The majority are triangular points, however, derived from the more prominent Woodland components.

Scott Site (21 CW 9):

The only other Petaga Phase site known at Mille Lacs is the Scott site (21 CW 9), north of Garrison. Elden Johnson observed the Scott collection, and Janet Spector conducted test excavations there in the 1970s with poor results. The collection has been documented recently by Teresa Halloran (2000), and was found to contain a wide variety of stone tool types, ranging from the Late Paleoindian into the Woodland tradition. Classic "Old Copper" artifacts are present as well, including points and an ulu (Figure 22). Copper artifacts seem more prevalent in the Pine City area, as described by Caine (1974) and Johnson (1993). The geographic range of the Petaga Phase should be further explored with consideration of data from both areas.

Cunz Site:

The Cunz site (21 ML 21) is known from the collections made by Jim Cunz in his garden. The site is located on the prominent beach ridge on the western shore of Lake Shakopee. Although artifacts from all time periods are represented in the collection, the majority appear to date to the Early Prehistoric Period, and specifically, to the Archaic tradition. Documentation of

the Cunz collection by Teresa Halloran (2000) has documented a range of Archaic point types, including stemmed and notched forms. Points similar to the Pelican Lake, Durst and Raddatz types deserve special mention because they suggest correlation with the Petaga Point lithic assemblage. One of the Pelican Lake-like points is made from Hixton orthoquartzite. The majority of the points are quartz, Tongue River Silica and siltstone, however, conforming to Bakken's (2000) outline of the Archaic QKT-Pattern at Mille Lacs. Three large, keeled scrapers are present which match the one illustrated below from the Ben & Fern Larson site. One particularly interesting object is a polished slate gorget (Figure 30). Such objects are primarily known from Laurentian and related Archaic cultures of eastern North America (Mason 1981), although this object requires more intensive scrutiny before such a suggestion can be confirmed.

21 AK 71:

This site is located on the southern shore of Ripple Lake, a short distance north of Garrison. It is in close proximity to the Scott site. A small assemblage of copper artifacts have been recently recovered here, including a socketed point base described as a harpoon. Worked nuggets also suggest the manufacture of copper tools at this location. A radiocarbon date from a hearth feature at this site suggests a date of approximately 500 B.C. (see Table 3), and the presence of Malmo ceramics suggests continued occupation into the Rum River Phase (Mulholland et al. 1997b).

T.H. 169 Sites:

Petaga Phase components are indicated at two of the sites recently investigated along T.H. 169 on Lake Onamia, but copper artifacts were not recovered. Two chopping tools similar to the Petaga Point styles were found at the Crosier site (21 ML 33) within an aceramic area of the site (Figure 24). Lithic raw materials from this area of the site represent the QKT-Pattern, suggested by Bakken (2000) to be indicative of the Archaic Tradition in general. Also, one Durst stemmed point (Figure 31) was found at the Van Grinsven site (21 ML 39). These sites provide glimpses of the Petaga Phase beyond the defining presence of copper (Bakken 1999; Mather 1991; Mather and Nicholas 2000b, 2000c). A Pelican Lake-like point is presence in the Onamia View site assemblage (Figure 32). Kent Bakken (2000) has noted that this point conforms to the general shape of the Pelican Lake type, but that it is fashioned from a flake, as is the Avonlea-like point illustrated below it. Controlled surface collection at the Onamia View site revealed a series of overlapping clusters of lithic debitage, much of which conforms to the QKT-Pattern (Mather 1991, 1994, 2000b).

A small Archaic component is present at the Ben & Fern Larson site, on a terrace at the edge of the Rum River. Notable aspects of this assemblage include a roughly made siltstone point and a large, keeled scraper fashioned of Tongue River Silica (Figure 33). Two small lithic scatters on the northeastern shore of Lake Onamia, the Old Onamia Beach I and II sites, conform to the QKT-Pattern as proposed by Bakken (2000). These three sites do not contain visible links with the Petaga Phase, but data are insufficient at this time to determine their position within the Archaic tradition.

Non-Petaga Phase Archaic?:

Other than the diagnostic presence of copper in the Petaga Phase, little definition has been made of the Archaic tradition at Mille Lacs prior to Bakken's (2000) preliminary outline of the QKT-Pattern. As previously mentioned, Johnson's (1984) Petaga Phase begins with the Late Archaic, "pre-500 B.C." This provisional definition certainly presents the impression that non-, or pre-Petaga Phase Archaic components are to be expected at Mille Lacs. Johnson did recognize that other Archaic components are present, often signified by individual finds at primarily younger sites. An example is the large stemmed point at Vineland Bay (Dickenson 1968:following page 52), which is similar to the stemmed point illustrated from the Onamia View site (Figure 32).

As with Paleoindian sites, the paucity of documented Archaic sites in the Mille Lacs region prior to the last decade is probably a result of past survey bias, with the preponderance of past research focused on the Late Prehistoric Dakota villages. More recent investigations, such as the T.H. 169 corridor investigations, have provided some insights to the Archaic tradition at Mille Lacs, but much is left open to question. It is possible that the pre-Petaga Phase Archaic tradition at Mille Lacs may bear greater similarity to the Prairie Archaic, as the region was at the prairie margin during the middle Holocene. Furthermore, presuming that water levels at Mille Lacs were lower during that period, it is possible that many Early/Middle Archaic components are now inundated. The Late Archaic Petaga Phase may indicate greater influence from the east with cooling climatic conditions. As mentioned above, Mille Lacs is at the western margin of significant of "Old Copper" components. Copper artifacts are also known to the west, but primarily as isolated finds (Anfinson 1997; Gibbon 1998; Stoltman 1997).

CHAPTER 5 - THE MIDDLE PREHISTORIC PERIOD

Marked by the first presence of burial mounds and ceramics in the Mille Lacs locality, the Middle Prehistoric Period includes the Rum River (ca. 200 B.C. – A.D. 500) and Isle (ca. A.D. 500-800) phases. Collectively, this time period includes the Initial Woodland and the transition to the Late Woodland tradition, two major cultural revolutions in the local archaeological record. The Rum River Phase represents the influence of Havana/Hopewell Middle Woodland peoples on the Mille Lacs Locality (Johnson 1984). The Isle Phase is seen as a time of increasing population, probably facilitated by the increasingly efficient use of wild rice (e.g. Johnson 1969; Gibbon and Caine 1980). This inclusion of the Isle Phase in the Middle Prehistoric Period is a minor departure from Johnson's (1984) framework, in which it begins the Late Prehistoric Period. Earlier versions of his Mille Lacs cultural chronology listed the Isle Phase as simply "Transitional," and didn't include it in either. Its placement in the current discussion is primarily to balance the four phases of the Late Prehistoric Period. Also, several of the sites discussed here, Black Brook and Van Grinsven, for example, are characterized by Rum River and Isle Phase occupations, suggesting continuity between the phases. Elsewhere, however, such as at the Cooper site and Petaga Point, the Isle Phase appears to initiate the major Late Prehistoric Period components following more ephemeral Middle Woodland presence. Sites with known Middle Prehistoric Period components are shown in Figure 34.

The Rum River Phase:

Elden Johnson saw the Rum River Phase as a period defined by external influence, particularly from the Hopewellian world to the south (Johnson 1984). Malmo ceramics are the primary archaeological indicator of the Rum River Phase, as defined through excavations at the Malmo (21 AK 1) and Brower (21 ML 1) sites. Johnson's concept of the Rum River Phase evolved from the Malmo Focus, as defined by Lloyd Wilford (1944, 1951b). The Trunk Highway 169 corridor studies effectively doubled the number of known well documented Rum River Phase components, with study of the Black Brook and Van Grinsven sites (Mather and Abel 1999). Malmo ceramics are also reported at Site 21 AK 71 on Ripple Lake, and at the Pit site on Lake Onamia. Middle Woodland components are mentioned at the Cooper site and the Griffin site in Kathio State Park (Mulholland et al. 1993, 1997b; Aufderheide et al. 1994; Streiff 1987).

Malmo Ceramics:

Malmo pots are thick walled conoidal vessels, and appear to represent a mixture of local and Havana/Hopewell influences. Only preliminary definition of this ware has been accomplished when compared to later periods. This is partly due to the history of Mille Lacs investigations. Wilford (1944, 1951b) defined the Malmo Focus, but not Malmo Ware. His illustrations of Malmo Focus pottery do show many diagnostic traits of the ceramic type, notably the conical base (Figure 34). As Matt Thomas (2000) describes it, a "general understanding arose that such a pottery type [Malmo] was present in the Mille Lacs region. In a 1962 report of

investigations at the Malmo mound group, Gary Hume uses the term 'Malmo Ware' to describe the smooth-plain surfaced, coarse grit-tempered pottery uncovered in their test excavations." It is also due to the relatively small amount of identified Malmo pottery recovered to date. There are no reconstructed Malmo vessels.

Present evidence allows the inference that the typical Malmo vessel has a vertical rim, flattened lip and a wide mouth with little if any constriction of the neck. It is assumed that Malmo vessels have a pointed base (Figure 35), similar to other northern Initial Woodland wares, but this portion of a vessel has not been recovered since definition of the type. The clay for these pots is tempered with coarsely crushed granite or (rarely) limestone. The surface of the pottery is smooth, and occasionally covered with a slip of clay. The rims of Malmo pots are decorated with zones of object impressions, including dentate stamps, cord-wrapped sticks, and fingernails. Punctates and bosses are also known, along with other stamp forms. The thickness of the walls of this pottery is notable, with a range generally between 5 and 10 millimeters (Thomas 2000; Caine 1979a). Examples of Malmo ceramics are shown in Figures 36-37.

A marked variability is seen in the extant assemblages of Malmo ceramics. This clearly demonstrates the existence of differing varieties of Malmo, but current data leave definition of such phases as premature. The attributes described by Gibbon (1975a) for the Brower site ceramics and Caine (1979a) provide a basis for such definition in the future. Likewise, ceramics from the Rum River Phase components at the Van Grinsven and Black Brook sites are similar to each other, and appear to represent a local, more plain variety of Malmo Ware (Figure 36). Matt Thomas (2000) describes the Malmo ceramics at the Van Grinsven and Black Brook sites as very similar to Laurel Ware (e.g. Stoltman 1973, 1974; Thomas 1996). Similar comparisons have been made for Initial Woodland wares in the Snake River Valley (Caine 1974). Malmo Ware definitely has outside influences, as well, as recognized by Johnson (1984). In fact, Wilford (1944) first included the Havanoid Howard Lake ware in his definition of the Malmo Focus, but later reconsidered (Wilford 1951b). Exotic influence is clear in the Mille Lacs area, however, as evidenced by the limestone tempered Malmo sherds from the type site, 21 AK 1 (Figure 37). Red slipped sherds are occasionally noted from regional sites as well (e.g. Wilford 1949, Johnson 1971b; Thomas 2000).

Malmo Ware has been dated ranging from ca. 500/200 B.C. to A.D. 500 (Johnson 1984; Caine 1979b). Recent radiocarbon dates from the Malmo type site range from A.D. 350 to 605 (Table 3). These are the first dates directly linked to Malmo pottery, being from charred food residues attached to the interior of the sherds. The two previous dates were from wood charcoal in burial contexts, and range from approximately 200 B.C. to A.D. 150 (Johnson 1964, 1971b; Lass 1980). These dates should be viewed with caution, as the materials were exposed in storage for years before the dates were run (Johnson 1964; Aufderheide et al. 1994).

Cemeteries:

Burial mode was considered a defining characteristic of the Malmo Focus by Wilford (1944, 1951a, 1951b, 1955). At that time, mound excavations by Jenks, Eckholm and Wilford were essentially the only information about the period at all. The Malmo type site (21 AK 1),

with its extensive mound group is one of the most amazing sites of the Mille Lacs Locality. The earthworks here were mapped by Brower and Bushnell (1900). Other than the mound excavations noted above, however, the site is generally unexplored.

The classic mortuary trait defining the Malmo Focus is the presence of burned logs over a burial area (Figure 38). This is by no means a ubiquitous feature, however, having been documented at only two of the 13 mounds excavated at the Malmo site (Aufderheide et al. 1994). Secondary bundle burials represent the only burial mode at the Malmo and Brower sites (Figure 39). It seems apparent that the logs, when present, where burned at the time of the funeral, because remains from both of these sites are charred. Green staining, perhaps indicative of copper, was also noted on remains from the Vanderbloom Mound at the Brower site. No grave goods were found with any burials ascribed to the Malmo Focus. A minimum of four individuals were recovered from the Anderson Mound and a minimum of 17 from the Vanderbloom Mound. Both of these mounds are subsumed within the Brower site. A minimum of 26 people are represented by remains from the Malmo site (Nelson 2000).

All burials known from the Rum River Phase (i.e. Wilford's Malmo Focus) are from mounds. The Anderson Mound was five feet in height and 50 feet in diameter when excavated by in 1933 by Jenks. The mound had been badly disturbed by road construction, and Jenks' excavations salvaged the remainder. The road cut exposed a red clay lens over the charred logs described above. The Vanderbloom Mound was similar in size (3 feet high, 45 feet in diameter) when excavated by Wilford in 1952, and had also been previously disturbed (Wilford et al. 1969; Aufderheide et al. 1994). Wilford's description of the mound contents is eloquent and presents a vivid image, so much so that it is quoted directly by Aufderheide et al. (1994) and again here:

> On the floor of the mound had been placed sheets of birch bark... On the bark, or at any rate on the original ground surface, bones of individuals were placed... Logs were placed over the human bones on the mound floor, not in a haphazard fashion but in grid form, with some logs placed in a northeast-southwest orientation and others crossing them at right angles or near-right angles... Some additional bones were thrown onto the log cribwork, as many fragments were found above the charred logs. The logs were then set afire and were almost completely consumed in the center and the southeast side. Before the fire had died out, dirt was thrown upon it, stopping the conflagration and preserving many partially burned logs. A considerable amount of clay was present in the dirt thrown on at that time, and it burned to a more vivid red than the sandy material of the area (Wilford et al. 1969:19).

A cemetery area was inadvertently encountered during the 1972 excavations at the Brower site, consisting of a secondary burial with an associated pot (probably Malmo) and firehearth. No visible earthwork marked this grave, but it is possible that a low mound had been plowed down. This area of the site was reburied without further disturbance (Gibbon 1975a:3).

As a last note regarding Rum River Phase burial mounds, it is tempting to suggest a Rum River Phase affiliation for some unexcavated earthworks on the basis of correlation with Middle Woodland mounds elsewhere. At the McKinstry site in the Rainy River region, for example, the Laurel affiliated Mound 1 is placed at the edge of the Little Fork flood plain terrace (Stoltman

1974). It seems reasonable to suggest that one reason for such placement is to increase the height of the mound when viewed from below. At the Mille Lacs Locality, mounds are positioned at the edge of prominent terraces in the Robbins Mounds and also at the Crosier site (Figure 40). The prominent ridges along the north shore of Mille Lacs Lake were once lined with mounds (Winchell 1911:344-345; Brower and Bushnell 1900:105). If further analysis finds any truth to this suspected pattern, it could provide a manner for at least tentative identification of earthwork age by non-intrusive means.

Lithics:

Prior to discussion of Rum River Phase lithic assemblages, it is necessary to introduce the Q-Pattern of lithic resource use. This pattern is described as "a somewhat localized adaptation, possibly designed in response to overall restrictions on raw material access" (Bakken 2000). Q-Pattern assemblages include quartz debitage ranging from 60 to 80 percent of the total, with no particular secondary material dominant. Bakken suggests that further research may reveal trends indicative of particular Woodland periods, but at the present time this is not possible. Current evidence suggests that the Q-Pattern extends throughout much of central and north-central Minnesota, with the Mille Lacs Locality near the southern boundary (Bakken 2000). While quartz cobbles are present in the Mille Lacs Moraine, they do not appear to occur in quantities comparable to the siltstone lag deposits, for example, at the Bradbury Brook site. This leaves the question of the source of so much material in question. While some of the quartz represented in the Q-Pattern is probably obtained through opportunistic procurement, the preponderance of quartz cobbles in the Mississippi River at Little Falls is of particular interest in this regard (Brower 1902).

There are few data related to the lithic assemblages of the Rum River Phase. The Malmo Focus was defined on the basis of mound excavations (Wilford 1944, 1951b), but the latter article does include illustrations of a variety of side-notched, corner-notched and stemmed projectile points. An assemblage of 19 projectile points was recovered at the Brower site, including a variety of stemmed, contracting stemmed and corner notched forms. Flaked scrapers, perforators and expedient tools are also present (Gibbon 1975a). One stemmed, unifacially flaked point was recovered from the Anderson Mound at the Brower site, although its exact provenience is uncertain (Aufderheide et al. 1994:265).

A corner-notched quartz point and a Knife River Flint perforator were recovered from the Black Brook site (Bakken 2000; Mather 1991, 1994; Mather and Nicholas 2000a). Lithic resource use at the Black Brook and Van Grinsven sites appears to fit the Q-Pattern, indicative of the Woodland tradition as a whole (Bakken 2000). The Brower site lithic assemblage also clearly fits the Q-Pattern (Gibbon 1975a:4). In the case of Black Brook, however, a surprising variety of raw materials exotic to the Mille Lacs Locality are present, including obsidian, Hixton Quartzite, Burlington Chert, Prairie du Chien Chert and Knife River Flint. I have suggested previously (Mather 1991, 1994) that this assemblage supports Johnson's (1984) theory of increased trade and external influence in the Rum River Period. This fits with Clark's (1984) interpretation of Knife River Flint being traded into the Hopewell Interaction Sphere by Sonota Complex peoples of the western North Dakota.

Insights into Rum River Phase lithic technology are suggested by the Van Grinsven and Black Brook site assemblages. The majority of debitage from both sites is flaking debris (ca. 75 percent), but flaked cores, bipolar cores and expedient tools are also present. One interesting artifact related to bipolar technology is an anvil from the Van Grinsven site (Figure 41). It has an artificially pitted surface on the top for placement of the bipolar core, and the bottom is pointed to anchor it into the ground. It is not clear if the anvil was modified to create the point, or if a natural stone of this shape was selected. The function of this feature would have been the same in either case (Bakken 2000; Halloran et al. 2000). A similar anvil was recovered at the Brower site (Gibbon 1975a:41).

Subsistence:

Although little subsistence data are available for the Rum River Phase, a major contribution has recently been made by Bob Thompson (2000), through phytolith analysis of food residues from two Malmo vessels. One was found to be indicative of wild rice, which in itself is interesting in an Initial Woodland context, but the other contained a phytolith assemblage characteristic of maize. Thompson stresses that this doesn't mean that maize was cultivated at Mille Lacs during the Rum River Phase, or even that it was present in large quantities, but simply that it was here. This is another indication of increased external, presumably Havana/Hopewell, contacts. While documentation of the presence of maize during this period is a significant addition to the archaeology of the Mille Lacs Locality, the date is consistent with the introduction of maize in other areas of the Great Lakes (Crawford et al. 1997), and shouldn't be considered particularly surprising. These residues were also the source of the radiocarbon dates described above, which fall in the latter half of the Rum River Phase (Table 3).

These phytolith data also add a new perspective on Clark's (1984) model of Hopewell Interaction Sphere trade passing through the Mille Lacs Locality. As mentioned above, Knife River Flint entered this network from North Dakota and was traded eastward, but what commodity from Mille Lacs played a similar role? There is no locally available lithic type that can rival the properties of Knife River Flint, but there is also, of course, no reason to believe that the Mille Lacs contribution would necessarily be so archaeologically durable. It is assumed that the maize represented by one of the Malmo vessels mentioned above was not cultivated at Mille Lacs (Thompson 2000; Crawford et al. 1997). This highlights the potential role of food materials in Middle Woodland trade networks, and therefore the potential of wild rice from Mille Lacs to fill this role. It must be emphasized, however, that this can only be considered a suggestion at this time, and that the Rum River Phase predates the period previously considered to be the beginning of intensive rice utilization (Gibbon and Caine 1980). We know that wild rice was utilized during the Rum River Phase (at least at the Malmo site) from Thompson's (2000) phytolith data, and we know that it was locally available from the Lake Ogechie pollen cores (McAndrews 2000), but we cannot yet gauge its role in the overall subsistence economy of the period. That question must await further archaeobotanical research on Rum River Phase components, and additional comparative analyses encompassing Mille Lacs and the surrounding regions.

Other hints of Rum River Phase subsistence are provided by archaeobotanical control samples from the Black Brook site but, unfortunately, no features were encountered to provide more secure data. There is little reason to doubt that the identified plants could have been present during the site occupation, however, and it seems very likely that they were utilized. Most significant is the presence of *Chenopodium* (goosefoot) in all sample levels, and raspberry at almost equal frequency. Goosefoot is a starchy, nutritious grain that can thrive in disturbed ground, such as a habitation site. *Chenopodium* was also present in the control samples from the Van Grinsven site, which also contains a Rum River Phase component (Valppu 2000; Mather and Nicholas 2000c). This grain is known to have been domesticated in eastern North America as early as 4,000 to 4,500 years ago (Smith 1995:189), approximately 2,000 years before the Rum River Phase.

There are no well preserved faunal assemblages from the Rum River Phase at the Mille Lacs Locality. One bone tool was found at the Black Brook site made from the scapula of a large turtle which, interestingly, does not match the locally available species (snapping and softshell turtles). Calcined bone fragments from a bear's paw were recovered from the Van Grinsven site, along with turtle shell. Deer and bird bones, and mussel shell are reported from the Brower site. One stone net-weight was also present in that site assemblage. The Gull Lake Dam site is located outside the Mille Lacs Locality, but contains a large faunal assemblage including bear, moose, and domestic dog remains. While these sites are perhaps best known for their Middle Woodland components, later occupations are also present. Therefore, these assemblages should not be assumed to necessarily apply to the Rum River Phase alone (Mather 1998; Mather et al. 2000; Gibbon 1975a).

Settlement Patterns:

Rum River Phase components are relatively well known at only seven sites within the Mille Lacs Locality, although it is likely that Malmo sherds are present in other regional ceramic assemblages. Two of these, Brower (21 ML 1), and Van Grinsven (21 ML 37) are on opposite sides of the Lake Onamia basin. The Malmo site (21 AK 1) is on the northeast shore of Mille Lacs. The Black Brook site (21 ML 40) is located on the Rum River, a short distance south of the Lake Onamia outlet. Site 21 AK 71 is located on the southern shore of Ripple Lake, immediately northwest of Mille Lacs. Middle Woodland components are also identified at the Cooper (21 ML 9/16) and Griffin (21 ML 18) sites, but these have not been analyzed or described in further detail (Johnson 1984; Streiff 1987). An apparently minor Rum River Phase component has recently been discovered at Petaga Point, near the interpretive center (Dave Radford and Stacy Allan, personal communication, 1999).

Outside the immediate Mille Lacs Locality, significant components with Malmo ceramics are also known at the Cedar Creek site (21 AK 58) and the Gull Lake Dam Mounds (21 CA 37) (Allan 1993; Johnson 1971b). These limited data show utilization of a variety of settings, all oriented toward water. It is tempting to consider the geographical setting of these components further, particularly the Black Brook as a gateway to the Mille Lacs Locality of sorts. With so few known sites, however, such speculation is obviously premature. Trails and waterways allowing access west to east across the Mille Lacs Locality deserve particular scrutiny in this

regard, particularly the Snake River Valley. Clark (1984) has suggested that Mille Lacs played a role in overland trade of Knife River Flint from western North Dakota within the Middle Woodland tradition Hopewell Interaction Sphere. This would eliminate, or at least decrease the emphasis on, waterways such as the Rum River in this Middle Woodland trade network.

The Malmo Site (21 AK 1):

The Malmo site is the type site for Wilford's (1944, 1951b, 1955) Malmo Focus. It is an extensive mound group on the northeast shore of Mille Lacs first mapped by Brower and Bushnell (1900). The town of Malmo gives the site its name, and construction of buildings and roads has obviously impacted the site since Brower's time. Test excavations of varied extent was conducted in thirteen of the mounds by Jenks and Gordon Eckholm with a crew of W.P.A. workers in the 1930s. Those excavations are reported by Aufderheide et al. (1994). The mounds include conical and ovate forms, and two of the excavated earthworks contained burned log features.

The habitation components of this site are unknown. Projectile points from the Malmo mound excavations were examined by Riaz Malik (1988), who described them as "Early to Middle Woodland." These materials were to be included in Malik's Ph.D. research on lithic use-wear in the Mille Lacs area, which unfortunately was not completed prior to his untimely passing. Recent survey work in the site vicinity is reported by Skaar (1997) and Peterson (1982:56-57).

The Brower Site (21 ML 1):

No non-burial sites dating to the Rum River Phase had been investigated prior to Gibbon's (1975a) excavations at the Brower site (21 ML 1). Jenks and Wilford had previously excavated two mounds at this location, then called the Vanderbloom and Anderson mounds, after the land owners. A portion of Gibbon's excavation, like Wilford's at the associated Kern property[1], may have intruded on a plowed down burial mound. Brower and Bushnell (1900) first mapped a large series of earthworks along the northwest side of Lake Onamia. The Brower site, including the Anderson and Vanderbloom Mounds, are within this area, as are the Crace and Lutheran Camp sites (Wilford et al. 1969; Gibbon 1975a, 1975b; Aufderheide et al. 1994; Streiff 1987). Recent reconnaissance-level survey in this area is reported by Emerson and Magner (1997) and Radford et al. (1996).

The Brower site is located on a relict beach ridge on the northwest shore of Lake Onamia. It is one of the few sites at Mille Lacs with a sand matrix, rather than the stubborn silt and stone of the Mille Lacs Moraine. The Rum River Phase component is the best known, but later occupations are indicated by groundstone, scapula hoes and antler digging sticks, and historic Ojibwe features (Gibbon 1975a; Aufderheide et al. 1994; Halloran et al. 2000; Mather et al. 2000).

[1] The Anderson, Vanderbloom and Kern sites were eventually subsumed within the Brower site.

The Black Brook Site (21 ML 40):

This small and unobtrusive site could be described as the diamond-in-the-rough of Mille Lacs archaeology. It is bisected by T.H. 169, which has caused substantial disturbance, and it has been impacted by residential development, but I believe the research potential of this location remains largely unrealized. Oblong and linear earthworks were documented here by Westover (1996) to the west of the highway corridor. The more prominent of these is an irregularly shaped, ovate mound that parallels a bend in the Rum River. The site area containing this mound has been plowed in the past but the earthwork is still visible. The lithic assemblage of the site, with its notable collection of exotic raw materials, has been described above (Bakken 2000; Mather 1991, 1994). The Rum River Phase ceramics are the local variety of Malmo (Thomas 2000). An Isle Phase component is also suggested by the ceramic assemblage. The area of the site that appears most promising for future research is located west of the highway, within an S-shaped bend of the river. This area is within the back yard of a residence (with a notable collection of yard art), and appears generally undisturbed. The landscape of the site area suggests that the orientation of the site as a whole is toward this topographic feature (Mather and Nicholas 2000a).

The Van Grinsven Site (21 ML 37):

This site is located on the northeast arm of the Lake Onamia basin, overlooking an area that is now entirely occupied by marsh instead of open water. The Rum River Phase component is best represented by concentration of Malmo ceramics, probably indicative of a single broken vessel. This also is the local variety of Malmo Ware (Thomas 2000). A small, crudely made ceramic cup is another interesting aspect of the Van Grinsven ceramic assemblage. The lithic assemblage fits Bakken's (2000) Q-Pattern, indicative of the Woodland Tradition. Late Archaic and Isle Phase occupations are also suggested by the artifact assemblage (Mather 1991, 1994; Mather and Nicholas 2000c).

21 AK 71:

This site is located on Ripple Lake, in close proximity to Mille Lacs as described above. Malmo ceramics are reported from the site, and a fire hearth feature produced a radiocarbon date within the Rum River Phase (Mulholland et al. 1997b). This area was largely aceramic, and also contained the copper artifacts described within the Petaga Phase, above. The relationship between these features of the site is undefined. It is possible that the copper is actually related to the Rum River Phase component. Copper was certainly used after the Petaga Phase, and Johnson (1984) notes copper trade as one aspect of Rum River Phase participation in the Hopewell Interaction Sphere. The copper from 21 AK 71 seems to represent more classic Petaga Phase forms, however. It seems likely that the site was simply occupied throughout this period.

The Petaga Point Site (21 ML 11):

The original excavations at Petaga Point in 1965 and 1966 did not produce Malmo ceramics (Bleed 1969), but it appears that a small Rum River Phase component is indeed present. Recent excavations by the DNR-State Parks crew in the vicinity of the Interpretive Center have recovered a concentration of Malmo sherds, possibly representing a single vessel (Dave Radford and Stacy Allan, personal communication, 1999).

Indian School Site (21 ML 6):

The Indian School site is located at Vineland Bay of Mille Lacs Lake, on the southern shore of Indian Point. The relatively low artifact density of the site has been noted since Wilford's (1949) first excavations. The Rum River Phase occupation is indicated by Malmo sherds found in the various excavations. Wilford, in fact, suggested a primary Rum River Phase (i.e. Malmo Focus) occupation for the site, but later excavations in the vicinity of the new Minnesota Historical Society museum and Mille Lacs Government Center have documented a Shakopee and/or Bradbury Phase component as well (Clouse 1992; Clouse and Pratt 1992). Cultural features were also documented during those investigation consisting of a rock concentration and a pit, but their age could not be determined from the available data.

It is likely that the Robbins Mounds represent a burial component of the Indian School site. The mound group was first mapped by Brower and Bushnell (1900). Brower's map of Indian Point clearly shows the relationship of this group to a ridge representing a higher, presumably glacial, level of Mille Lacs Lake. This ridge is visible immediately to the west of T.H. 169 at the southern edge of the reservation. Much of the mound group has been affected by development on the Mille Lacs Reservation, particularly in the vicinity of the Little Flower Mission, the casino and Mille Lacs Government Center and the T.H. 169 corridor. A number of mound remnants were mapped by Goltz (1996) to the south of the mission and directly outside the Mille Lacs government center.

The Isle Phase:

Hallmarks of the Isle Phase are St. Croix ceramics and linear burial mounds. The Isle Phase was simply referred to as "Transitional" in early versions of Johnson's (1984) Mille Lacs chronology (e.g. Caine 1983; Streiff 1987). This time period has been identified as a pivotal juncture in the prehistory of eastern Minnesota, with an increase in population based partly on improvements in wild ricing technology and utilization (Gibbon and Caine 1980). St. Croix ceramics and linear mounds link the Isle Phase to the enigmatic Arvilla Complex (Johnson 1973), which ranges from east-central Minnesota to the Red River Valley. This complex was defined from mortuary data alone, including offerings of copper, worked animal bone and shell. The Stumne Mounds in Pine County are one of the most prominent Arvilla sites (Johnson 1973; Cooper 1967).

Onamia Series Ceramics:

St. Croix and Onamia ceramics are included in the Isle Phase by Johnson (1984), while the latter ware continues into the subsequent Vineland Phase. These ceramic types share many similarities (Caine 1979b, 1983; Ready 1979a), and Matt Thomas (2000) has recently argued that they should both be subsumed as types within the Onamia Series.

Onamia Series pots are subconoidal to semi-subconoidal vessels. Constriction of the neck creates a pronounced shoulder, but the rim is straight and vertical, with a wide orifice. The surface of these pottery types is cord-marked, and the walls are notably thinner than Malmo Ware, averaging approximately 6 millimeters in thickness. Onamia Series ceramics are tempered with grit, composed primarily of crushed granite (Thomas 2000; Caine 1979b, 1983; Ready 1979a). Decoration of Onamia Series pottery consists of impressions made with a dentate stamp or cord-wrapped object. Two dentate stamp tools recovered from the Snake River area present another aspect of ceramic manufacture. "One is made of bone, the other of white chert. When applied to moist clay, both form a dentate impression of the type found on St. Croix Stamped pottery from the region" (Caine 1974:63).

The three varieties of the Onamia Series are defined by decorative motif, based on analyses by Caine (1983). Type I is the traditional Onamia Ware, with long oblique decorations, and decoration on the interior of the rim. Types II and III are varieties of the traditional St. Croix Ware. The first (Type II) is typified by oblique or vertical over horizontal decorations, with interior decorations. A subtype has cord-wrapped object impressions. Type III has horizontal decoration but no lip or interior decoration. A subtype has bosses (Thomas 2000). Previous definitions of these wares are provided by Caine (1979b, 1983) and Ready (1979a). St. Croix mortuary pots from the Arvilla Complex are generally miniature versions of the ware, and are presumed to not be functional artifacts (Johnson 1973).

One of the type vessels for St. Croix ware (Caine 1983) was recovered in the early 20th century from the Fort Poualak site on the Whitefish chain of lakes in Crow Wing County. F. T. Gustavson was an avocational archaeologist who became interested in a series of depressions at Hay Lake site after reading Brower's description of the area. The context of the find was interpreted by Gustavson as a house depression. Two other fragmented St. Croix vessels were found at the same time. The Fort Poualak material and associated documentation have recently been donated to the Minnesota Historical Society (Figure 42). Charcoal residue from the exterior shoulder of the pot have provided the first radiocarbon date from St. Croix pottery, ranging from approximately A.D. 600 to 760 (see Table 3).

Lithics:

Little is known about lithic use or technology specific to the Isle Phase. As previously mentioned, Bakken's (2000) Q-Pattern applies to the Woodland tradition as a whole, and is named for the heavy reliance on quartz at this time. Johnson (1984) identifies small side-notched points as a trait of the Isle Phase. Side-notched Cross Lake points have been associated with St. Croix ceramics in the Snake River Valley (Caine 1969, 1974). Points from the Arvilla Complex

mounds are primarily side-notched, although one Parkdale eared point is present as well (Johnson 1973:74).

Subsistence:

The Isle Phase is inferred to represent a shift to focal resource use, with a particular emphasis on wild rice utilization (Johnson 1984; Gibbon and Caine 1980). Little empirical subsistence evidence for the Isle Phase exists, however, but a recent contribution is favorable to that theory. This evidence is derived from phytolith analysis of food residues from the famous Fort Poualak Bowl. The charred material from inside the vessel produced a phytolith assemblage consistent with wild rice, but it is cautioned that the diagnostic phytoliths were too infrequent for statistical certainty (Thompson 2000). There seems little reason to question the truth of this identification, however, statistics aside. Wild rice utilization is certainly expected in an Isle Phase context, and is now well documented in the preceding phase as well.

It seems likely that the Black Brook site plant macrofossil data from the Rum River Phase (*Chenopodium* and raspberry) apply to the Isle Phase as well. The control samples in question were from a block excavation that produced both Malmo and Onamia Series Type II pottery (Valppu 2000; Thomas 2000; Mather and Nicholas 2000a).

Cemeteries:

Linear earthworks are a striking aspect of Minnesota archaeology (Figure 43). They are loosely associated with St. Croix ceramics through Johnson's (1973) definition of the Arvilla Complex. With the working assumption that they can be assigned to the Isle Phase, they are certainly the most visible indicator of sites dating to this time. Linear mounds are found from the Pine City area east of Mille Lacs to the western prairies and in the Red River Valley (Johnson 1973:3-5). Mille Lacs sites with linear mounds include the Garrison Creek (21 CW 5), Portage Bay (21 ML 31), Griffin (21 ML 18), and Black Brook (21 ML 40) sites (Streiff 1987; Mather 1994, 1997; Westover 1996). Notable sites with linear mounds near the Mille Lacs Locality include the Stumne Mounds (21 PN 4/5), the Christensen Mound site (21 SH 1/16) and the Gull Lake Dam Mounds (21 CA 37) sites (Cooper 1967; Johnson 1971a; Wilford et al. 1969). While earthwork studies often inspire geographical consideration at a greater scale, the alignment of linear mounds is more suggestive than the forms of most other mounds.

> ... an examination of the Stumne mound group on the Snake River in east central Minnesota suggests that the linear tumuli in this group may include two discrete sub-populations, perhaps representing two distinct episodes of construction. In the Crow Wing County area, the IMA has found what may be significant and uniform alignments among certain of the linear mounds. For example, using Brower's data, the long axes of the major chain of linears at the Gordon Mound Group near Cross Lake, and the parallel embankments of Fort Poualak near Upper Hay Lake, are seen to be oriented 21 degrees west of north. This exact orientation is also shared by the Black Bear mound, suggesting that each of these mounds or groups was laid out with an eye toward the heavens (Birk 1986:99).

The linear mounds mapped at Portage Bay of Mille Lacs by Les Peterson (Peterson et al. 1989:105; Mather 1994) exhibit spatial patterning, but do not match this orientation. The Portage Bay linear mounds are oriented along two axes. From the southernmost point, the eastern mound extends approximately 500 feet at 75 degrees east of north. Smaller oblong mounds are seen to run parallel to this orientation. From the same point, the eastern linear mound also extends approximately 150 feet at 80 degrees west of north. A second linear mound begins almost 200 feet to the west, and extends at 85 degrees west of north for approximately 450 feet before it is cut by the T.H. 169 corridor (Figure 43).

Conical mounds are also known from the Isle Phase, as seen at Cooper Mound 3, excavated by Jan Streiff in the late 1960s (Figure 44). This earthwork did not contain any burials, but did contain two St. Croix vessels (Aufderheide et al. 1994). Conical mounds are also listed as a trait of the Isle Phase by Johnson (1984). He notes that some linear mounds are cumulatively built and eventually incorporate groups of conical mounds, as is seen at the Gull Lake Dam Mounds (Johnson 1971a). Mound 2 at the Cooper site (Figure 44) appears to be a cumulative construction of this type.

Settlement Patterns:

In terms of settlement, the Isle Phase does truly seem "transitional" (Caine 1983; Johnson 1984). Some sites, such as Black Brook, show continuity from the Rum River Phase. At others, such as Cooper and Griffin, the Isle Phase is the apparent start of occupation that intensified in the Late Prehistoric Period, yet to come. The landscape position of these sites is a constant in Mille Lacs archaeology. All are situated on high ground in proximity to water. These are the best places to live at Mille Lacs, and they are also practically the only places that the archaeologists have looked.

Cooper Site (21 ML 9/16):

The Cooper site is the flagship of Mille Lacs archaeology, but it is best known for its later occupations. Named for Leland Cooper, who conducted the first excavations here in 1965, the site consists of a series of conical burial mounds and an associated village site (Figure 44). The Cooper site is located on the most prominent point on Lake Ogechie, in the middle of the southern/eastern shore. The best available evidence for the Isle Phase component is the excavation of Mound 3 by Jan Streiff. The mound did not contain burials, but it did contain two St. Croix (Onamia Series) vessels (Aufderheide et al. 1994). Elden Johnson's Cooper I component included St. Croix and Kathio ceramics, as differentiated from the Sandy Lake and Oneota ceramics of the Cooper II component (Lothson 1972:177). Further definition of these components within the village site must await detailed and comprehensive analysis of the Cooper site data, however, particularly in regard to the ceramic assemblages.

Griffin Site (21 ML 18):

The Griffin site is located a short distance to the northeast along the shore of Lake Ogechie from the Cooper and Wilford sites. A Rum River Phase component is indicated by Malmo ceramics found during excavations in 1975 and 1976 by Elden Johnson and Janet Spector, with the Isle Phase occupation most evident in an impressive series of linear and conical mounds. The main linear mound is significantly larger, in terms of width and height, than other linear mounds of the region (Streiff 1987). Other earthworks at this site have recently been mapped by St. Cloud State researchers (Rothaus et al. 1999).

Portage Bay (21 ML 31):

This group of linear and conical mounds was described by Brower and Bushnell (1900) but unfortunately was not mapped. The site is located at the southern shore of Mille Lacs, in the center of Portage Bay. The earthworks within the right-of-way for T.H. 169 have since been mapped (Peterson et al. 1989) because the highway now bisects two of the linear mounds. It was noted at that time that other mounds were visible among the resort cabins on the lakeshore, north of the highway. The site area has been the subject of several reconnaissance level surveys, some of which have recovered St. Croix-like ceramics (Mather 1991, 1994; Kluth and Kluth 1996), but details of the site's archaeology are largely unexplored. A summary of the cumulative survey and site data related to the highway corridor is presented by Mather (1997).

Black Brook (21 ML 40):

The setting of the Black Brook site was described above in discussion of the Rum River Phase. Onamia Series Type II (St. Croix) ceramics were also recovered from this site, from the same area as the Malmo sherds (Thomas 2000). It is possible that the mounds from this site may date to the Isle Phase, but the oblong, ovate mound is dissimilar to most of the linear mounds in the region. Westover (1996) reports the find of a clay pipe bowl from the Black Brook site, similar to those of the Arvilla Complex (Johnson 1973). Unfortunately, that area of the site was found to have been previously disturbed during the Phase III excavations (Mather and Nicholas 2000a).

Other Initial Woodland Components:

Although their proper chronological placement is a matter of some controversy, net impressed ceramics have been noted in small numbers at sites across the Mille Lacs region. These are grouped here as Brainerd Ware, the only known ceramic type in Minnesota with net impressions (Lugenbeal 1978; Hohman-Caine and Goltz 1995). Brainerd Ware was initially defined based on excavations at the Gull Lake Dam site (21 CA 37) by Johnson (1971b). A second net impressed ceramic type, Gull Lake Net Impressed, was later proposed by Neumann (1978), but this definition has generally not been accepted by other scholars.

A suite of radiocarbon dates for Brainerd Ware have recently shown that it is much older than previously thought (Hohman-Caine and Goltz 1995), and may represent an Early Woodland ceramic form such as was thought to be absent from much of Minnesota (Gibbon 1986). Much of the debate concerning these dates has been the derivation of some from charred food residues from sherds. While this issue is certainly complex, presumably involving many unknown intricacies of food and water chemistry, it may prove significant that food residue dates reported here (Table 3) for Malmo and St. Croix ceramics fall within the expected ages for these wares. The residue date from an Ogechie vessel is somewhat older than expected, however, and barely overlaps the previously defined beginning date for this ceramic type at A.D. 1400 (Ready 1979b). It may be significant in this regard that the Ogechie vessel residue contained diatoms, indicative of a water source (Thompson 2000). The possible 400 year discrepancy in the Lake Ogechie pollen core record and radiocarbon dates (McAndrews 2000) was discussed in Chapter 3.

Net impressed ceramics are reported from Site 21ML28, in Father Hennepin State Park, west of the inlet to Isle Harbor. Other Middle and Late Woodland materials have been recovered from the same location (Radford and George 1992; Vernon et al. 1979). Similar sherds are present at the Crosier and Pit sites by Onamia (Westover 1996; Mulholland et al. 1993), and at Aquipaguetin Island (Wilford 1949). To the north of the Mille Lacs Locality, Allan (1993) describes sherds from the Cedar Creek site (21 AK 58) that display a mixture of Malmo and Brainerd characteristics.

As previously mentioned, the net impressed ceramics from the Mille Lacs Locality presumably represent Brainerd Ware, but no independently diagnostic vessel fragments have been recovered to date. It is notable that net impressed ceramics occur in consistently small amounts at Mille Lacs sites, often representative of two percent or less of the total ceramic assemblage, when they are present at all (Thomas 2000). This suggests that Mille Lacs is at the southern edge of the Elk Lake Culture, as correlated with Brainerd Ware by Hohman-Caine and Goltz (1995).

CHAPTER 6 - THE LATE PREHISTORIC PERIOD

As the focus of Johnson's (1984, 1985) Mille Lacs chronology, the Late Prehistoric Period has received a greater degree of subdivision than is possible for most areas of the state. Having said that, however, the phases within this period are essentially a series of overlapping transitions, with diagnostic ceramic styles as the primary markers. This period corresponds generally to the Late Woodland Tradition, and includes the first evidence of French contact with the eastern Dakota. The Late Prehistoric Period at Mille Lacs includes the Vineland, Wahkon, Shakopee and Bradbury phases. Sites with known components of the Late Prehistoric Period are depicted in Figure 45.

This period of time was the focus of many extensive excavations at the Mille Lacs Locality, conducted by the University of Minnesota in the 1960s and 1970s. Unfortunately, few (or none) of these collections have been the subject of a comprehensive analysis, and basic site reports for the most part do not exist. Individual subjects or classes of data are presented in the literature, many as graduate theses completed by Elden Johnson's students. The most comprehensive site excavation reports are by Bleed (1966, 1969) for Petaga Point, Dickenson (1968) for Vineland Bay and Gibbon (1976) for the Old Shakopee Bridge site.

Therefore, the nature of the available data for the Late Prehistoric Period requires a somewhat different organization for this section of the overview. The synthesis of subsistence information in particular, as developed by Johnson (1984, 1985) and Whelan (1990) is painted with a broad brush, and is applied to the Late Prehistoric Period as a whole. To a lesser degree, settlement data are presented in a similar manner. For these reasons, the Late Prehistoric Period is discussed in general terms here, with Phase and site-specific information, when available, presented later.

Subsistence:

Analysis of the Late Prehistoric Period subsistence mode at Mille Lacs was a primary goal of the Mille Lacs Research Project, and site excavations were planned with fine-scale recovery techniques to allow study of seeds and small animal remains (Johnson 1984, 1985). Faunal and/or floral data from the Vineland Bay (21 ML 7), Cooper (21 ML 9/16) and Wilford (21 ML 12) sites were the primary resource for this purpose (Whelan 1990; Schaaf 1981; Bailey 1997; Johnson 1985). Faunal remains from Petaga Point (21 ML 11) were also analyzed by Whelan but were not incorporated into models of the Late Prehistoric Period subsistence mode.

Some comments about these data are necessary, regarding their applicability to the period as a whole. The floral data are derived largely from features or other secure contexts, such as squash seeds from a pot in the Cooper Mounds (Johnson 1985). This information can be ascribed to a particular time with a reliable degree of certainty. The faunal data, however, consist of huge assemblages derived from across the excavation areas of the sites in question. Whelan (1990) presents species identifications in her overview of the data, and this certainly provides a broad picture of animal resource utilization for the period. Much of the potential of

the assemblages remains untapped, however, such as body part representation. Whelan's unpublished data include this information, some of which is incorporated by Mather et al. (2000).

Another important point seen in Whelan's unpublished data is the division of components at these sites as developed by Elden Johnson. For purposes of the faunal analysis at least, the Cooper site assemblage was entirely ascribed to the Late Woodland Component. At Vineland Bay, the Late Woodland component was identified as material recovered from the surface and Levels 1 and 2 (0-20 cm). Obviously, these divisions will result in the inclusion of materials derived from both earlier and later components as well. This point is not made to criticize Johnson, as he was attempting to compile a vast array of artifacts into a meaningful body of data, and the component divisions as described above establish working definitions based on the archaeological methods utilized at the sites. The point here is simply that the faunal remains will be able to be presented in a more meaningful way after full analysis of all materials from these sites, and component divisions based on ceramic identifications and radiometric dates. Until then, the faunal data from the Kathio sites (Whelan 1990; Johnson 1984, 1985; Mather et al. 2000) should be utilized with full realization of the scope at which they were defined.

All caveats aside, the Late Prehistoric Period subsistence mode at Mille Lacs can be relatively easily summarized. Staple plant species include wild rice and *Chenopodium* (Figure 46), while corn and squash are documented in small amounts (Bailey 1997; Schaaf 1981; Johnson 1984, 1985). Johnson (1985) notes the absence of acorn remains as surprising. Major animal resources were a mixture of large mammals, such as deer and elk, and aquatic species including fish, mussels, turtles, ducks and small mammals. Domestic dog is also represented in the Kathio assemblages (Whelan 1990; Johnson 1985). It is likely that dogs were eaten at least on some occasions, but they also likely served as pets and draft animals (Morey 1986; Snyder 1991). By the Bradbury Phase, and probably earlier, travel to the western prairies was a major annual event, to participate in communal bison hunts with other Dakota bands (Johnson 1985, Hennepin 1938). Johnson (1985) and Whelan (1990) suggest that the importance of bison is under-represented in the Kathio faunal assemblages because much of the meat was probably transported already dried or as pemmican.

Within this discussion, the importance of wild rice cannot be overemphasized. Johnson (1985) notes that *Chenopodium* seeds outnumber rice in some contexts, but the nutritional value of the rice far exceeds other grains. The value of rice to inhabitants of the Great Lakes has long been recognized (e.g. Jenks 1901; Johnson 1969, 1984, 1985; Vennum 1988; McAndrews 2000; Valppu 2000). It has been argued that its prevalence and nutritional value provided a predictable, reliable substitute for domesticated crops such as maize. These factors are seen as pivotal to cultural history of the region. The development of technology to fully exploit the rice beds is interpreted as a causal factor in the cultural revolution the culminated in the Late Woodland Tradition (Gibbon and Caine 1980; Johnson 1969, 1984, 1985, 1991; Thomas 1995).

In many ways, the Late Prehistoric Period subsistence base can be compared to the seasonal round of the historic Ojibwe (e.g. Buffalohead and Buffalohead 1985; Densmore 1979; Hilger 1992) with two exceptions. The first is the absence of bison hunting among the Mille Lacs Ojibwe. The reason for this is largely political, however. At the time of conflict between

the Dakota and Ojibwe for possession of Mille Lacs Lake, the Ojibwe were at their western frontier following close to a century of conflict with the Dakota (e.g. Warren 1985). Prior to that time, the Dakota were able to move freely between Mille Lacs and the western prairies for the hunt.

The second (possible) exception involves the question of prehistoric maple sugaring. This practice is well known for the Ojibwe and historic Dakota, but the lack of empirical evidence for its use in prehistoric times is an interesting archaeological problem that still generates controversy (e.g. Holman 1984; Mason 1990; Thomas et al. 1999). While it seems likely that pre-contact peoples had knowledge of maple sap and all its qualities, it remains unknown whether syrup and sugar were made as they are known to have been in early historic times.

Ceremonial Plant and Animal Utilization:

Plants and animals fulfill many roles in human life that do not pertain to subsistence, or at least to subsistence alone. We are fortunate that insights into varied ceremonial practices have been revealed by the archaeological sites of Mille Lacs. Tobacco is the best example of this, with a prominent and well known role in American Indian religious practices. Seeds of tobacco and morning glory, a hallucinogen, have been recovered from features at the Wilford site. The tobacco is the domesticated variety, *Nicotiana rustica*, suggesting that it was cultivated here in gardens (Bailey 1997; Schaaf 1981; Johnson 1984, 1985)

Bear ceremonialism is another striking aspect of ancient religious practices at Mille Lacs. Unusual features containing bear skulls have been found at the Crace (21 ML 3) and Elders' (21 ML 68) sites at the Mille Lacs Locality (Gibbon 1975b; Mather and McFarlane 1999). Features such as this were first identified archaeologically at the Christensen Mound site (21 SH 1/16), on Elk Lake near Zimmerman (Winchell 1911; Wilford et al. 1969). This site is in close proximity to Mille Lacs, and the practices represented at the three sites are clearly related on some level. The features all differ in potentially significant ways, however, and they do not appear to be necessarily contemporary in time. These sites will be discussed at greater length below.

Lithics:

Little variability is recognized in the lithic traditions of the Late Prehistoric Period. Johnson (1984) identifies small side-notched points as a trait of the Vineland Phase, along with small triangular points. Triangular points alone signify the subsequent Wahkon, Shakopee and Bradbury phases. Some variation in triangular point forms is evident, however, in the Cooper site lithic assemblage (Figure 47). Also of interest in this regard is a quartz point from the Elders' site, with serrated edges and a thinned base (Mather and McFarlane 1999). The Q-Pattern, reflecting heavy reliance on quartz, continues to be prevalent throughout this period (Bakken 2000), suggesting continuity with the preceding Middle Prehistoric Period. Lithic debitage profiles from the Cooper and Wilford sites are indicative of the Late Prehistoric Period Q-Pattern, as well as other utilized materials (Figure 48). It should be emphasized, however, that

these charts were compiled from previously generated file data at the Wilford Archaeological Laboratory, and it is not known if they can be considered representative of the site assemblages in their entirety.

Groundstone artifacts are present at Mille Lacs beginning with the Shakopee Phase, and remain in use during the proto-historic Bradbury Phase. This artifact class includes objects such as grinding slabs and shaft straighteners (Halloran et al. 2000). It appears that these artifacts represent an increasing Oneota influence on the Mille Lacs Locality. Although it is a topic that certainly requires further consideration, it seems that many of these groundstone articles would have been imported into the area. The shaft straighteners are generally made of sandstone, for example, which is not available at the Mille Lacs Locality.

Cemeteries:

Mounds of the Late Prehistoric Period were initially subsumed within the Kathio Focus as defined by Wilford (1944, 1951a, 1951b, 1955). As described above, many mounds were ascribed to the Kathio Focus based on burial mode. The similarity of the defined burial modes for the Malmo and Kathio foci (i.e. secondary burials with few grave goods) has been a source of difficulty for later researchers.

> There are no significant differences in burial practices between Malmo and Kathio... Wilford has attributed mortuary sites distributed over a wide geographic range to the Kathio Focus based solely on the presence of secondary bundle burials and the lack of associated burial artifacts. Few "Kathio" mortuary sites have been radiocarbon dated, and therefore the reliability of many of Wilford's designations, especially of sites outside east-central Minnesota, is questionable (Myster and O'Connell 1997:223).

Within the Mille Lacs Locality, burials from the Cooper Village site and the Cooper Mounds have been ascribed to this time period. The Christensen Mound was also identified as belonging to the Kathio Focus, as was the Fingerson Mound (21 PO 2) and other mortuary sites on the western prairies (Wilford et al. 1969). Late Prehistoric Period earthworks are generally conical. They are often smaller than mounds of the Middle Prehistoric Period, but not in a quantitative sense (Nelson 2000; Johnson 1984). Further investigation of some Mille Lacs mounds, Mound 1 at the Cooper site in particular, have demonstrated the construction and use of burial mounds through the proto-historic Bradbury Phase (Lothson 1972; Birk and Johnson 1992).

The Vineland and Wahkon Phases:

These phases span the years of A.D. 800 to 1300, and the transition from Onamia to Kathio ceramics. There is less to differentiate these phases than is evident for the remainder of the Mille Lacs sequence. Onamia pottery is present in the Vineland Phase, having continued from the preceding Isle Phase, and Kathio pottery is present for the first time. Kathio pottery is the only ceramic type in the Wahkon Phase. Other traits of both phases include the first ricing

and midden features known at Mille Lacs. With the exception of the ceramic sequence, the diagnostic features of the phases as defined by Johnson (1984) are identical. They are therefore grouped for purposes of the present discussion. Johnson clearly saw a reason to define two phases to cover this period of time, but his writings do not elaborate. It is hoped that future research at Mille Lacs will further explore these phases and their relationship to the rest of the Mille Lacs chronology.

Kathio Ceramics:

Onamia Series ceramics have been described above. Kathio Ware is a ceramic form with clear relationships to Onamia, but with closer links to the contemporary Clam River, Blackduck and Madison wares (Caine 1983; Thomas 2000; Gibbon and Caine 1980; George 1979). Thomas (2000) has recommended that Kathio be subsumed within the Clam River Series:

> Kathio is a ware caught in an identity crisis. Blackduck and Clam River wares have been previously well defined and Kathio displays traits that are mutually exclusive between Clam River and Blackduck. In essence, if one finds a sherd that looks like Blackduck or Clam River in the Mille Lacs region, it is called Kathio (Thomas 2000).

For example, Clam River Series pottery from Triangle Island in Knife Lake, called Kathio-Clam River by Hendrickson (1984), includes combing of the rim, a trait generally considered diagnostic of Blackduck. It seems unlikely that these sherds would be placed in the Clam River Series if they were found in the Mississippi Headwaters or Rainy River regions.

Given the prominence of the Kathio Focus in the development of Minnesota archaeology (Wilford 1944, 1951a, 1951b, 1955), it is ironic that Kathio ceramics are so poorly defined. In many ways, it seems that the presence of this ware was ancillary in designation of a site to the Kathio Focus. The complications inherent in definition of Kathio apart from the Blackduck-Kathio-Clam River continuum are further summarized by Van Dyke and Oerichbauer (1988):

> ...a number of points can be made about the relative state of archaeological knowledge in the north-western Wisconsin – east-central Minnesota region. First, with few exceptions, our understanding of regional archaeological manifestations is based on interpretations of incompletely represented phenomena, usually mortuary practices, with inadequate chronological documentation. Second, contextual relationships of artifacts in burial mounds are uncertain. Third, few radiocarbon dates exist to substantiate claims in the literature. Fourth, reported similarities in ceramics suggest relationships from as far west as Roberts County, South Dakota, to the Chippewa River valley in west-central Wisconsin, but very large gaps in the excavated record exist between these finds. Finally, while there is an apparent similarity of materials excavated by Cooper and McKern, the results of much of their fieldwork are unwritten and therefore unavailable for comparison (Van Dyke and Oerichbauer 1988:145).

It seems that some of the problems of the Blackduck-Kathio-Clam River continuum are products of the history of archaeological investigations. W. C. McKern, for example, provides

the first description of Clam River pottery, derived from his excavations in the Clam River (47 BT 1) and Spencer Lake (47 BT 2) mounds in Burnett County, Wisconsin (McKern 1963:60-61). While noting the similarity between the Clam Lake sites and Wilford's Mille Lacs Aspect, even to the point of ascribing the same ethnicity, he nonetheless divides the areas archaeologically.

> The presence of similar mass secondary burials in Minnesota [citing Wilford], encountered in large, compound mounds and associated with pottery and other cultural elements comparable to the Clam Lake complex, suggests that such customs were not limited to the Dakota residing in Wisconsin (McKern 1963:71).

Such complications notwithstanding, a working definition of Kathio pottery does indeed exist. Kathio pots are globular in shape with an outflaring rim, constricted neck and outward expansion of the shoulder and body. The lip is sometimes thickened with the application of fresh clay during decoration of the rim. The pots are tempered with grit and marked with cord or fabric impressions. The walls ranges between 3 and 5 millimeters in thickness, except for the lip, which can reach 7 millimeters (Thomas 2000; Ready and Anfinson 1979a; Caine 1983). The general form of Clam River Series pottery is illustrated by a vessel from the Altern site in Wisconsin, shown in Figure 49.

Structures:

Rectangular, semi-subterranean houses are another trait of this period, best represented at Petaga Point (Johnson 1971a, 1984). On the final day of Bleed's work at the site in 1966, "a dense localized area of tall grass," (Bleed 1969:11) was investigated through excavation of a 1x3 meter trench (Figure 50). The only artifacts recovered include cordmarked ceramic bodysherds and quartz debitage. Bleed concluded that the log feature was of Woodland origin, but noted that its function remained unknown. Johnson (1971a) continued excavation of this feature the following year, revealing the outline of the structure (Figure 51).

> The house is rectangular in plan, measures approximately 6x11 meters with an additional 2 meter entrance passage, and has a floor depressed approximately 50 cm below the original ground surface. Post molds are peripheral along the four walls and the main fire pit is offset and located toward the entrance. No interior post molds indicating a roof support pattern were found, and the house is oriented on a northwest-southeast axis. The structure had been burned and masses of charcoal and partially burned wood lay over the floor. Eastern triangular points and Kathio sherds lay under the charred material on the original floor surface at several places within the structure (Johnson 1971a:17,19).

Five such features were documented at Petaga Point. Johnson (1971a:19) goes on to say that similar houses were excavated at the Cooper site, where they are overlain by the later Bradbury Phase component. A similar house style was documented at the Old Shakopee Bridge site by Gibbon (1976). This structure is more oval in shape and is smaller, measuring approximately 3x5 meters. The entrance passage is approximately 3 meters in length. These house forms are not the only structure types known for this time period, however. Round pit houses were excavated on the Snake River by Leland Cooper. These structures appear to be associated with Clam River ceramics (Johnson 1993). Other depressions are documented at

Triangle Island (21 KA 29) in Knife Lake (Hendrickson 1984). Feature 7 at that site was radiocarbon dated to approximately 500 years of age from charcoal in association with Clam River Series pottery (see Table 3). This date is later than the defined range of Kathio pottery at the Mille Lacs Locality, and will be discussed further below.

Cemeteries:

As mentioned previously, the Kathio Focus as defined by Wilford does not provide a working definition of Vineland or Wahkon Phase mortuary practices. Kathio Phase cemeteries are defined as secondary burials with few if any grave goods. This is in clear contrast to the Clam River Focus as defined by McKern (1963) in Wisconsin, where the type vessels for the ceramic series were found in mortuary contexts. However, given the close relationship between Kathio and Clam River ceramics, as described above, the Clam Lake and Spencer mound excavations (McKern 1963) may provide a good frame of reference for mortuary practices of the Wahkon Phase at the Mille Lacs Locality.

Successive stages of mound building and clear evidence of ceremonial architecture are evident in the Clam River Mound in Wisconsin. This is one of the type sites for the Clam River Focus, considered by McKern (1963) to be contemporary with Wilford's Kathio Focus, as described above. The first construction stage of the mound, McKern's (1963) Stratum 1 or Mound I, is suggestive of ceremonial preparation of the earth surface:

> The central floor of the mound, consisting of an area 30 feet in diameter, was covered to a central depth of two feet with a material that was primarily pure red ochre. Running spottedly through this amazing pile of "paint," with which the semi-nude excavators painted their faces and bodies most effectively, were thin striae and occasional solid lens-shaped loads of a thick black muck. The colorful effect of these mixed elements as seen in vertical profile, a view which the builders of course never had, was most striking. No burials, cultural objects, or other features of any kind were found in this great mass of ochre, which comprised the major portion of Mound [Stratum] 1 (McKern 1963:19).

A remarkable range of objects and mortuary data were produced by the excavation, including the organic remains of torches and birch bark. Hundreds of secondary bundle burials were excavated, some in the remains of birch bark containers which were presumably used to transport the deceased from burial scaffolds. Preparation of the mound surfaces prior to successive levels of construction is evident in the presence of a buried stump, and placed layers of clean sand. The clearly ceremonial features of the mound and the observation of long bone tapping seem to reflect more Middle Woodland influence (Stoltman 1974; Thomas and Mather 1996) than might be expected. It is therefore of interest that a radiocarbon date from the mound ranges from A.D. 490-1370. Another date from the associated habitation site suggests occupation during the eighth century A.D. (Meer et al. 1994; Ritzenthaler 1966). These dates, with the one from Triangle Island mentioned above, indicate a persistence, if not flourishing, of the Clam River Focus in western Wisconsin well after the end of the Wahkon Phase at the Mille Lacs Locality as defined by Johnson (1984).

Bear Ceremonialism:

The first evidence of bear ceremonialism in Minnesota was found in 1907 near Mound 3 of the Christensen Mound site (21 SH 1/16) by Newton Winchell. He was in the process of compiling his classic work, *The Aborigines of Minnesota*, and he became so interested in Theodore Lewis' documentation of the site that he decided to visit the area himself. Winchell excavated several of the linear mounds at that time, and also noticed a concentration of bear bone eroding from the cut bank of a wagon road at the edge of Mound 3. The bone was primarily cranial, but other bones and artifacts were present as well (Winchell 1911; Wilford et al. 1969; Mather 1999a).

It was nearly 40 years later before the bear skulls from the site received more press. The owner of the local dance hall decided to level Mound 1 at that time to expand his parking lot, and in doing so exposed a cache of bear skulls and mandibles at the edge of the mound. The find was investigated by Louis Powell of the Science Museum and Lloyd Wilford, who excavated a greater portion of the mound. Wilford assigned the mound to the Kathio focus based on ceramics found in the mound fill (Wilford et al. 1969). It was too late to document the cache of bear crania *in situ*, and Mr. Christensen apparently gave many of them away to his neighbors and visitors to the site. Powell (n.d.) felt that the cache represented the remains of a ceremonial feast of bear brains, and argued that the site dated to the eighteenth century. This made for a fabulous headline in the *St Paul Dispatch*: "Bear Brains Yum-Yum Dish Here in 1700s." Preliminary examination of the collections made by Powell and Wilford has resulted in a minimum count of greater than 100 bears (Lukens 1963). A recent radiocarbon date from a bear mandible indicates a range of approximately 1150 to 1400 (see Table 3) for the Christensen Mound (Mather and McFarlane 1999).

A feature of similar age, as inferred from the presence of Kathio ceramics, was excavated at the Crace site (21 ML 3), located on the northwest shore of Lake Onamia. The feature is described as ...

> ...a linear concentration of rocks and bear mandible fragments that ran through units 2, 4, and 7. The ... feature which contained rocks about 10 cm. in diameter with split and exfoliate cortexes probably represents a scattered fire hearth, for some of the bear bone had been burned (Gibbon 1975b:49).

The remains in the feature were found to represent a minimum of 32 bears. One of the teeth had been carved. Gibbon interprets the feature as a midden deposit, while noting the unusual nature of its contents. He is cautious, however about further interpretation of its meaning: "Although one's imagination might soar with images of ceremonial rites and dietary delicacies, a reliable reconstruction of the function of this special activity component is not possible until more information is available concerning the use of bear bone by Kathio people" (Gibbon 1975b:56).

Known Sites and Settlement Pattern:

There is no definitive evidence to suggest significant changes in settlement patterns early in the Late Prehistoric Period. The major sites are related on the shores of the major waterways, but again, these are the primary areas of past survey efforts. It is expected that further analyses of the Kathio State Park sites in particular will reveal patterns in component distribution and representation. Several sites with evidence pertaining to the Vineland and Wahkon phases in particular are described here. The primary data related to this component from the Petaga Point and Crace sites were presented above.

Aquipaguetin Island (21 ML 2):

Artifacts from this site (Figure 9) provided the only non-mortuary data for Wilford's (1944, 1951b, 1955) definition of the Kathio Focus. The site is an island, now surrounded by marsh in the northwest corner of the Lake Onamia basin. These finds and the association of the island with Father Hennepin by Brower (1901; Brower and Bushnell 1900) and others led to conclusions that Kathio ceramics were used by the Dakota in the late 17th century. Later components are also present at this site, including historic period sugar camps and farmsteads, but these remain largely unexplored. Renewed surface survey of the island has recently been undertaken by researchers from St. Cloud State University (Rothaus et al. 1999).

The Kathio School Site (21 ML 6):

This site is located on the north side of Vineland Bay, in the area of the Ayers store and now the Mille Lacs Indian Museum. The Vineland and Wahkon phases are interpreted to be the primary components, as the ceramics recovered by Wilford suggest occupation ranging from the end of the Middle Prehistoric Period forward. Identified wares include Malmo and Kathio (Streiff 1987). Further excavation of the site was conducted by the Minnesota Historical Society during the planning process for construction of the museum. Those efforts documented a later, Bradbury Phase component, but did not find other definitive evidence of the Rum River Phase (Clouse 1992, 1993).

The Vineland Bay Site (21 ML 7):

Another aspect of animal ceremonialism (although not bear ceremonialism) is seen in the burial of a dog's head at the Vineland Bay site (Figure 52). The dog's skull, mandible and cervical vertebrae were recovered in anatomical position from Pit 14, a large, round, steep-walled pit. A Wahkon Phase date is suggested for the feature based on the presence of a Kathio rimsherd, along with other sherds and lithic flakes, although this ascription should be considered tentative due to the presence of a bear skull at the same site attributed to the Ojibwe component (Wilford 1949; Dickenson 1968:18). While the rimsherd and other materials could be accidental inclusions in a later pit, no historic materials were found in Pit 14, in contrast to the wood-burning stove parts found with the bear skull.

The Old Shakopee Bridge Site (21 ML 20):

This multicomponent site is located at the inlet of the Rum River into Lake Shakopee. The series of complex and overlapping components as described by Gibbon (1976) unfortunately typifies much of the archaeological record of the Mille Lacs Locality. The earliest occupation here occurred during the Isle Phase, although an earlier, possibly Archaic component may also be present. The major occupations date to the Late Prehistoric Period, however. Most significant for the Wahkon Phase is the probable association of a house and occupation floor with Kathio ceramics and triangular projectile points. Bakken's (2000) Q-Pattern is clearly represented in the lithic assemblage, with quartz accounting for 81% of the lithic debitage. The house is described as oval in shape, measuring approximately 5 x 3 meters, with a entrance passage of almost 3 meters in length. The house was outlined by 42 postmolds, with a mean diameter of 10.9 centimeters. The occupation floor consisted of "a hard loamy clay dark reddish brown soil (5YR3/2) that stretched across the excavated units between a depth of 16 and 20 cm" (Gibbon 1976:8).

The Crosier Site (21 ML 33):

The Woodland Tradition components of the Crosier site are not well defined by the excavations conducted along the highway corridor. As mentioned previously, it seems likely that occupations from this time period would be better represented on the relatively undisturbed lower terrace, adjacent to the current water level of Lake Onamia. The Crosier site is mentioned in this section because, other than the Sandy Lake vessel described below, Kathio pottery is the best represented ceramic type of the site assemblage. Three vessels are represented by the recovered sherds, the first by multiple rims and interconnecting body sherds. This vessel is decorated with at least four rows of cord wrapped object impressions (Thomas 2000).

The Shakopee Phase:

The first Oneota influence in the Mille Lacs area is seen in the Shakopee Phase, with the advent of Sandy Lake ceramics. This constitutes a major shift in ceramic technology for the region (Thomas 2000). The nature of this transition from the preceding Wahkon Phase and Kathio ceramic series is a topic pivotal to the archaeology of the Mille Lacs Locality, and one that requires detailed study. Johnson (1984) notes that the beginning of this period coincides with the abandonment of the Oneota villages on the Cannon River in southeastern Minnesota. Small, triangular points are a trait of this phase and groundstone technology is first seen at Mille Lacs at this time (Halloran et al. 2000; Johnson 1984). Major components of this period are present at the Cooper, Wilford, Griffin, Petaga Point, Old Shakopee Bridge and Elders' sites (Johnson 1984, 1985; Aufderheide et al. 1994; Streiff 1987; Gibbon 1976; Mather and McFarlane 1999). Cultural components with Sandy Lake pottery cover a broad geographic and temporal range. Strong connections with the western prairies are evident during this period, as indicated by the distribution of Sandy Lake into the Red River Valley and beyond. The makers

of Sandy Lake ceramics have been alternately called the Wanikan Culture (Birk 1977a, 1977b) and the Psinomani (Gibbon 1994).

Sandy Lake Ceramics:

Sandy Lake ceramics (Cooper and Johnson 1964) span a long temporal range, from the thirteenth through the eighteenth centuries A.D., and are generally accepted as Dakota, or at least Siouan, in origin (Participants 1988). Early Sandy Lake pots, such as the one from the Crosier site (21 ML 33), are grit tempered (Figures 53 and 54). That vessel has an associated radiocarbon date of cal A.D. 1409 (Table 3) (Mather 1991, 1994). A much later Sandy Lake radiocarbon date is reported by Justin and Schuster (1994:83) from the Basswood Shores site (21 DL 90), at 200+/-90 B.P. (Beta-51692). Sandy Lake ceramics from this time are almost exclusively shell tempered. Justin and Schuster also provide a compilation of radiocarbon dates for Sandy Lake ceramics.

Sandy Lake vessels can be generally described as globular in shape, with a short, vertical or slightly flaring rim and marked thickening at the intersection of the shoulder and the rim. Temper, as mentioned above, can be grit or shell, or a combination of the two. Surface treatment varies from cord-marked or fabric-marked to smooth. Sandy Lake ceramics are rarely decorated, but check stamping, trailed lines and punctates are known. The lip is often designed in a saw tooth fashion, or modified with finger impressions, as shown in Figure 54 (Thomas 2000; Birk 1979). This pottery type is found over a notable extent of the midcontinent, including southern Manitoba and Ontario, northern Wisconsin and the approximate northern half of Minnesota. The Mille Lacs Locality is near the southern limits of this distribution (Participants 1988).

Subsistence:

The general Late Prehistoric Period subsistence mode was previously discussed, and further elaboration for the Bradbury Phase is provided below, but a note is appropriate at this point regarding wild rice processing. Wild rice is known to have been present at Mille Lacs since the Late Archaic tradition (McAndrews 2000), and to have been utilized since the Rum River Phase at least (Thompson 2000), and an intensification of wild rice use has been proposed for the Isle Phase (Gibbon and Caine 1980; Johnson 1969). It is possible that Late Prehistoric Period rice use continued to increase throughout the period, as clay-lined ricing jigs are a not-uncommon feature of the later components at the Cooper, Petaga Point and Old Shakopee Bridge sites (Johnson 1984, 1988; Bleed 1969; Gibbon 1976), among others. Gibbon (1976:25) associates these features with the Shakopee Phase component at the Old Shakopee Bridge site because they are superimposed over the probable Wahkon Phase house outline, as described above. Bleed (1969:6) notes that one clay-lined jig is cut by a historic Ojibwe rice parching feature at Petaga Point. These observations bracket use of the jigs within the Shakopee and Bradbury phases, although further research is clearly needed before concluding that they were not present during previous phases as well.

Gibbon (1976:6) describes the clay-lined jigs at Old Shakopee Bridge as 42-60 cm in diameter and 15-21 cm in depth. The thickness of the clay lining varied from 5-10 cm. "All of the jigs appeared in plane view as orange, roughly circular 'halos' filled with dark brown soil; these features resembled hollow quarter spheres in vertical cross-section."

Bear Ceremonialism:

The most vivid archaeological image of bear ceremonialism known in Minnesota was recently discovered on Shah-Bush-Kung Bay of Mille Lacs (Mather and McFarlane 1999), where a pit feature at the Elders' site (21 ML 68) was found to contain an estimated 500 black bear skulls (Figure 55). This number is inferred from the archaeological data, as will be described. The pit is roughly oval in shape, measuring approximately four meters in diameter. The excavation uncovered only a portion of the top of the feature, by which time the spectacular and extremely fragile nature of the find was apparent, and the excavation plan was amended.

This relatively limited amount of excavation produced a wealth of data, however. A cruciform trench exposed the edges of the feature at the cardinal directions, and an area of the center of the pit. Along the north and east sides of the feature, the pit edge was relatively vertical, and it could be seen that it was lined with bear skulls stacked one upon the other. They were placed in rows, juxtaposed against each other, in at least two rings facing the southwest. One test unit was excavated to expose a profile of the feature, which extended to a depth of approximately half a meter below the ground surface. The soil within the feature was black and greasy. Charcoal was present but the bear remains were not burned. That unit contained the cranial remains of a minimum of eleven bears. The remainder of the trench exposed enough additional skulls to push that number close to 75. Extrapolation of that number for the documented dimensions of the pit easily allows the potential for 500 skulls to be present within the entire feature (Mather and McFarlane 1999).

Few artifacts were found directly in or around the feature. Those present suggest a Shakopee Phase date, however, including a quartz triangular point with serrated edges, and two small sherds with characteristics similar to "Sandyota" (Gibbon 1995). Two radiocarbon dates from the Bear Feature range from approximately 1440 to 1680 A.D. (see Table 3). These dates, and the Sandyota sherds indicate an overlap into the Bradbury Phase. The site is presented here in the context of the Shakopee Phase, however, due to the lack of definitive Ogechie or Oneota ceramics. Furthermore, the majority of the Elders' site ceramic assemblage consists of Sandy Lake Ware, including one vessel that is a virtual match for the Crosier vessel described above. One of the radiocarbon dates was derived from wood charcoal recovered within the Bear Feature. The other was from a postmold located immediately to the west of the pit. The matching dates suggests the association of a structure of some sort. The Bear Feature is interpreted as a funeral: a ceremony for bears possibly killed in a single winter hunt (Mather and McFarlane 1999).

The radiocarbon dates from the Elders' and Christensen Mound sites (Table 3) document a long history of bear ceremonialism at the Mille Lacs Locality, and there is every reason to believe that reverence for the bear is an ancient and enduring practice. The particular expression

of bear ceremonialism seen at these sites, and the Crace site, differs as well. These are topics that clearly merit further consideration. Bear ceremonialism is known from a broad variety of cultures, ranging across subarctic North America and Eurasia (Hallowell 1926; Shepard and Sanders 1985; Rockwell 1991; Schlesier 1987). It is relatively well documented in the historical and ethnographic literature pertaining to the Great Lakes (e.g. Blair 1996; Ritzenthaler and Ritzenthaler 1983). The Elders' site is one expression of bear ceremonialism, in this case almost certainly attributable to the eastern Dakota of Mille Lacs.

Structures and Palisades:

The Cooper and Wilford sites, in particular, were fortified villages by this time, if not before. Large house forms (Figure 56) are documented at both sites, but it is unclear from the current documentation whether they date to the Shakopee or the Bradbury Phase, or both. Houses of the Bradbury Phase are described semi-subterranean, trench and post rectangular structures with a packed clay floor, a continuation of the tradition from earlier in the Late Prehistoric Period (Johnson 1984).

The palisades found around the perimeters of the Cooper and Wilford village sites are a striking aspect of the archaeology of the Mille Lacs Locality (Johnson 1985). The outline of the palisade at the Cooper site is marked in a very effective public interpretation of the site in Kathio State Park. It is illustrated as surrounding the village by Aufderheide et al. (1994), perhaps being open toward the Lake Ogechie shore (Figure 44). The Cooper site palisade was constructed in a trench, with posts spaced intermittently. Several sections were excavated through the feature during the cumulative University of Minnesota investigations of the site (Figure 57). The Cooper feature appears to conform to Milner's (1999) description of "northern" palisades, with upright posts spaced apart from each other, and the gaps filled with branches or bark. No indications of daub are reported from the Mille Lacs sites (Cooper 1965; Johnson 1984, 1985). Milner (1999) also contrasts the northern fortified villages with Mississippian sites, where palisades generally show a greater degree of planning and maintenance. This contrast is also seen is overall settlement size, with the Mille Lacs villages notably smaller than contemporary Oneota sites to the south.

Some of the postmolds excavated at the Cooper and Wilford sites contained preserved wood, emphasizing the relatively recent date of palisades. Posts with preserved wood were also found at the Griffin site (Figure 58). It is important to remember in further analyses of the documentation from these excavations, however, that each site area also contains a historic farmstead component (Hanson 1999).

While it can be assumed that the palisades at the Lake Ogechie sites were constructed for purposes of defense, the specific nature of the perceived threats is not known. After all, ...

> ... people in the Eastern Woodlands were being killed by their enemies for many thousands of years before the threat of attacks forced them to erect walls around their settlements, which first took place late in the first millennium A.D. (Milner 1999:118).

It seems most likely that the increase in warfare during this period is an outgrowth of Oneota expansion from the south. There is an increase in the number of palisaded sites on the northern Mississippian frontier during the period of A.D. 1350 to 1500, and a more dramatic rise between A.D. 1500 to 1650. In contrast, the number of palisaded Mississippian sites stays roughly equal throughout the period (Milner 1999:123). The likelihood of the Oneota being the potential cause of this strife adds an interesting dimension to Mille Lacs archaeology, as increasing Oneota influence is a classic trait of both the Shakopee and Bradbury phases (Gibbon 1995, 1999).

The Bradbury Phase:

The interaction of cultures evident in the Bradbury Phase is the very reason for the first archaeological inquiry in the Mille Lacs region by Jacob Brower and others more than a century ago. Defining features of this phase are Ogechie ceramics (a continuation from the Shakopee Phase) and French trade goods. Sandy Lake ware also persists into the Bradbury Phase, but appears to be exclusively shell tempered, and bears more obvious similarity to Oneota ceramic styles (Birk and Johnson 1992; Johnson 1984, 1985).

The connection of Ogechie, Sandy Lake and French artifacts was documented by excavation of Cooper Mound 1 (Lothson 1972) and other burials in the Cooper habitation site. French artifacts are also present at the Wilford site (Birk and Johnson 1992; Aufderheide et al. 1994; Anfinson 1980). These finds linked the Mille Lacs archaeological record with the writings of Father Hennepin and other French explorers, confirming the ascription of the Late Prehistoric Mille Lacs villages to the Mdewakanton Dakota (Johnson 1985; Birk and Johnson 1992).

Ogechie Ceramics:

Oneota presence in the Mille Lacs region is signified most clearly by Ogechie ceramics (Figures 59 and 60). The definition of Ogechie as an independent ceramic type is somewhat problematical, due to its close similarities with other Oneota wares. Elden Johnson clearly felt that Ogechie was a local phenomenon within the greater Oneota sphere of influence.

> The name "Ogechie" has been given to the shell tempered, smooth surfaced and lip notched "Oneota" ceramics from sites in the Mille Lacs locality. Ogechie ceramics are locally made except for two funerary vessels which are identical with funerary vessels from the Orr phase Hogback site in extreme southeastern Minnesota (Johnson 1983:2).

In an early description of the Cooper Mound vessels, Elden Johnson writes, "In type they were like the ceramics of the village and the majority were smooth surfaced, shell tempered, Mississippian vessels" (Johnson 1968:2). Johnson's (1991) later reflections are also instructive regarding his separation of Ogechie from Oneota:

> My earlier definition of a vessel from the Femco Mound (21WL1) as Oneota (Wilford 1970:15-17) is incorrect. It is an Ogechie vessel and is most probably a product of a more westerly Dakota group. That definition, incidentally, was made before I had worked at Mille Lacs and identified Ogechie as a ceramic ware. In one sense I was only partially wrong as Ogechie ceramics are certainly Oneota-like and Oneota-derived. I have, in fact, frequently described the protohistoric Mille Lacs complexes as "Oneota with wild rice" or "Oneota without maize" (Johnson 1991:5).

In many ways, the problematical definition of Ogechie is a remnant of growing pains from redefinition of the Orr Focus into the Orr Phase (Henning 1970), as described by Benchley et al. (1997). Mille Lacs is at the northwestern frontier of the Oneota world (Figure 61), although other Oneota-like archaeological components are known from as far afield as Manitoba. Nevertheless, debate as to whether Ogechie and the Bradbury Phase represent a "true" Oneota manifestation or an area of heavy Oneota influence (e.g. Hollinger and Benn 1998; Hall 1991; Henning 1998a, 1998b; Gibbon 1995) will likely continue for the foreseeable future.

Subsistence:

The general subsistence mode for the Late Prehistoric Period was described above. Several findings specific to the Bradbury Phase deserve mention here, however. Continued heavy reliance on wild rice during this phase is clearly indicated by floral analysis of the Wilford site (Figure 46), and phytolith analysis of food residues from an Ogechie vessel from Cooper Mound 1 (Thompson 2000). Tobacco and corn are also present at the Wilford site in small amounts. The tobacco, at least, and squash appear to have been locally cultivated (Bailey 1997; Johnson 1985; Schaaf 1981). The presence of scapula hoes (Figure 62) at the Cooper site further confirms garden horticulture during the Bradbury Phase. This may have had its origins in the Shakopee Phase, if not before. Cooper and Johnson (1964), for example, describe garden beds associated with the Sandy Lake component at the Altern site in western Wisconsin.

Bison hunting during this phase by the Mille Lacs Dakota is documented by Hennepin (1938), although his writings do not include the hunt itself. Bison bone has been found at the Kathio State Park sites, although it is believed to be underrepresented due to the great distance between Mille Lacs and the kill sites (Whelan 1990; Johnson 1985). It is interesting to note that Hennepin was hungry through much of his time among the Dakota. His stay was in the spring and food was apparently scarce. His meals consisted mainly of wild rice and smoked fish roe, and were served on bark dishes.

Structures:

As noted above, it is difficult on the basis of extant documentation to separate the Mille Lacs house features of the Shakopee and Bradbury phases. Two particularly large house floors have been excavated at the Wilford site (Fristad 1975), however, and it seems likely, although by no means certain, that some of these can be attributed to the Bradbury Phase (Figure 63). The living floor of one house at the Wilford site, for example, contained notable concentrations of

Sandy Lake ceramics and smaller amounts of Ogechie, although St. Croix, Kathio and Onamia sherds were also present. Other artifacts included a grinding slab, a catlinite pipe and one French trade bead. The excavations, while extensive, did not reveal enough of the houses to document their full dimensions. It is tempting to suggest correlation of these structures with Johnson's (1962) ethnographic description of Eastern Dakota bark houses.

French Artifacts:

French trade goods are a defining trait of the Bradbury Phase. Honey-colored French gunflints (Figure 64, upper left) and Jesuit rings have been found at the Cooper and Wilford sites. Trade knives, axes and brass tinkle cones and other objects are also reported. These artifacts are not representative of French residence at these sites, but rather the increasing contacts of the fur trade (Birk and Johnson 1992; Johnson 1984, 1985; Butcher-Youngans 1980; Anfinson 1980).

The Battle of Kathio:

The Bradbury Phase ends with the abandonment of Mille Lacs by the Dakota. This historical event has been the cause of much controversy, and accounts of the Battle of Kathio clearly fascinated early scholars such as Brower. While it is true that the Dakota and Ojibwe were enemies and had many conflicts, a major battle at Mille Lacs is not supported by present archaeological or documentary evidence. The main component of the battle story, burning Dakota houses by dropping powder through the smoke hole, would create many highly visible archaeological features. Furthermore, the French at the time kept close records of any conflict between the Ojibwe and Dakota, no matter how small. This was a matter of economic importance to the fur trade. Minor skirmishes are reported for the years of the middle eighteenth century, so a full three day battle would surely have been noted. It is possible that the Dakota and Ojibwe movements were more a result of greater historical trends. The Dakota already had strong connections with the prairies to the south and west (e.g. Johnson 1984; Anderson 1997; Butcher-Youngans 1981). Whatever the cause, the displacement of the Dakota by the Ojibwe marks the end of the Late Prehistoric Period, and brings us to the realm of historical archaeology.

CHAPTER 7 - OJIBWE AND EUROAMERICAN HISTORICAL ARCHAEOLOGY

Historical archaeology is a largely unexplored area of research in Mille Lacs archaeology, but it is gaining in prominence. Archaeological sites from this period can be ascribed to the Ojibwe after approximately A.D. 1750, and to Euroamerican loggers and settlers starting in the middle of the nineteenth century (Figure 65). As will be seen, the boundary between prehistoric and historical archaeology is anything but distinct.

The transition from "prehistoric" to "historical" archaeology has always been a subject of major archaeological interest, because the abandonment of prehistoric material culture (such as pottery and lithics) in favor of metal objects and other trade goods is a milestone in the study of material culture. Another reason is that the transition seems to have occurred so quickly that it is not visible in the archaeological record. After all, the Bradbury Phase should probably be considered the start of historic archaeology at Mille Lacs. The Dakota lived in a traditional way at that time, however, with few trade goods, and the French did not establish permanent settlements here.

In considering this transition, it is interesting to note the different ways that European objects were accepted by the people of Aquipaguetin's band. Father Hennepin (1938) tells of the value placed on his robes and other clothing by the Dakota, some of which was appropriated to wrap the bones of one of Aquipaguetin's ancestors. Other objects the French explorers also carried were prized by the Dakota. A notable exception is an iron kettle with lion claw feet, which the Dakota women hung from a branch without touching it, saying that they would not enter a lodge if the kettle was inside. On the other hand, Hennepin used a clay pot given to him by the Dakota, until it broke at a campsite during his voyage down the Mississippi River.

Another perspective on the replacement of native technology is provided by a story told by Mille Lacs elder Maude Kegg about her childhood in the early twentieth century. The story is about Maude as a little girl and her grandmother going to help weed a neighbor's garden. An event that occurred during their walk through the woods is quoted here.

> As we walked along, we came across a little lake. That lake was small. There was a duck there, a mallard, and she [Maude's grandmother] picked up a stone and hit it. She killed it. She was very happy that she killed the duck, and she went and got it. It wasn't very far out in the lake, but just close. Then right there she plucked the duck, built a fire, and singed it.
>
> "Oh, Naawakamigook, we're going to eat," the old lady, Gitchi-aakogwan, said after she got through singeing it. "Oh no, we haven't even got a knife along," she said. "Look around there for a sharp stone," she told me. I couldn't spot any. I didn't know what sort of stone I was looking for. Pretty soon, she stood up, went to the shore, and started looking around right along there. Then she started noisily pounding on a stone. Then she came over. All of a sudden that stone was real sharp. That's what she used to cut up the duck which she cooked in the little pail she was carrying.

> Oh boy, we had a big dinner. The soup was delicious with the bread we'd packed for lunch. Then we left (Kegg 1991:59-61).

This story is important because it demonstrates the persistence of native lithic technology for more than 200 years after the Fur Trade, despite the near-invisibility of the transition in the archaeological record. It also describes modern people doing things they are not supposed to do, such as grandmothers killing ducks with rocks, wading in lakes, flintknapping, and cooking lunch over an open fire in the woods. The beauty of the story is the casual way in which it was told, suggesting that Maude's grandmother did things like this all the time. It also illustrates the overlap of two "traditions" of material culture. A metal knife was the best tool for the job at hand, and would normally have been used, but since they didn't have one she made a stone knife quickly and easily. In Maude's own experience metal tools were always available, so lithic technology was not familiar to her. This story is a time capsule. It captures the loss of indigenous technology from one generation to the next, but at a much later date than is assumed by many archaeologists.

The Mille Lacs Ojibwe:

The Ojibwe are a people of the eastern Woodlands. Their arrival at Mille Lacs was end of a long migration that spanned several centuries. Ojibwe legend tells of their origin on the Atlantic seaboard and their travels westward following visions of the sacred Megis shell. Their arrival at the Great Lakes brought them into conflict with the Dakota, and for many years the principal Ojibwe settlement was on Madeline Island in Lake Superior. This location was chosen primarily for protection, but over many decades they continued to push the Dakota westward, colonizing northern Wisconsin, Fond du Lac, the Mississippi Headwaters and finally, Mille Lacs (Buffalohead and Buffalohead 1985; Warren 1985).

Archaeologically, Ojibwe components have been noted at many sites in the Mille Lacs area but have received little attention aside from the burials at Vineland Bay, Petaga Point and Strawberry Hill (Dickenson 1968; Bleed 1969; Aufderheide et al. 1994). Ojibwe historical archaeology holds much promise for the definition of settlement patterns and changing land use around the Mille Lacs Locality, throughout the transition into the Reservation period. Study of resource procurement sites, such as ricing and sugar camps, is a fascinating topic in and of itself, and also holds promise for the application of such findings in interpretation of prehistoric sites (e.g. Holman 1984).

Some Ojibwe settlement sites are shown on Brower's *Archaeologic Chart of Mille Lac* (Brower and Bushnell 1900), notably on the west and south shores of the lake at Wigwam Bay, Shah-Bush-Kung Bay, Cormorant Point, Portage Bay, Cove Bay, Mazomani Point, and in the vicinity of Wahkon and Isle (Figure 7). Of these, continued residence has occurred in the Vineland Bay area and at Cove Bay, despite attempts at removal of all the Mille Lacs Ojibwe to the White Earth Reservation (Buffalohead and Buffalohead 1985). The nature of occupation at some of these sites has been documented through recent ethnohistoric investigations by Bruce White (2000), notably in the vicinity of Cove Bay and on the western shore of Lake Onamia.

Ricing Sites:

Ricing jigs and other pits are ubiquitous features of many Mille Lacs sites in Kathio State Park and elsewhere. Excavation into these features at the Cooper site on Lake Ogechie, the Pit site on Lake Onamia, and at the Roll-in Ricing Pits on the west shore of Mille Lacs Lake have produced historic artifacts, some as recent as the middle twentieth century (Johnson 1985; Mulholland et al. 1993; Peterson 1982).

A related feature type at many Mille Lacs sites is the result of seed parching. These features are generally oblong (ca. 2x.5 meters) and have red/orange coloration of the soil. The edges are amorphous and contain concentrations of charcoal. Bleed (1969:7) describes a "rice-parching ring" as "one of the most interesting, if problematical, finds made at Petaga Point." The charcoal lenses in that feature contained charred rice grains and historic seed beads (Figure 66). Wilford (1949) reports a similar feature at the Vineland Bay site (21 ML 7), then known as the Kathio School site.

> At the south end of the trench was a firehearth dug shallowly into the subsoil, and containing charcoal. The earth beneath the charcoal was burned to a reddish color. At the eastern edge was a circular pit, pit 2, whose base was one foot below the floor of level 5. It contained bits of charcoal (Wilford 1949:36).

The Vineland Bay feature contained historic materials, including part of a wood-burning stove. A complete bear cranium was found directly over the feature. The bear skull, if not the entire feature, may be an archaeological reflection of bear ceremonialism pertaining to the Mille Lacs Ojibwe (Mather and McFarlane 1999; Mather et al. 2000).

A series of these distinctive burned red/orange features (Figures 67-70) have recently been excavated at the Crosier Cemetery (21 ML 33) and Van Grinsven (21 ML 37) sites (Mather and Nicholas 2000b, 2000c). None of the features contained historic artifacts, but radiocarbon dates range from the late 1600s into the historic period (Table 3). Paleobotanical analysis by Seppo Valppu (2000) revealed the presence of wild rice and domestic *Chenopodium* in the features, but in small amounts. One wild rice grain from Loucks Feature 12 at Crosier was charred with its husk intact (Figure 71). The soil chroma are interpreted as similar to the firing of pottery, but being an indirect effect of the parching fires. It is possible that the color and configuration of these features reflect the adoption of metal kettles or other implements for parching rice and other seeds (i.e. *Chenopodium*).

Storage pits are present at many Mille Lacs sites as well. They are notably larger and deeper than ricing jigs, but some confusion between the two feature types occurs. The pits at the Ricing site (Streiff 1987), for example appear to be mainly storage pits rather than jigs (Rothaus et al. 1999). This is not to say that the Ricing site was not a ricing camp, however. The presence of storage pits can be expected in any area of the seasonal round. Excavation of a storage pit at the Pit site on Lake Onamia is a valuable contribution to the historical archaeology of the Mille Lacs Locality (Mulholland et al. 1993).

Maple Sugaring Sites:

As mentioned above, maple sugaring prior to the historic period has not been recognized archaeologically. This is somewhat ironic because 20th century maple sugar camps are often immediately recognizable (Thomas et al. 1999). Features of these sites include pits and dugouts, and a notable surface distribution of metal and glass objects. Of course, the most obvious traits of these areas are the stands of old growth maple. Within the Mille Lacs Locality, sugar camps have been recorded as archaeological features at Aquipaguetin Island, Cove Bay, and on the Wealthwood shore (Streiff 1987; Mather 1999c; Peterson 1986). There are undoubtedly many more, presumably spanning the transition from early historic subsistence economy to commercialization in the 20th century. Future sugarbush investigations at Mille Lacs will also benefit from a comprehensive contextual study recently completed by the Lac du Flambeau Band of Lake Superior Chippewa in northern Wisconsin (Thomas et al. 1999).

"Indian sugar" and "sugar orchards" are were noted in the General Land Office surveys at Mille Lacs in the mid-nineteenth century at Cove Bay and Mazomani Point (Figure 72), as depicted by Trygg (1969). This record is an example of both the strengths and weaknesses of the documentary historical record. Other sites with known sugar camps are not illustrated, for example, but a wealth of information is still provided, including the locations of trails, villages, farmsteads and other features (Figure 72).

Euroamerican Sites:

Archaeological sites related to early Euroamerican presence at Mille Lacs are primarily related to logging or farming. No Euroamerican cemeteries at Mille Lacs have been the subject of archaeological excavation. Euroamerican components are present at many of the defining sites for the prehistoric period, such as Petaga Point, Cooper, Wilford, Griffin, Aquipaguetin Island and Vineland Bay (Streiff 1987; Rothaus et al. 1999; Hanson 1999). Studies of the historic artifacts for the Cooper and Wilford sites have been undertaken (Butcher-Youngans 1980 and Anfinson 1980, respectively), but in general the archaeology of the historic period has been overlooked in the search for the prehistoric data. We are fortunate, however, that recent (and ongoing) investigations have renewed interest in the farmsteads and other historical archaeology of Kathio State Park. This short period of attempted farming in the post-logging cutover areas will continue to offer unique insights to the settlement patterns and culture of early historic Minnesota (Rothaus et al. 1999; Hanson 1999).

The onset of continuous Euroamerican presence began at Mille Lacs with the beginning of lumbering on the Rum River. This began surprisingly early, prior to the 1837 treaty, with logs from this area being used for the construction of Fort Snelling (Waters 1977). A logging camp with large intact berms has been recorded to the west of Vineland Bay (Streiff 1981). This is potentially the oldest recorded logging site currently known at Mille Lacs. At the opposite end of the logging period, a probable log staging area on the Rum River has recently been investigated at the Larson site (21 ML 41). This site dates to the early 20th century, and contains a house (Figures 73 and 74) and other domestic features (Abel and Mather 2000).

Other historic activities at Mille Lacs have also left their mark on the archaeological record. The Civilian Conservation Corps, for example built many public works around the lake in the 1930s. Their stonework is very distinctive, and is easily recognized in the historic marker for the Battle of Kathio at Vineland Bay, the overlook at Garrison (the fiberglass walleye was a later addition), and in numerous small bridges along T.H. 169. Archaeological remains of one of the camps, CCC Camp SP-15, are partially preserved within the Mn/DOT right-of-way immediately south of Garrison (Mather et al. 1995). No building remnants are visible at the site, but the effects of the structures on the now-mature trees are evident. Other features, including ornamental stonework, are also visible. It seems likely that these cobbles originally lined a pathway or parade ground. Jan Streiff's (1987) map of the Vineland area shows another CCC camp at that location. A chimney and other visible structural features related to the camp are reported at that location by Clouse (1992, 1993). As described above for the historic-era Ojibwe sites, oral history interviews have much to offer in the archaeological study of Euroamerican farmsteads, logging camps, CCC camps, and other sites.

As a final note, the distinction between Ojibwe and Euroamerican historical archaeology can be unclear as well. The built environment can be very complex, and result in the blending of many cultural features. This is illustrated well by Streiff's (1987) documentation of the vicinity of 21 ML 6 on Indian Point. Streiff's map also shows the depth of the archaeological record of Mille Lacs in general, with 2,000+ years of overlapping cultural features in one of the most developed areas of the lake. This blend is also seen in the growth of commerce at Mille Lacs, which presents definite implications for the historical archaeological record as first seen at the Ayers Trading Post on Vineland Bay (Figure 75) and later at Fort Mille Lacs.

CHAPTER 8 – CONCLUSIONS AND FUTURE RESEARCH

In ending this overview of Mille Lacs archaeology, it is appropriate to think back to Jacob Brower and all others who have worked here in the past, and appreciate their many contributions. This century of research also gives us the perspective to realize how much archaeology has changed. For one thing, the excavation of graves is no longer a goal of academic research. Mille Lacs archaeology has evolved from the antiquarian search for the Mound Builders one hundred years ago though the birth and development of archaeology as an academic field in the research of Lloyd Wilford, Elden Johnson, their colleagues and many students. This culminated in the monumental and multidisciplinary Mille Lacs Research Project (e.g. Johnson 1984, 1985; Streiff 1987; Birk and Johnson 1988; Aufderheide et al. 1994). Elden Johnson (1984) wished for a greater involvement of Indian people in Mille Lacs archaeology, and this has certainly come to pass through establishment of the Mille Lacs Tribal Historic Preservation Office and participation of Mille Lacs tribal members in an increasing number of archaeological projects on and off the reservation.

Although it is but one aspect of the Mille Lacs archaeological record, we are fortunate that the link of prehistory and history provided by the Mdewakanton Dakota and Father Hennepin has cast its shadow over most local research. This was the reason for Jacob Brower's (1901; Brower and Bushnell 1900) pioneering Mille Lacs explorations, and it remained prominent in Lloyd Wilford's (1944, 1955) definition of the Mille Lacs Aspect in the middle twentieth century. Archaeological definition of Eastern Dakota ancestry was a primary goal for Elden Johnson and the University of Minnesota's Mille Lacs Research Project, culminating in an archaeological framework specific to the Mille Lacs Locality (Johnson 1984). Definition of the Bradbury Phase through excavations at the Cooper and Wilford sites (Johnson 1984, 1985; Birk and Johnson 1992; Aufderheide et al. 1994; Lothson 1972) has come a long way toward establishment of the archaeoethnicity (Mason 1997b) of the Eastern Dakota. The "Pre-History of the Sioux" remains a primary topic today for Guy Gibbon (1999).

The scope of archaeology itself has also broadened to a considerable degree. This is very apparent if one considers that many Mille Lacs archaeological sites, such as CCC camps, farmsteads, logging camps, ricing and maple sugaring camps, are younger than the first archaeological exploration of the area. In fact, intact archaeological remains of one of Brower and Bushnell's camps would probably be eligible for the National Register of Historic Places, if one could only find and recognize them. In the last decade alone the scope of the documented Mille Lacs archaeological record has broadened to a considerable degree, particularly in regard to the Early Prehistoric Period. This is best seen in the Late Paleoindian tradition, starting with the discovery and subsequent excavation of the Bradbury Brook site (Malik and Bakken 1993, 1999). Many of the recent advances in Mille Lacs archaeology have occurred within the realm of Cultural Resource Management, conducted along the highways, in Kathio State Park, and increasingly, for development projects undertaken by the Mille Lacs Band of Ojibwe.

Elden Johnson's multidisciplinary approach to the archaeology of the Mille Lacs Locality is continued in the present Lake Onamia – Trunk Highway 169 Data Recovery Project (Mather and Abel 2000). This has been a great benefit to the current archaeological overview, as no

single researcher can possess the depth of knowledge required to address all the complexities of the Mille Lacs archaeological record. Current research by the Archaeological Computing Laboratory of St. Cloud State University continues to add new investigative techniques to Mille Lacs archaeology, including remote sensing, satellite imagery and GIS analysis (Rothaus et al. 1999). Furthermore, their ongoing investigations in historical archaeology and oral history pertaining to the Kathio sites are an invaluable contribution to the archaeology of the locality (e.g. Hanson 1999). These components are of great significance in their own right, and these efforts will establish a renewed understanding of the basic structure of these sites. This, in turn, can set the stage for renewed consideration of the prehistoric occupations.

Finally, a primary goal of Mille Lacs archaeology should be to revisit the artifacts and file data from the Kathio State Park excavations of the Mille Lacs Research Project. These sites, particularly Cooper, Wilford and Petaga Point, are the basis of Johnson's (1984) cultural framework for the locality, but basic levels of analysis have never been completed. This problem is most apparent in regard to the ceramic assemblages, upon which other artifact analyses depend for assignment of cultural components. It can be expected that the data will have suffered from the intervening years since the excavations, but the benefits of having even imperfect data from these sites would be immeasurable. It could be said that the Kathio sites have attained the status of sacred ground in the decades since the Mille Lacs Research Project, but it may ultimately be appropriate to conduct additional excavations. This should not even be considered, however, until detailed analysis of the extant data are completed, thus forming the basis of a focused excavation design with specific research goals.

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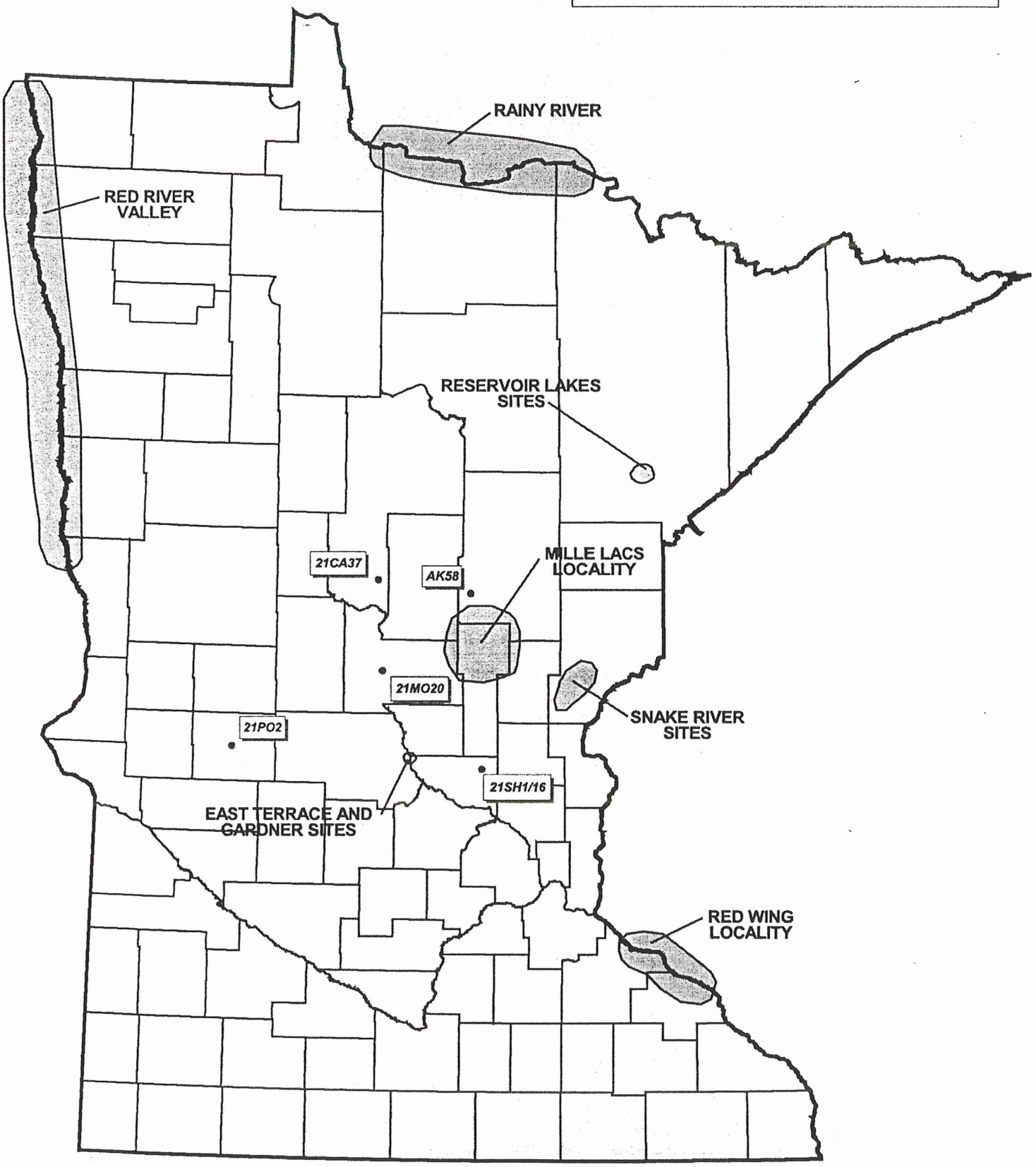
FIGURES

Figure 1. The Mille Lacs Locality from the air, looking northeast along Lake Ogechie to Mille Lacs Lake and its outlet at Vineland Bay. Photo courtesy of the Wilford Archaeological Laboratory, University of Minnesota.

Fig_Airphoto.pub

FIGURE 2
THE MILLE LACS LOCALITY AND OTHER ARCHAEOLOGICAL AREAS



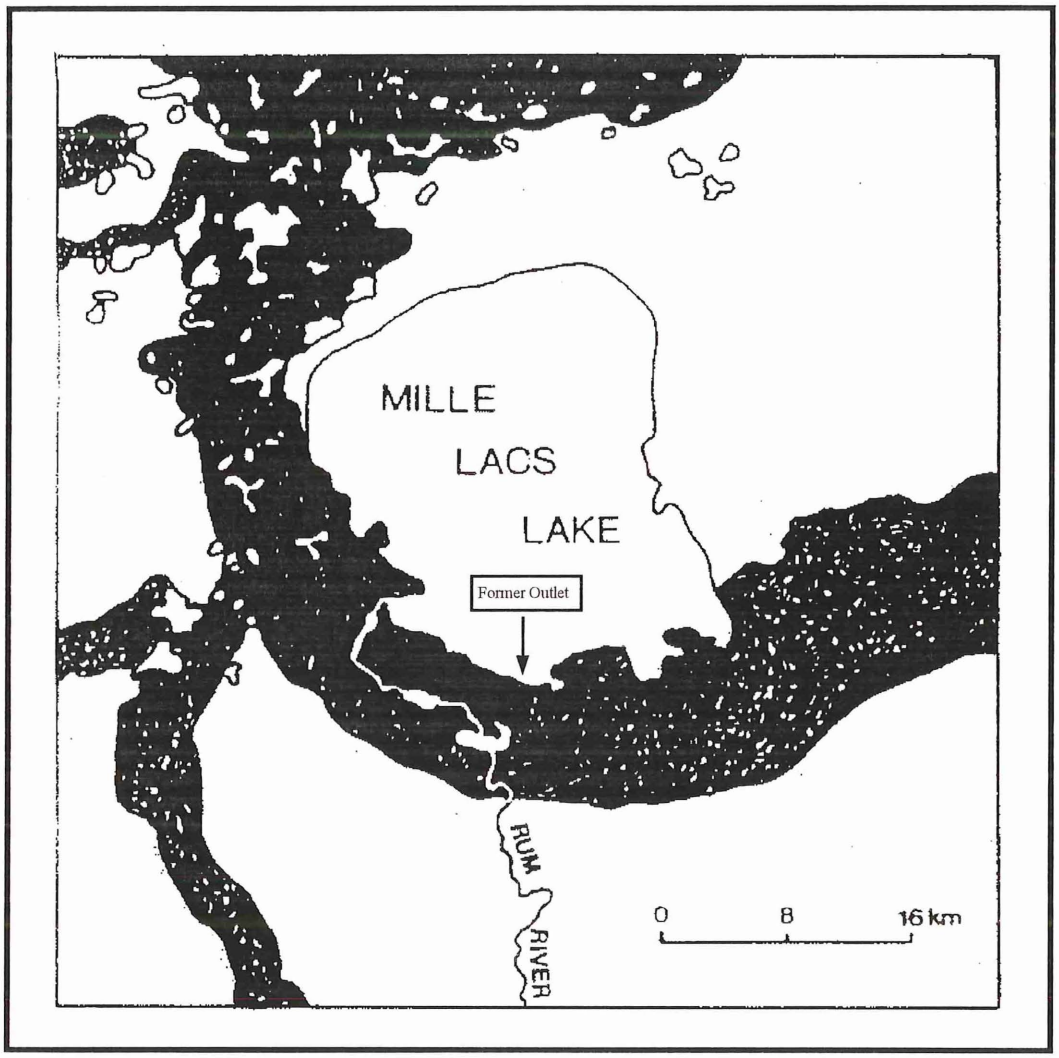


Figure 3. The Mille Lacs Moraine, and location of former outlet to Lake Onamia, from Ojakangas and Matsch (1982) and Anderson (1998).

FigHH.pub

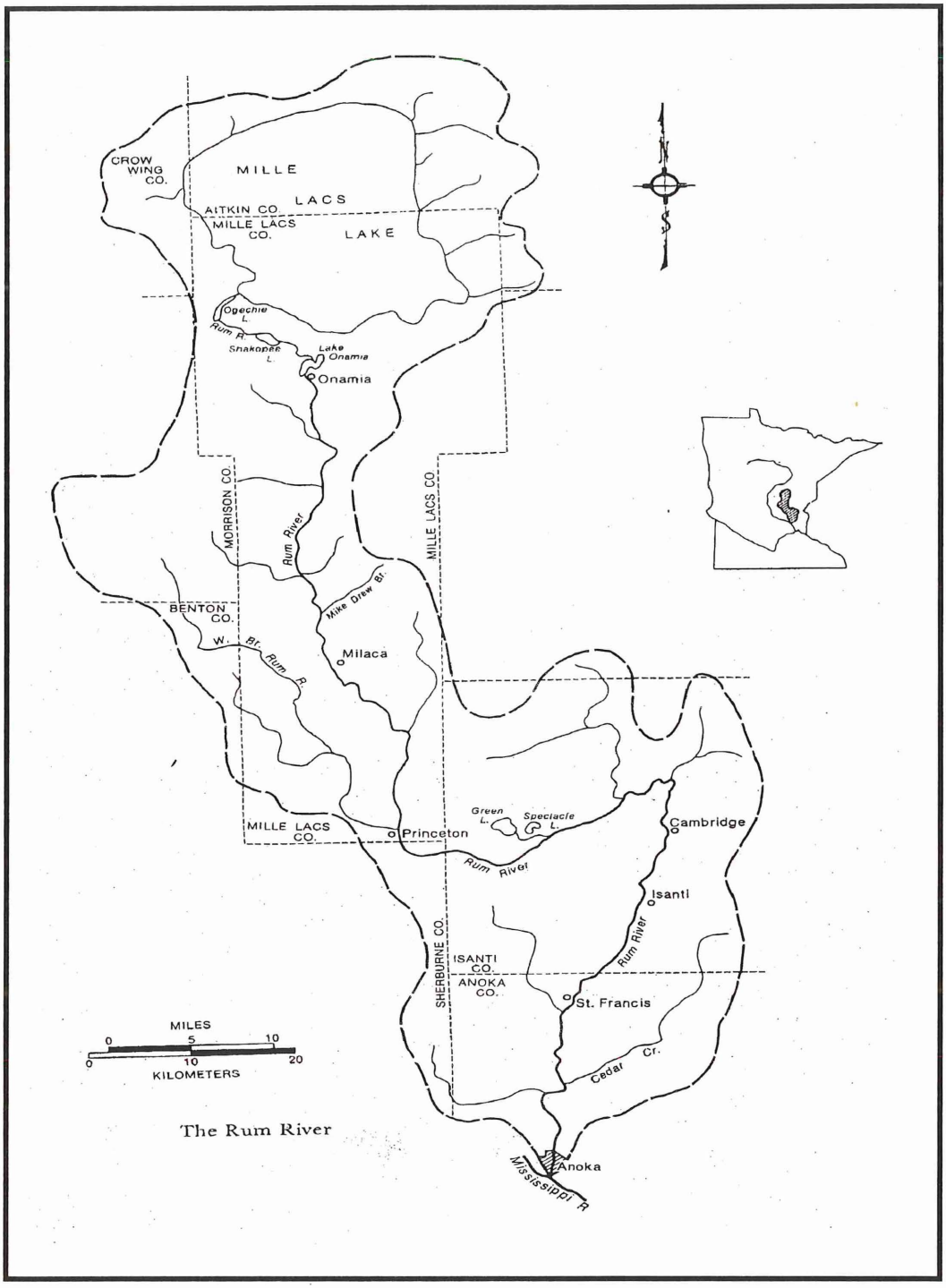


Figure 4. The Rum River watershed, from Waters (1977).

FigLL.pub

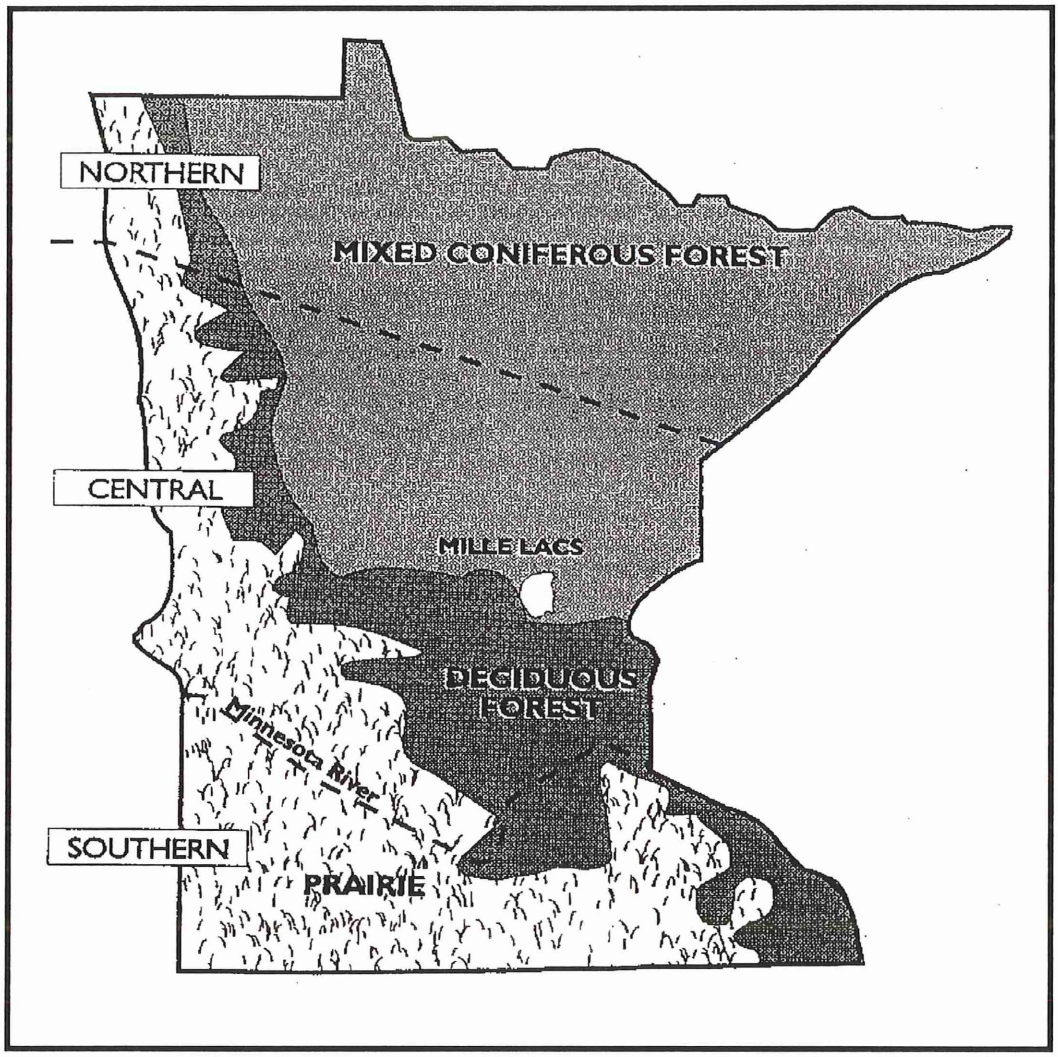


Figure 5. Ecological setting of the Mille Lacs Locality, from Aufderheide et al. (1994).

FigGG.pub

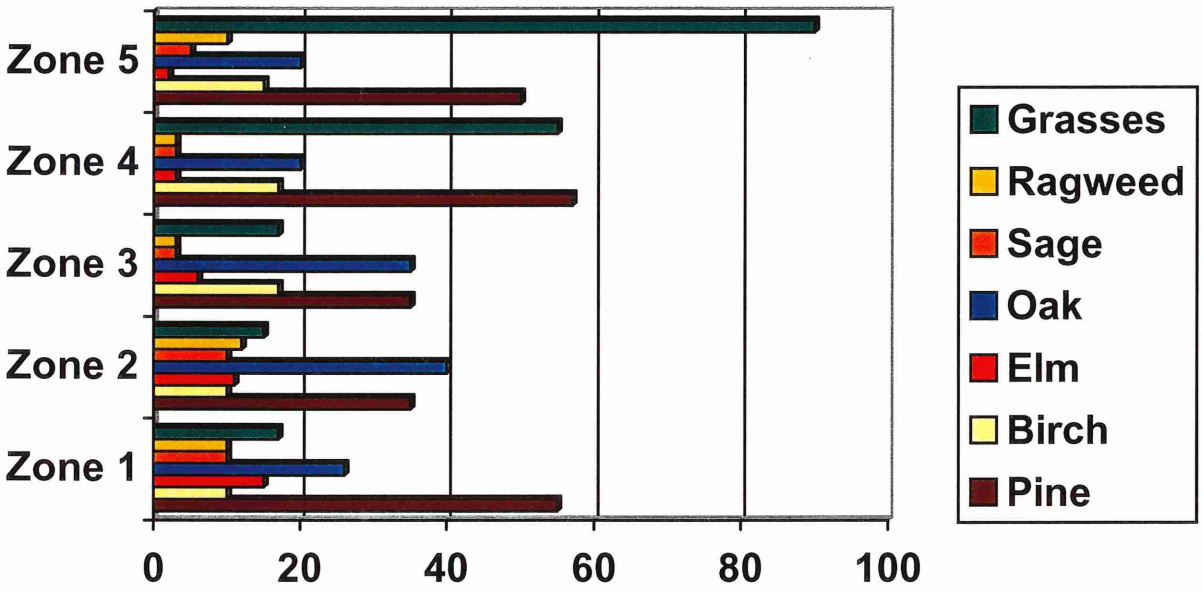


Figure 6: Changes in pollen percentages of selected plants through time, compiled by averaging percentages from each pollen zone. Data from McAndrews (1998).

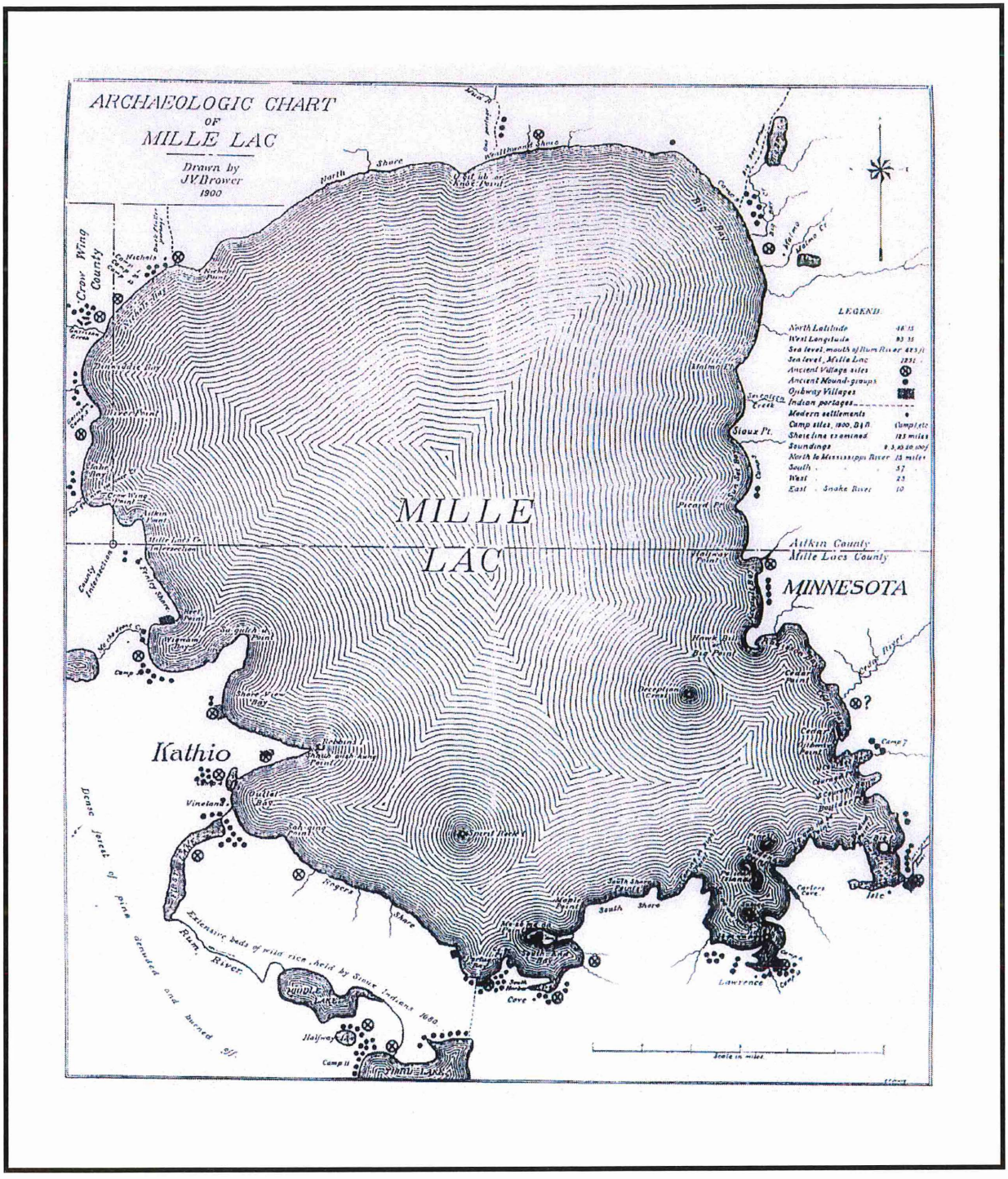


Figure 7. Brower's "Archaeologic Chart of Mille Lac" (Brower and Bushnell 1900).

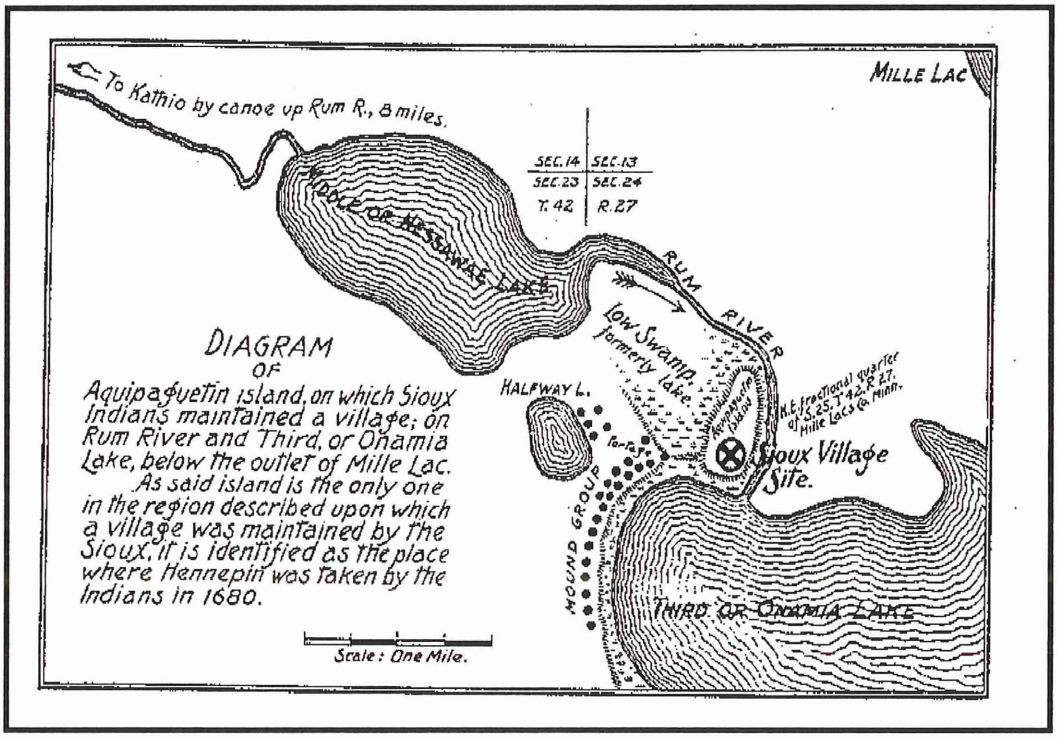


Figure 8. Jacob Brower's exploration of Aquipaguetin Island (Brower and Bushnell 1900).

FigKK.pub

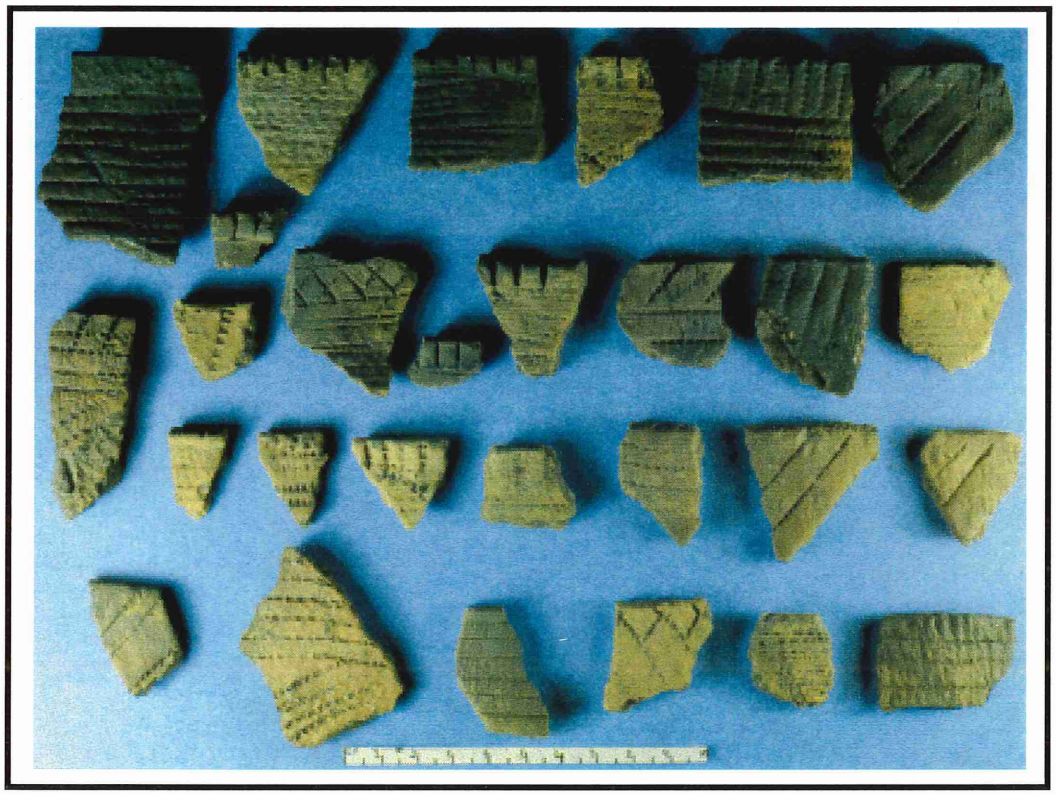


Figure 9. Ceramic sherds from Aquipaguetin Island, one of the type sites for Wilford's (1944) Kathio Focus. Photo courtesy of the Wilford Archaeological Laboratory, University of Minnesota.

Fig_ML2Sher.pub

Figure 10. Leland Cooper at the Cooper site. Photo courtesy of the Wilford Archaeological Laboratory, University of Minnesota.

Fig_LelandM.pub

Figure 11. Elden Johnson and pit feature at the Cooper site. Photo courtesy of the Wilford Archaeological Laboratory, University of Minnesota.

Fig_Elden.pub

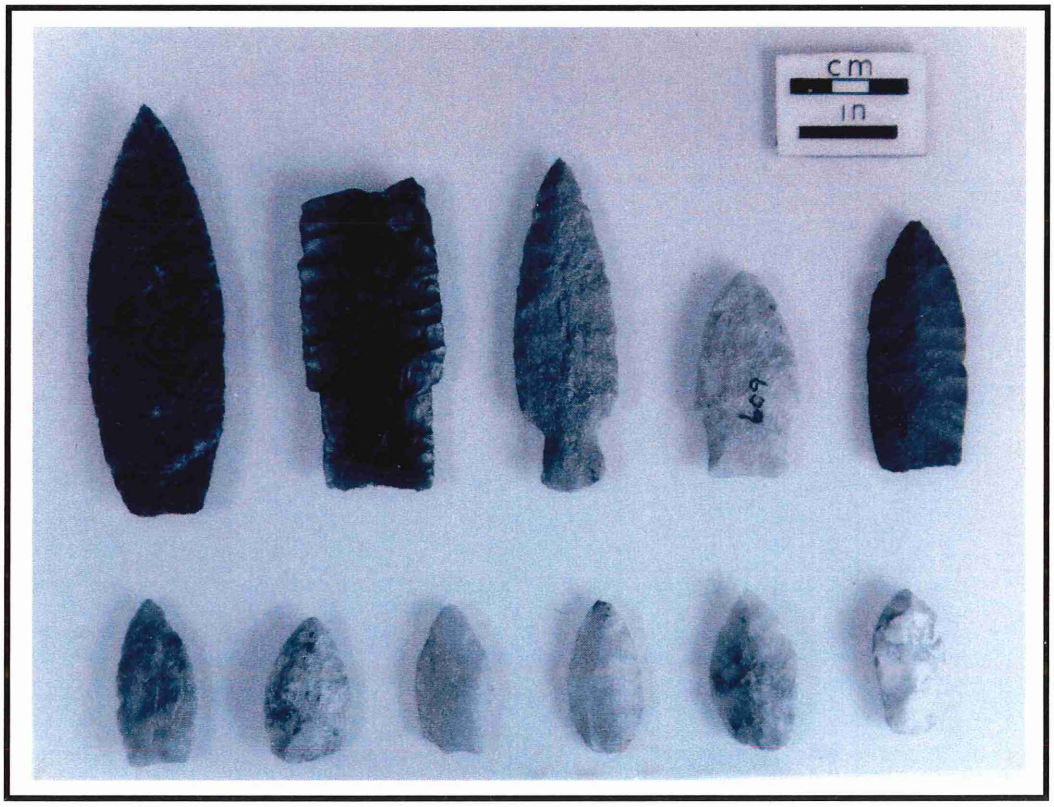


Figure 12. Plano points from the Snake River Valley. Top row, first and second from left: Browns Valley and Scottsbluff. Photo from Caine (1969).

FigPP.pub

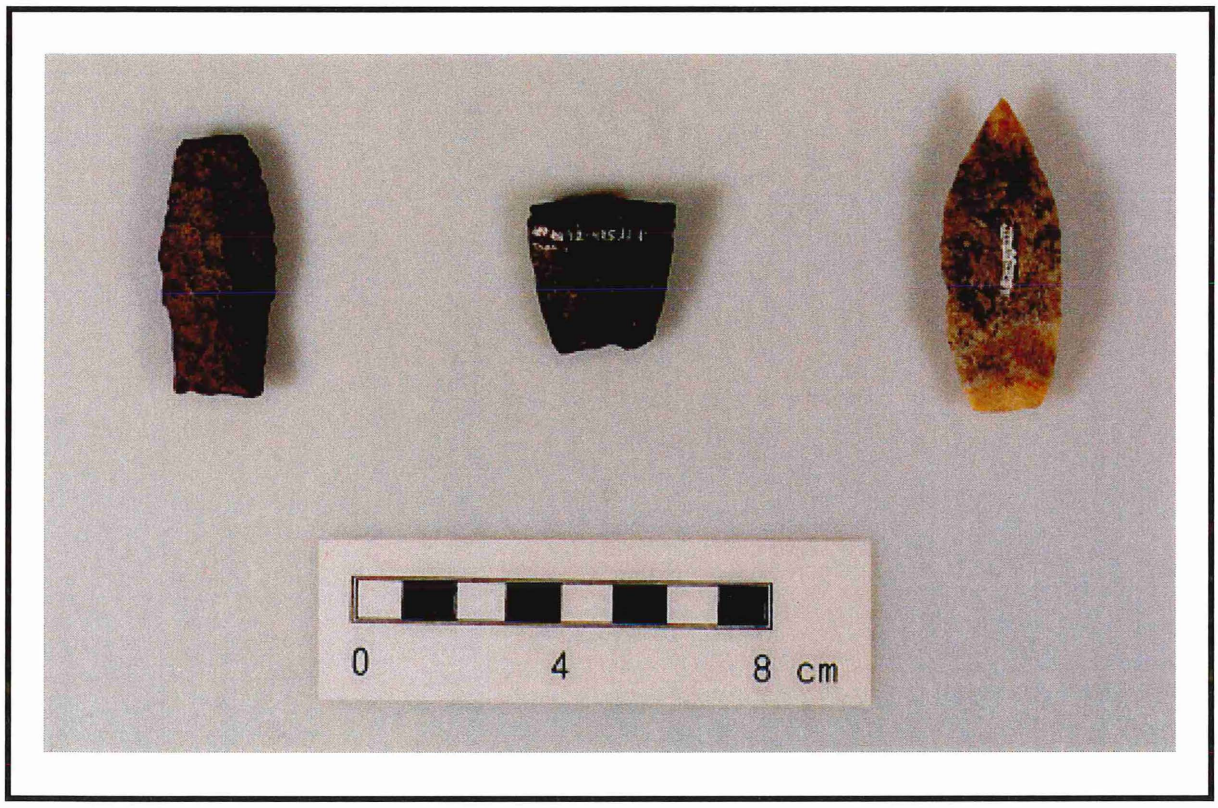


Figure 13. Plano points from the Mille Lacs Locality. Left to right: Scottsbluff-like from the Pike Point Summit site; unnamed Plano from the Rum River Terrace site; Browns Valley-like from the Upper South Harbor site. Photo from the Lake Onamia – Trunk Highway 169 Data Recovery Project.

96506/FigO.pub

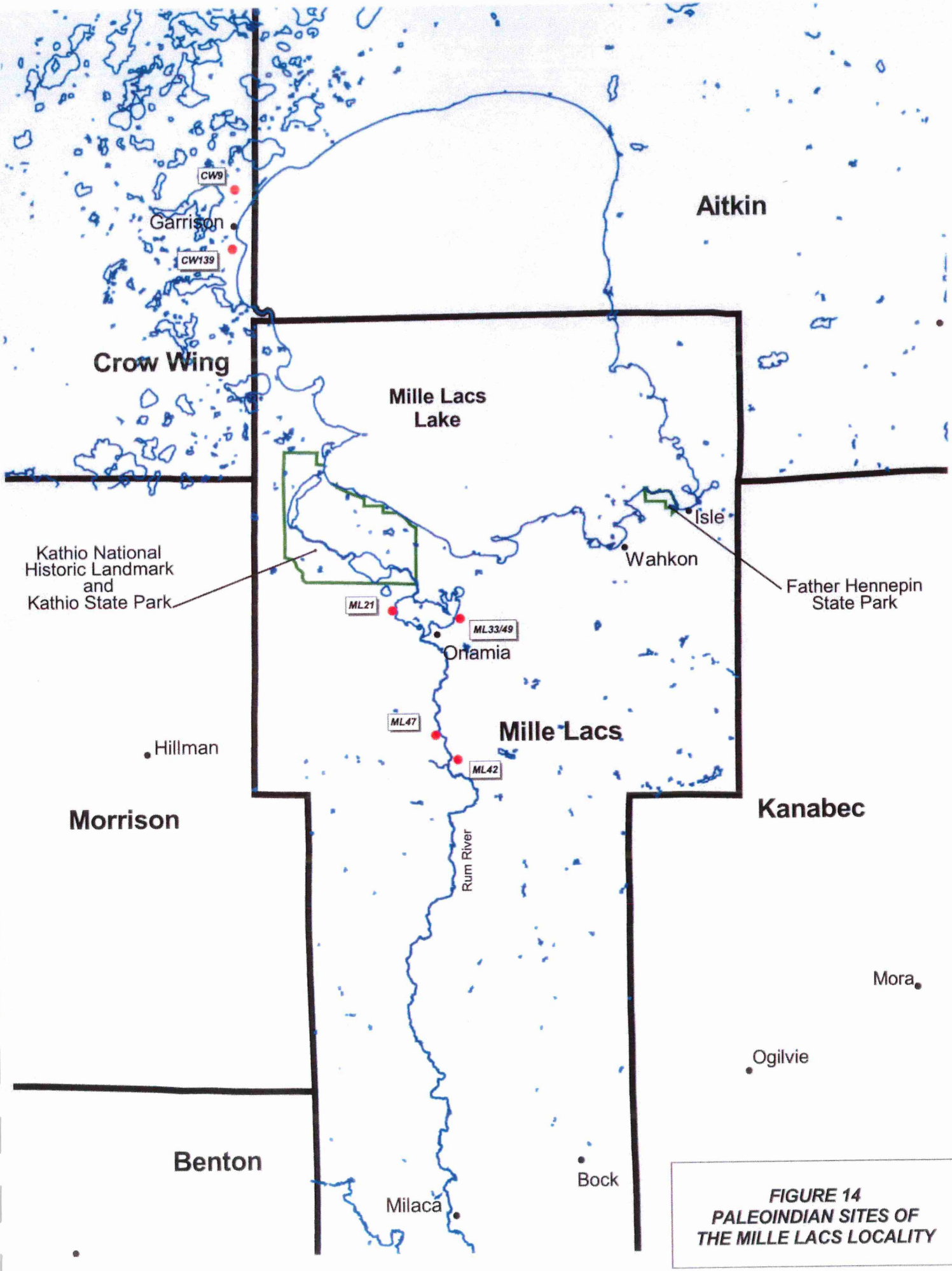


FIGURE 14
PALEOINDIAN SITES OF
THE MILLE LACS LOCALITY

Figure 15. Phase III excavations at the Bradbury Brook site. Photo courtesy of the Minnesota Historical Society.

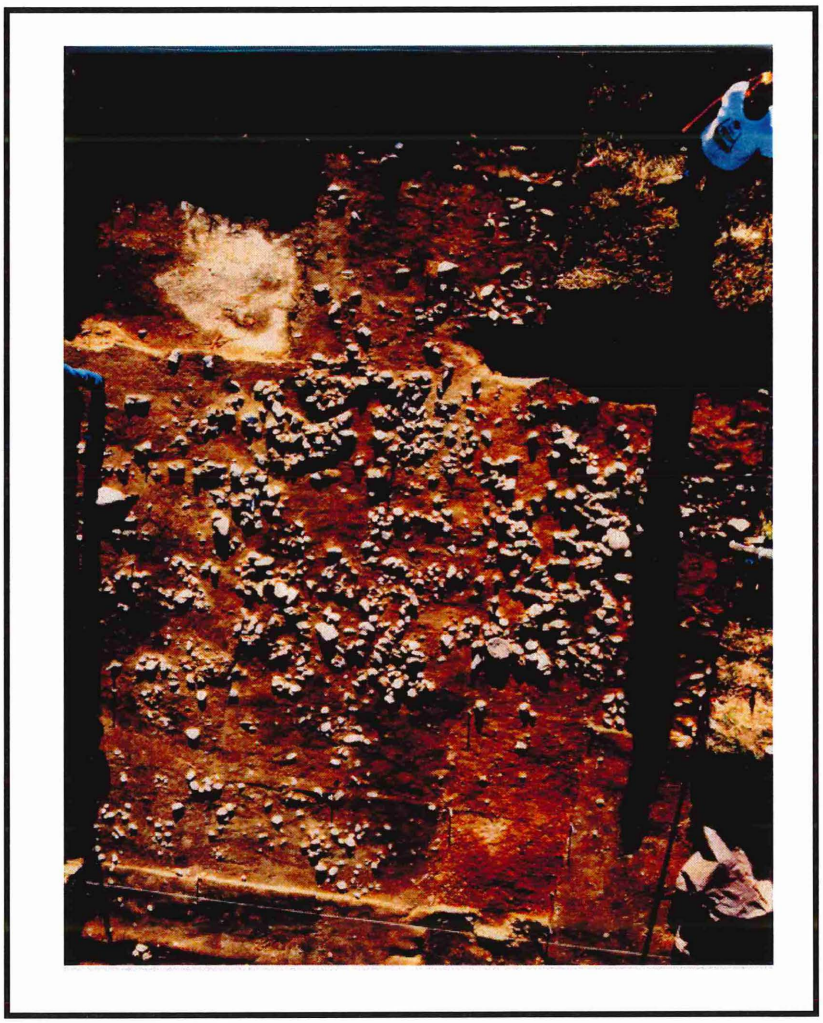


Figure 16. Intact siltstone reduction area at the Bradbury Brook site. Photo courtesy of the Minnesota Historical Society.

Figure 17. Alberta point base from the Bradbury Brook site. Photo courtesy of the Minnesota Historical Society.

Figure 18. Reverse of Alberta point base showing patination characteristic of K-Pattern siltstone assemblages. Photo courtesy of the Minnesota Historical Society.

Figure 19. Late stage bifaces from the Bradbury Brook site. Photo courtesy of the Minnesota Historical Society.

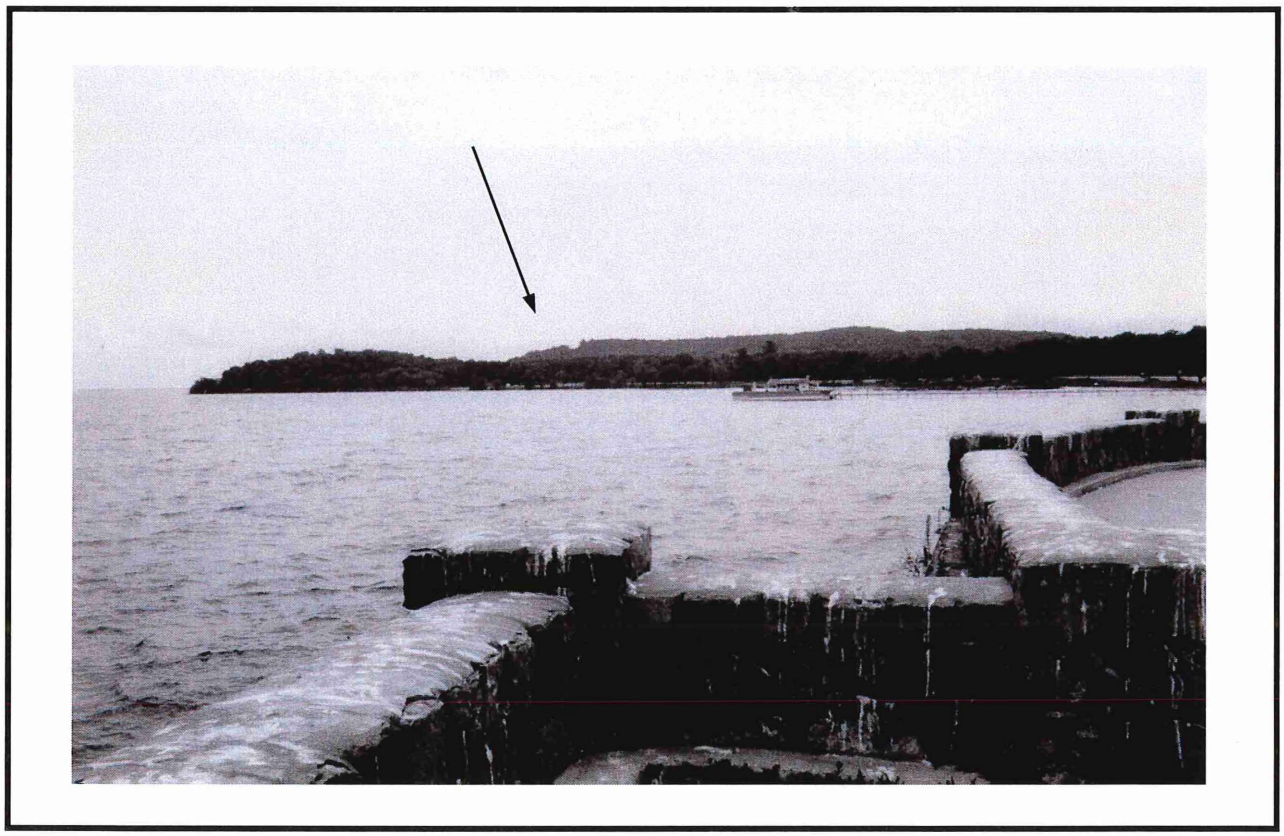


Figure 20. Landscape position of the Pike Point Summit site. Photo from Mather et al. (1995).

96506/FigD.pub

Figure 21. Quartz lanceolate point from the Cunz collection (right). Photo from the Lake Onamia – Trunk Highway 169 Data Recovery Project.

96506/FigE.pub

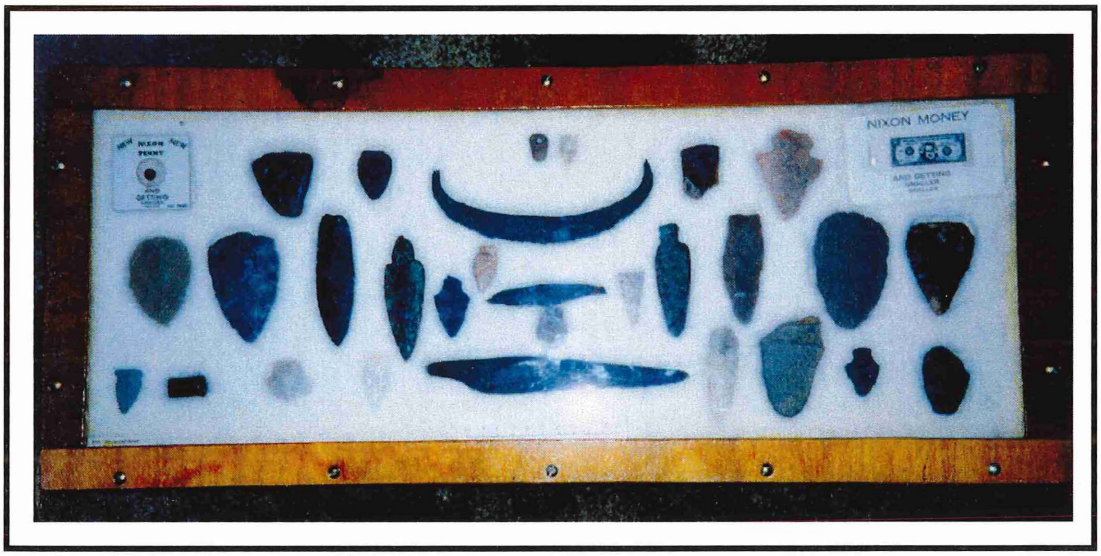


Figure 22. A sample of the Scott collection, including Plano point (left of center) and copper knives, stemmed points and an ulu (grouped at center). Photo from the Lake Onamia – Trunk Highway 169 Data Recovery.

96506/FigC.pub

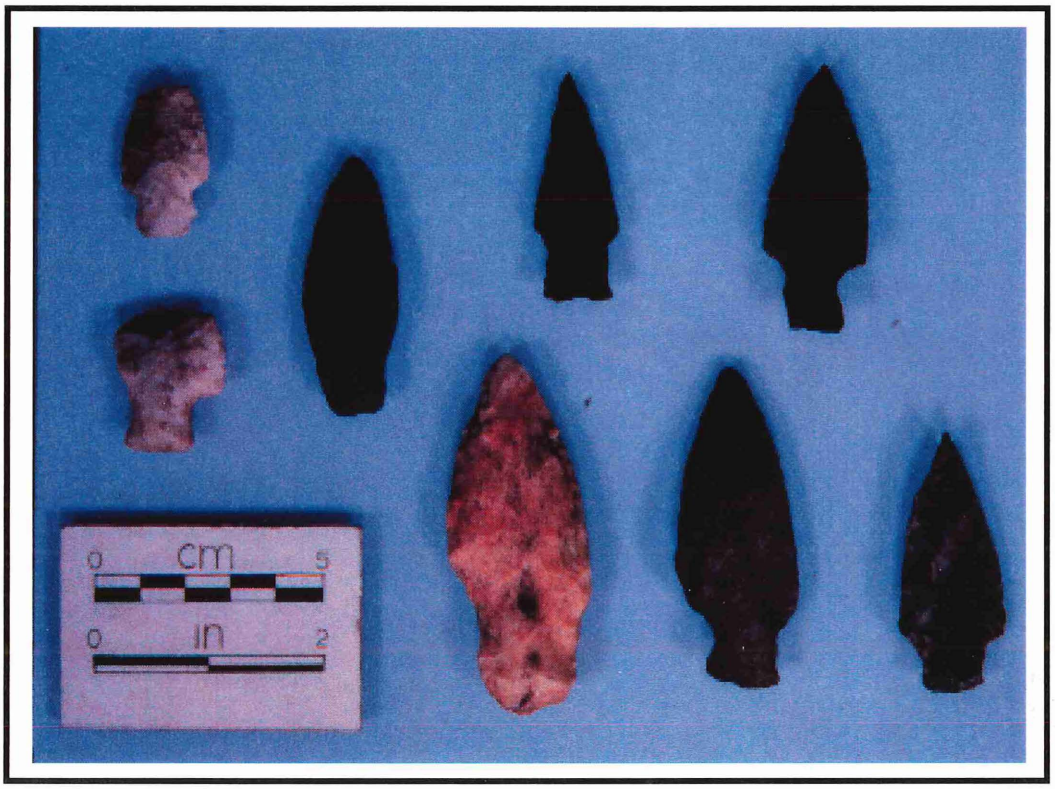


Figure 23. A sample of Archaic projectile points from Petaga Point. Photo courtesy of the Wilford Archaeological Laboratory, University of Minnesota.

Fig_M11POI.pub

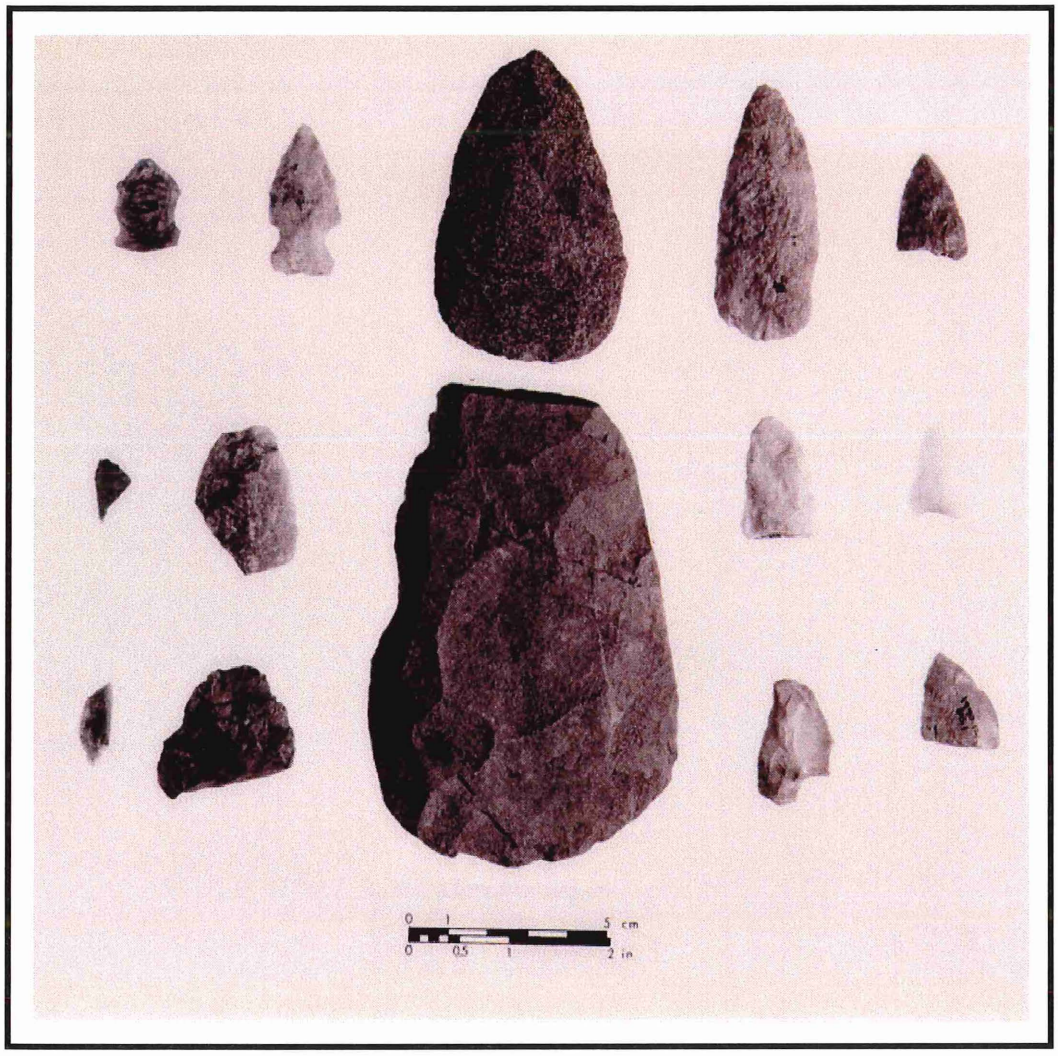


Figure 24. Chopping tools and other lithic artifacts from the Crosier site. Photo courtesy of the Minnesota Historical Society.

FigDD.pub

Figure 25. Copper artifacts from the Snake River Valley. Photo from Caine (1969).

FigQQ.pub

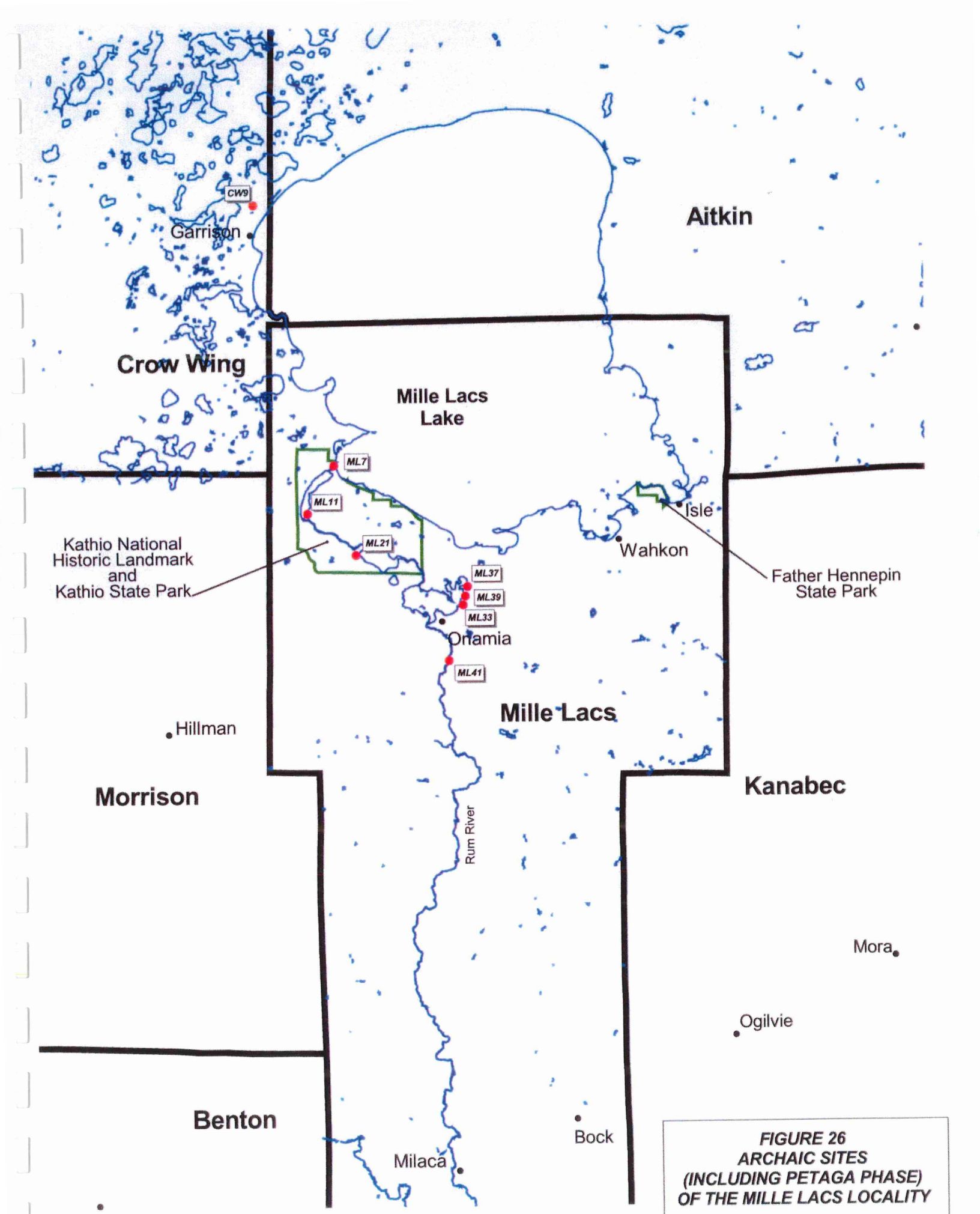


FIGURE 26
ARCHAIC SITES
(INCLUDING PETAGA PHASE)
OF THE MILLE LACS LOCALITY

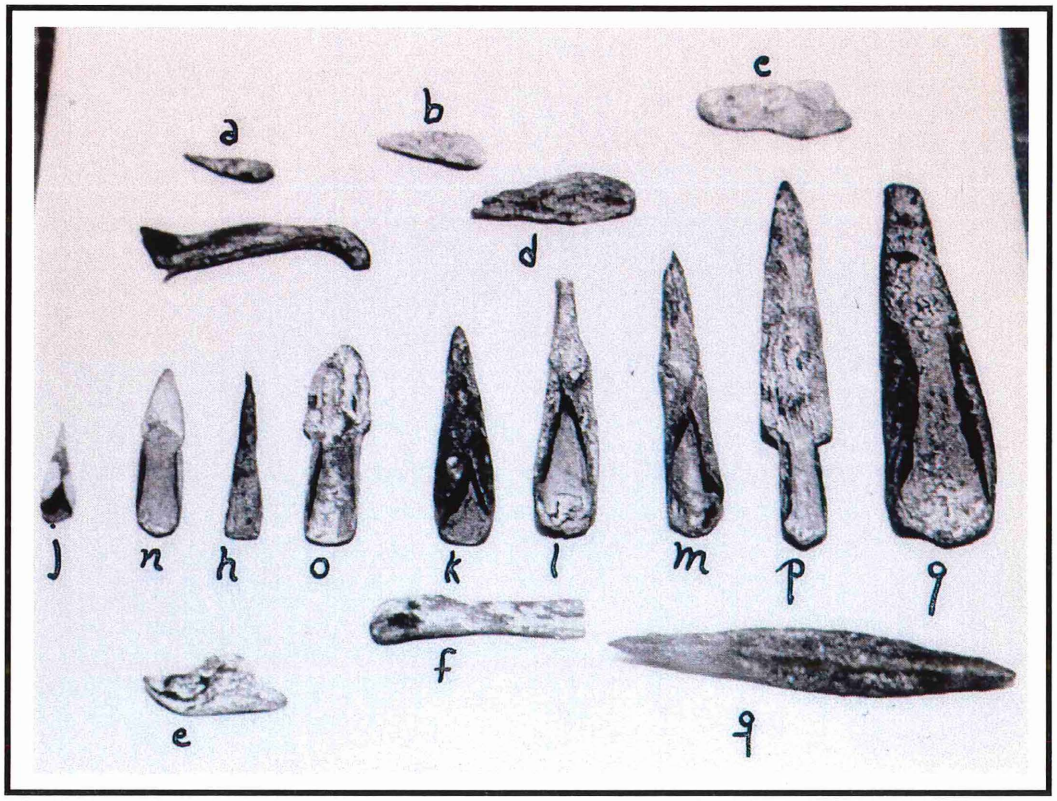


Figure 27. Cooper artifacts collected by the Moore Family. Photo by Monroe Killy, from Bleed (1967).

FigRR.pub

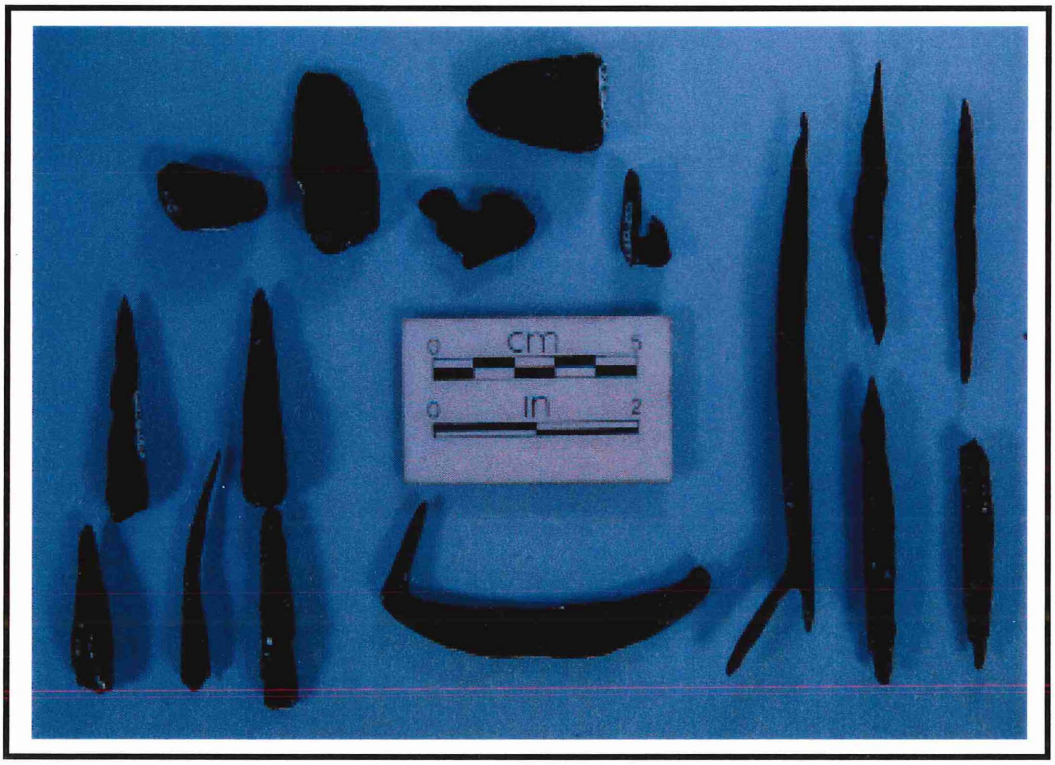


Figure 28. Copper artifacts from the Petaga Point excavations. Photo courtesy of the Wilford Archaeological Laboratory, University of Minnesota.

Fig_Copper.pub

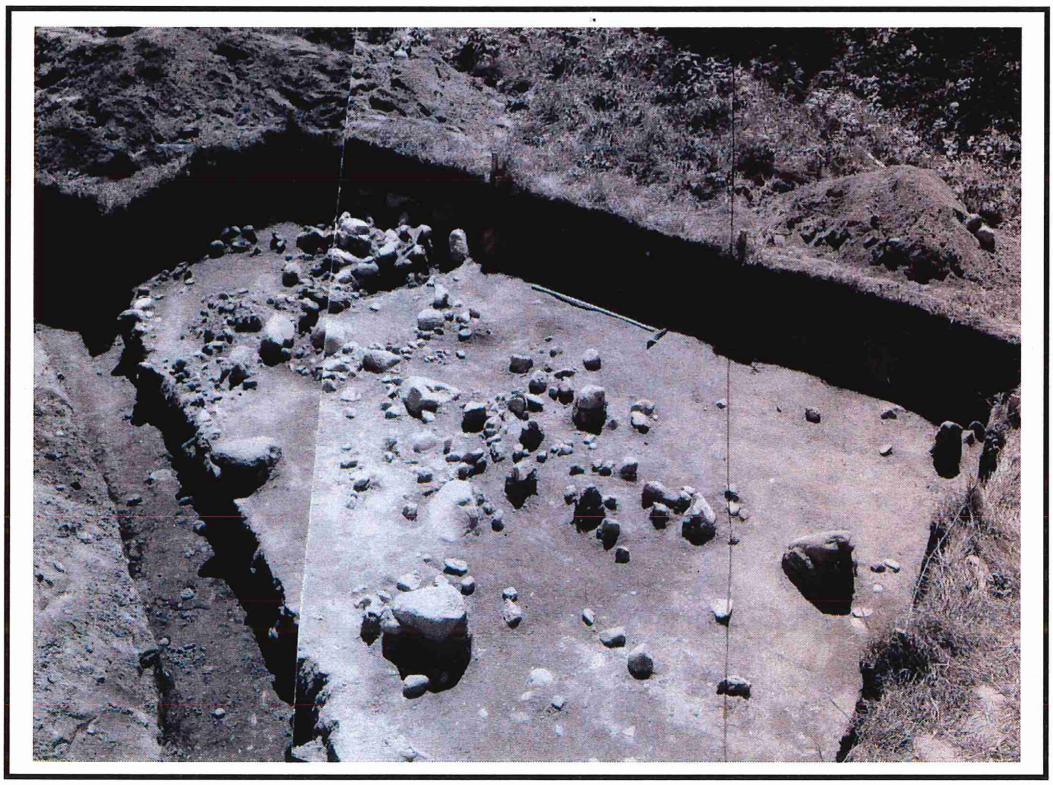


Figure 29. Excavation of possible Archaic structure at Petaga Point. Photo from Bleed (1967).

FigSS.pub

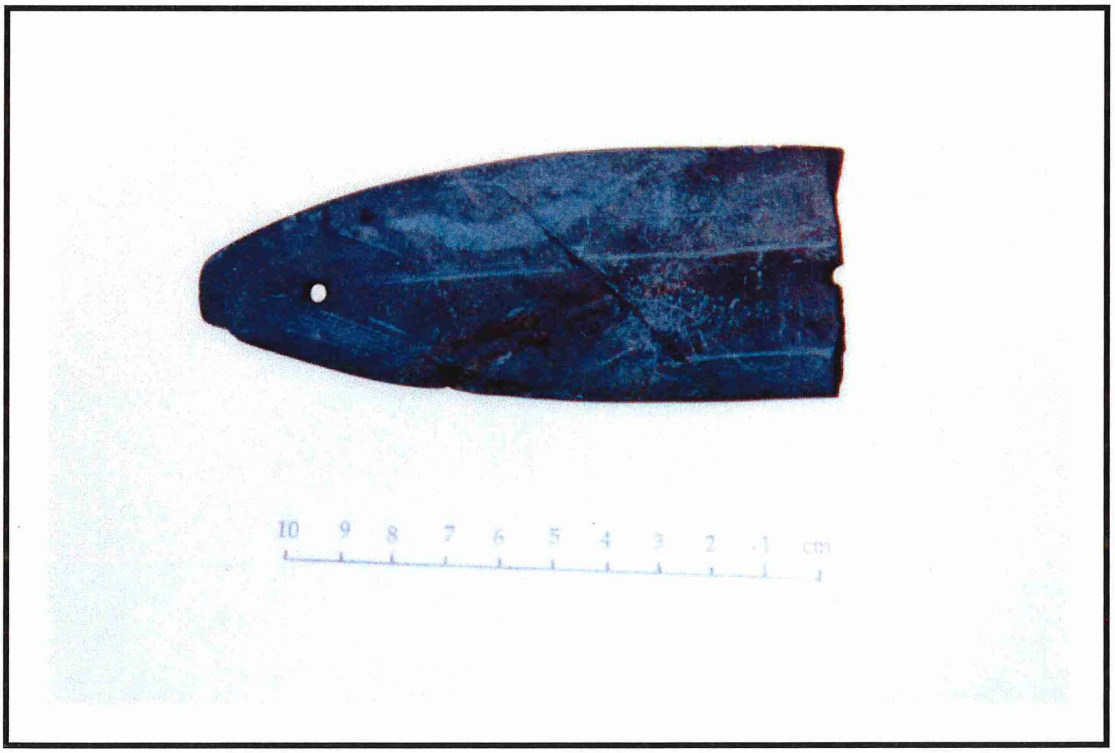


Figure 30. Ground slate gorget from the Cunz collection. Photo from the Lake Onamia – Trunk Highway 169 Data Recovery Project.

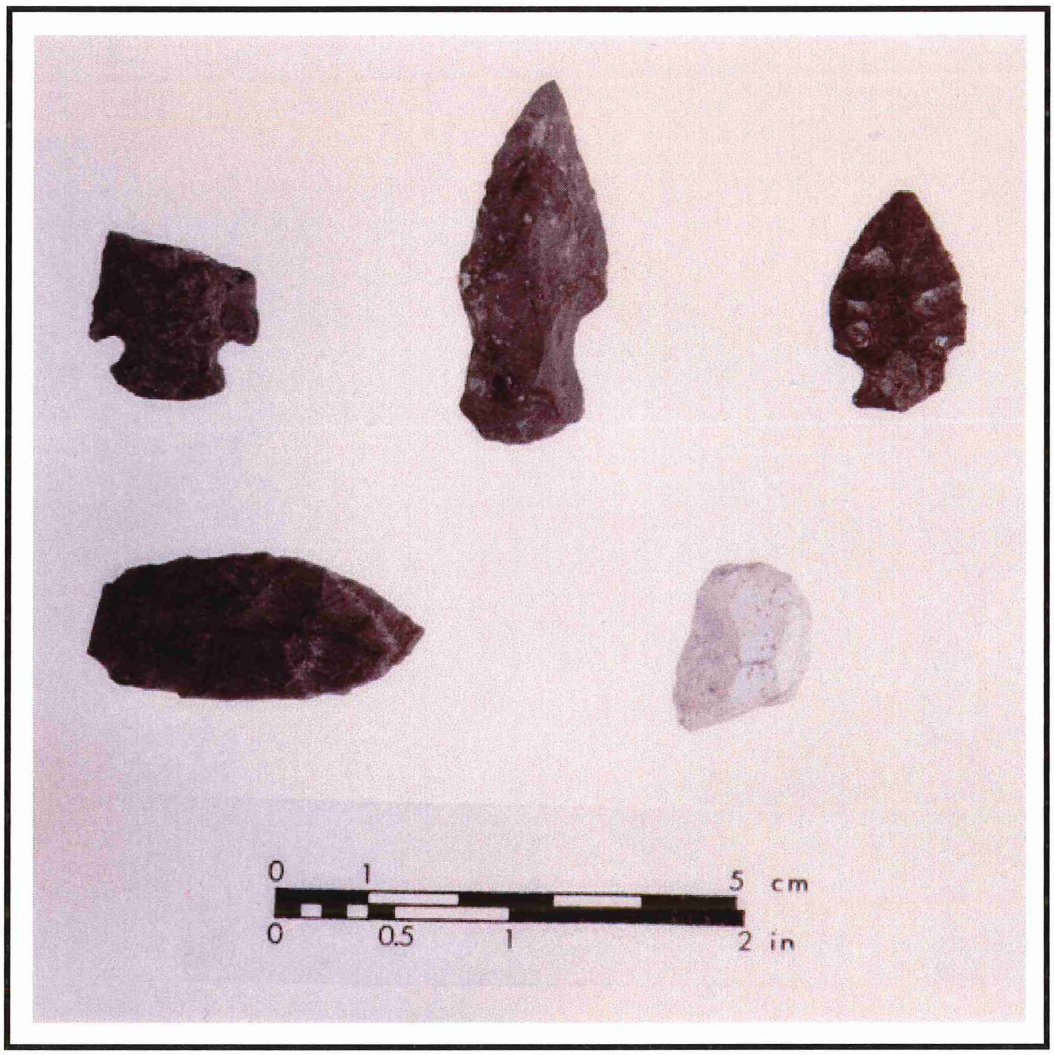


Figure 31. Durst stemmed point (top center) from the Van Grinsven site. Photo courtesy of the Minnesota Historical Society.

FigEE.pub

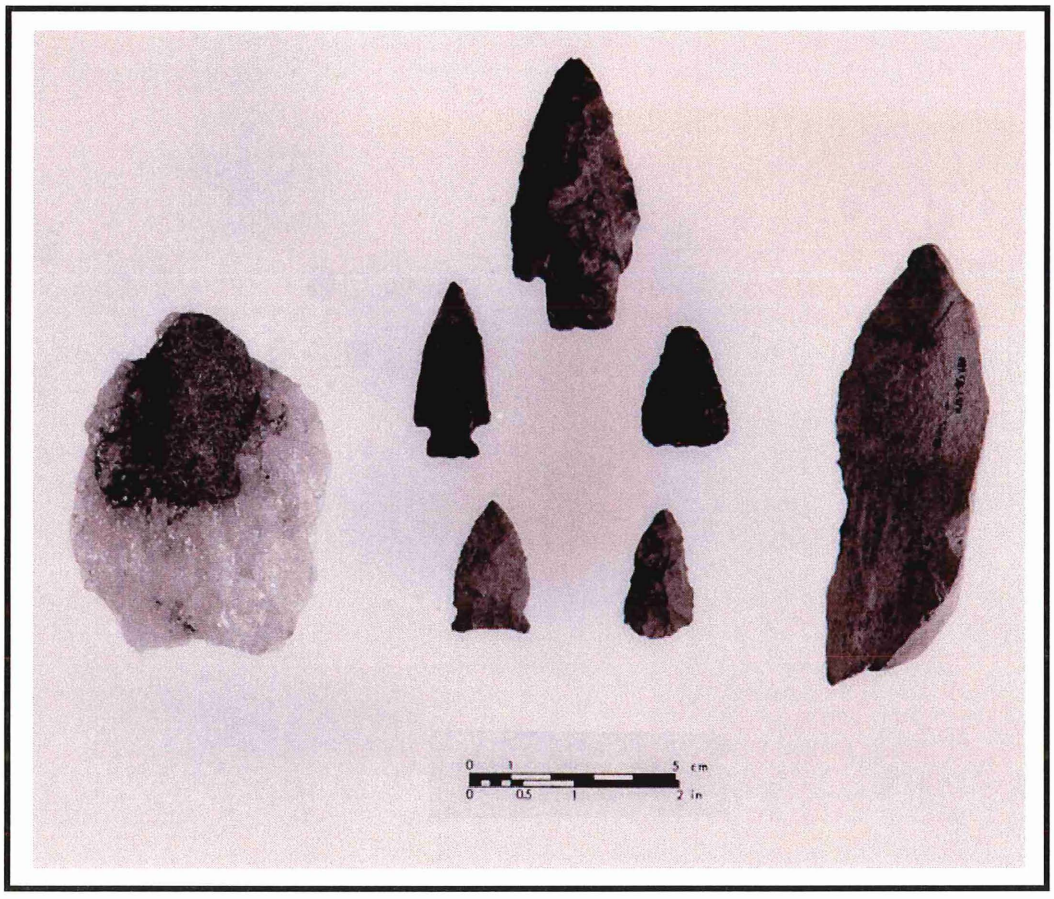


Figure 32. Stemmed point (top center) and other lithic tools from the Onamia View site. Photo courtesy of the Minnesota Historical Society.

FigBB.pub

Figure 33. Lithic tools from the Ben & Fern Larson site. Photo from the Lake Onamia – Trunk Highway 169 Data Recovery Project.

FigCC.pub

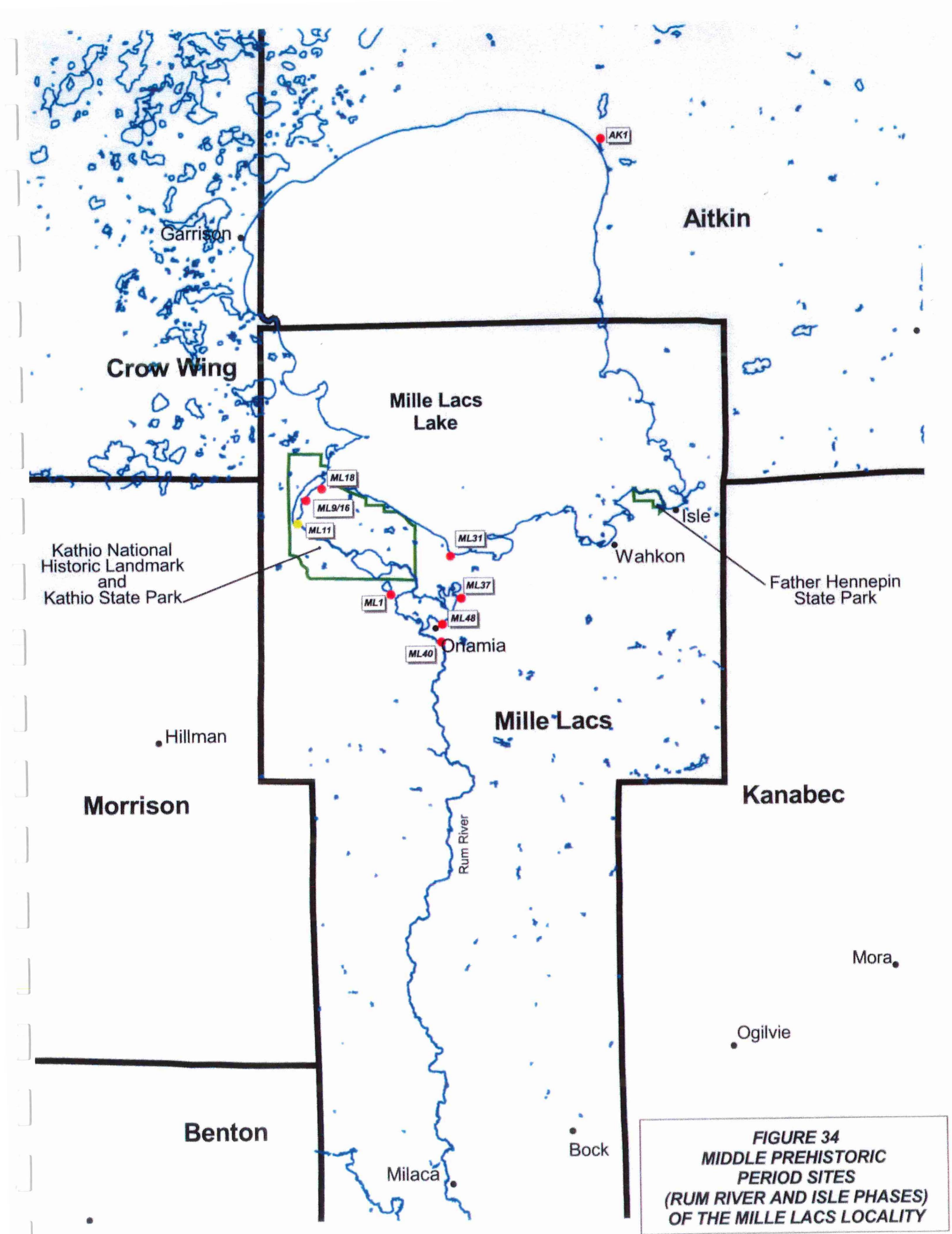


FIGURE 34
MIDDLE PREHISTORIC PERIOD SITES (RUM RIVER AND ISLE PHASES) OF THE MILLE LACS LOCALITY

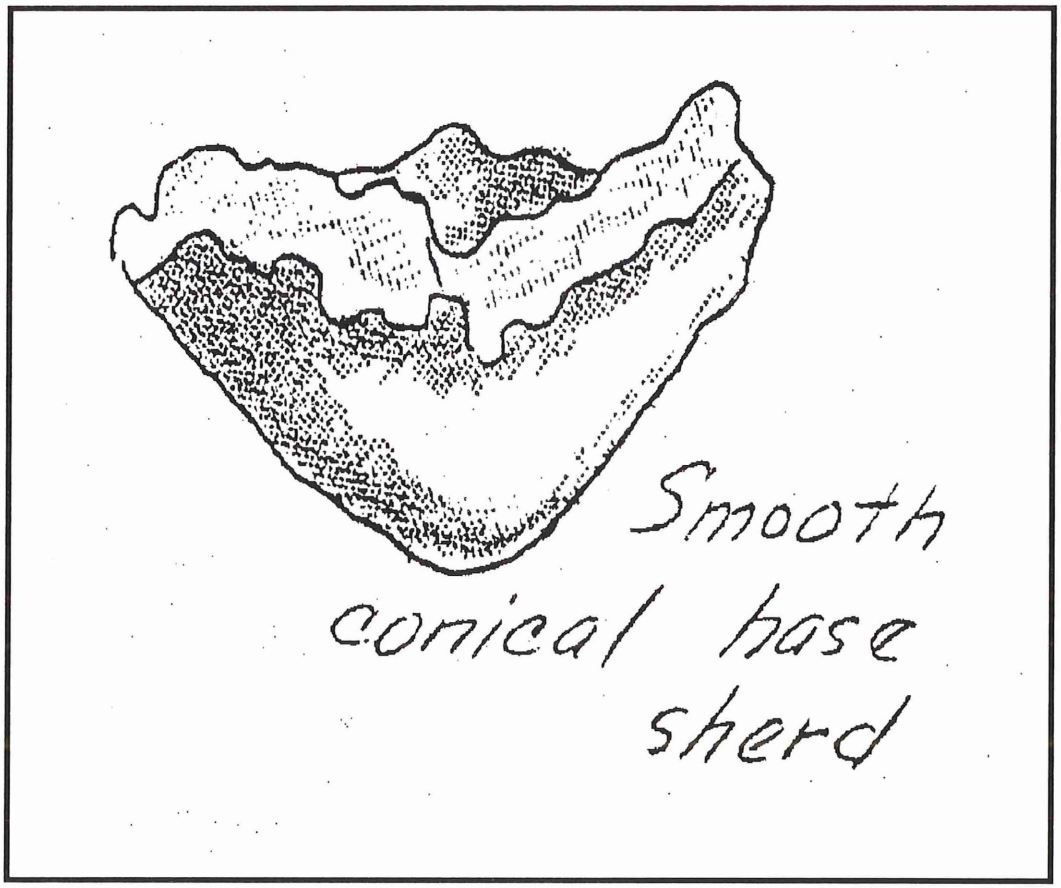


Figure 35. Pointed base of a Malmo vessel, from Wilford (1955).

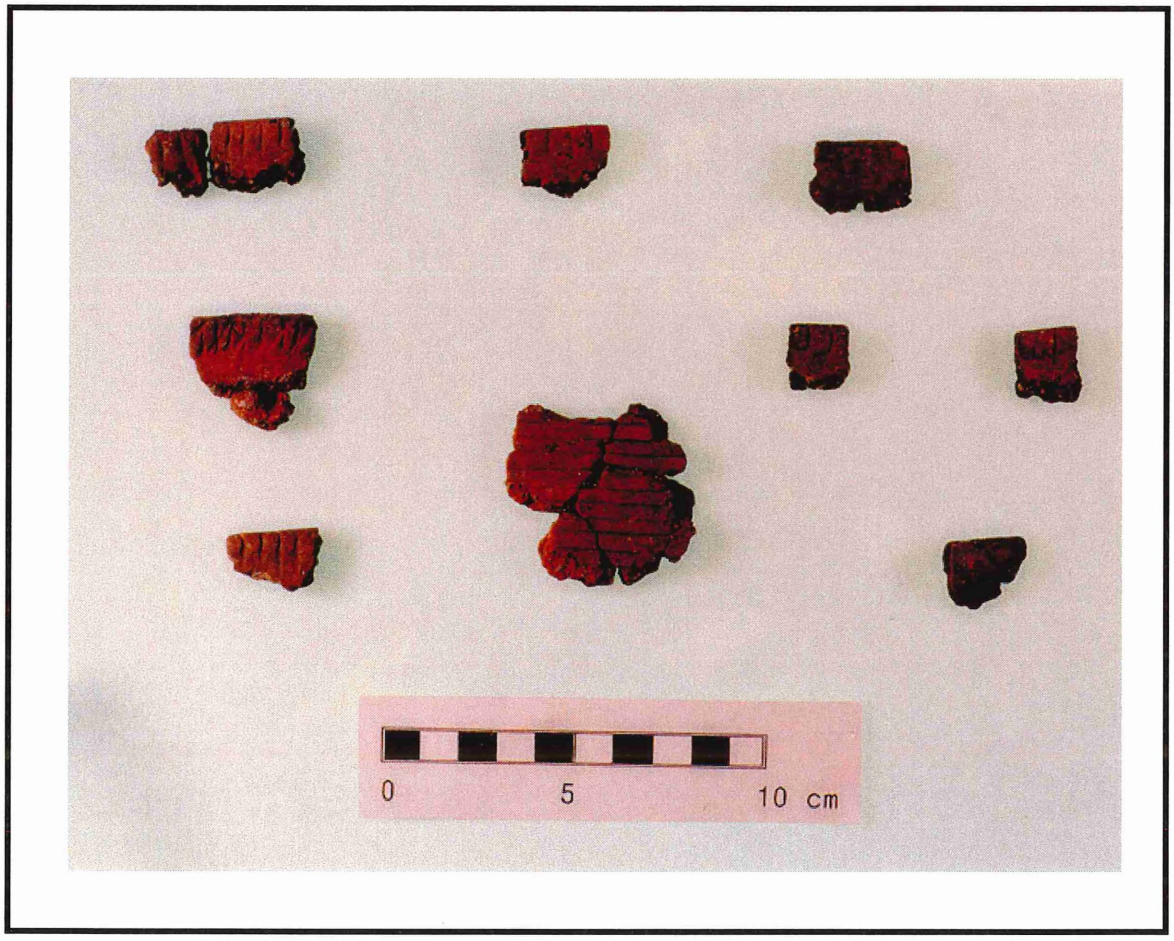


Figure 36. Malmo ceramics from the Black Brook site. Photo from the Lake Onamia – Trunk Highway 169 Data Recovery Project.

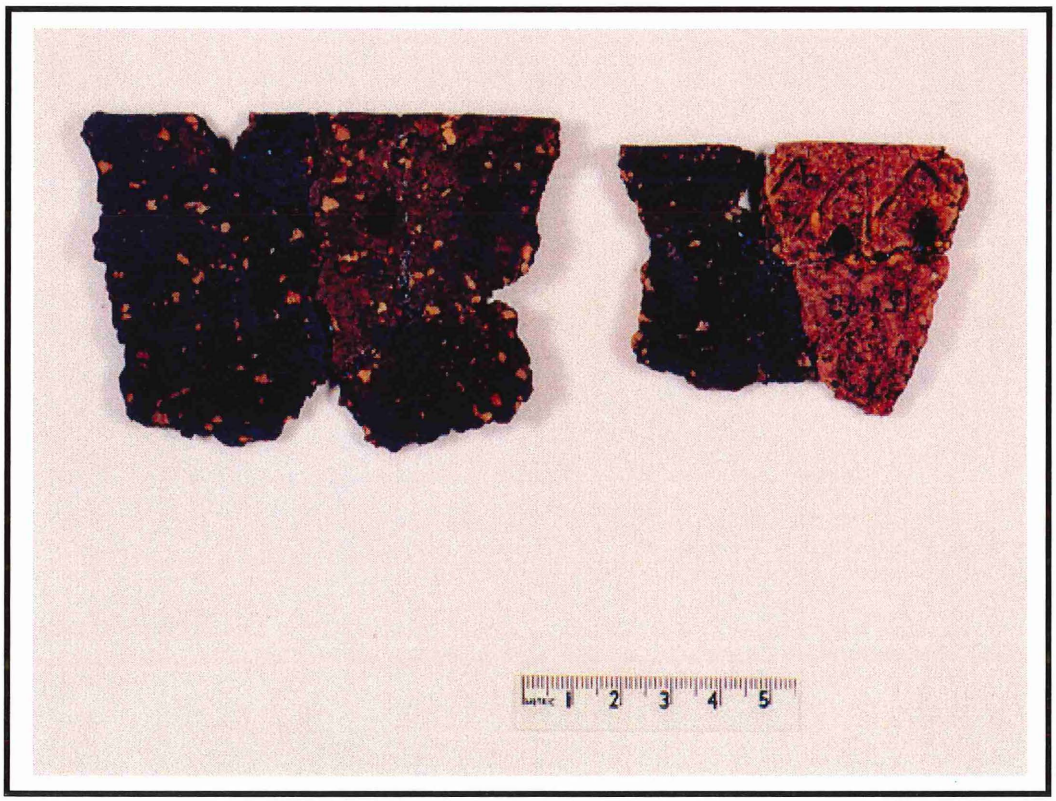


Figure 37. Limestone tempered Malmo ceramics from the Malmo site. Photo from the Lake Onamia – Trunk Highway 169 Data Recovery Project.

FigAA.pub

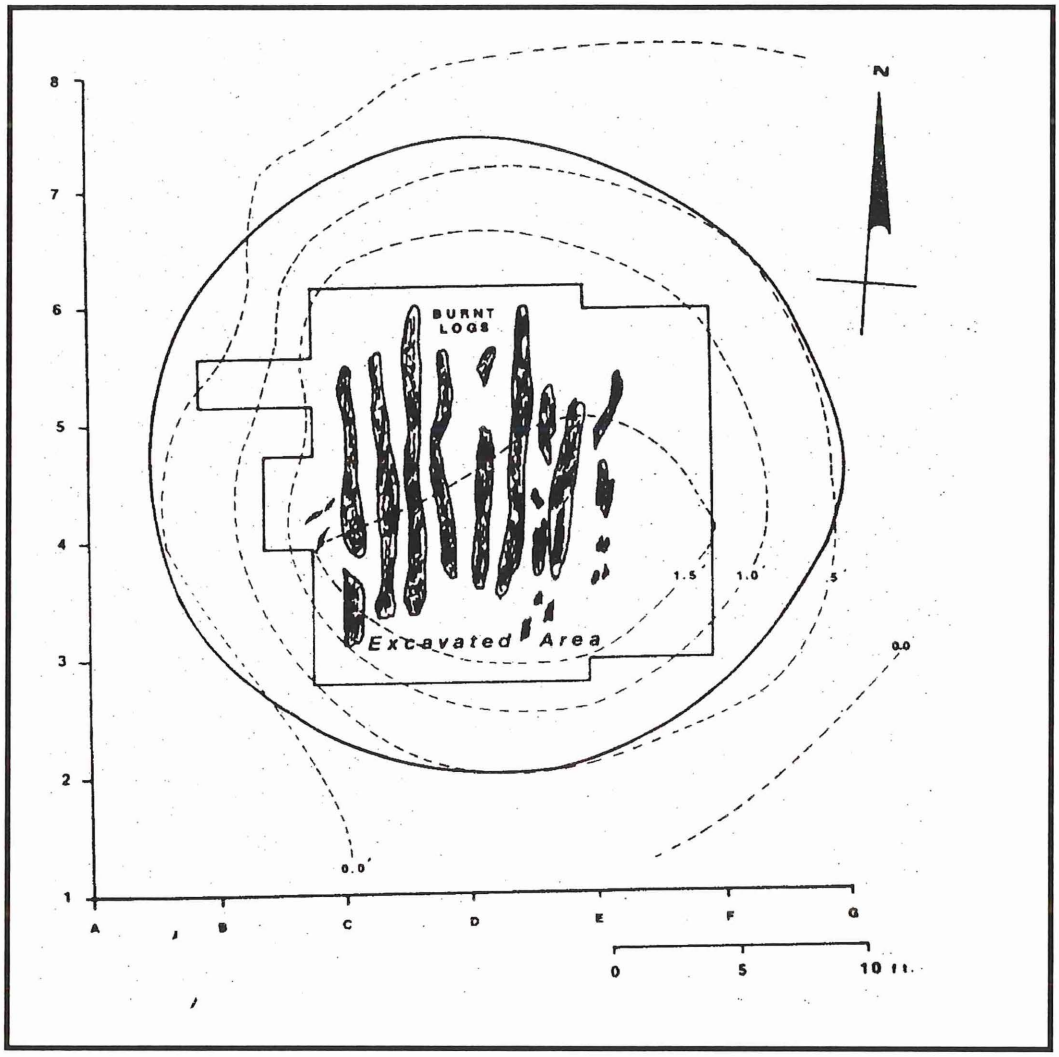


Figure 38. Burned logs covering burial area in the Malmo Mounds, from Aufderheide et al. (1994).

FigMM.pub

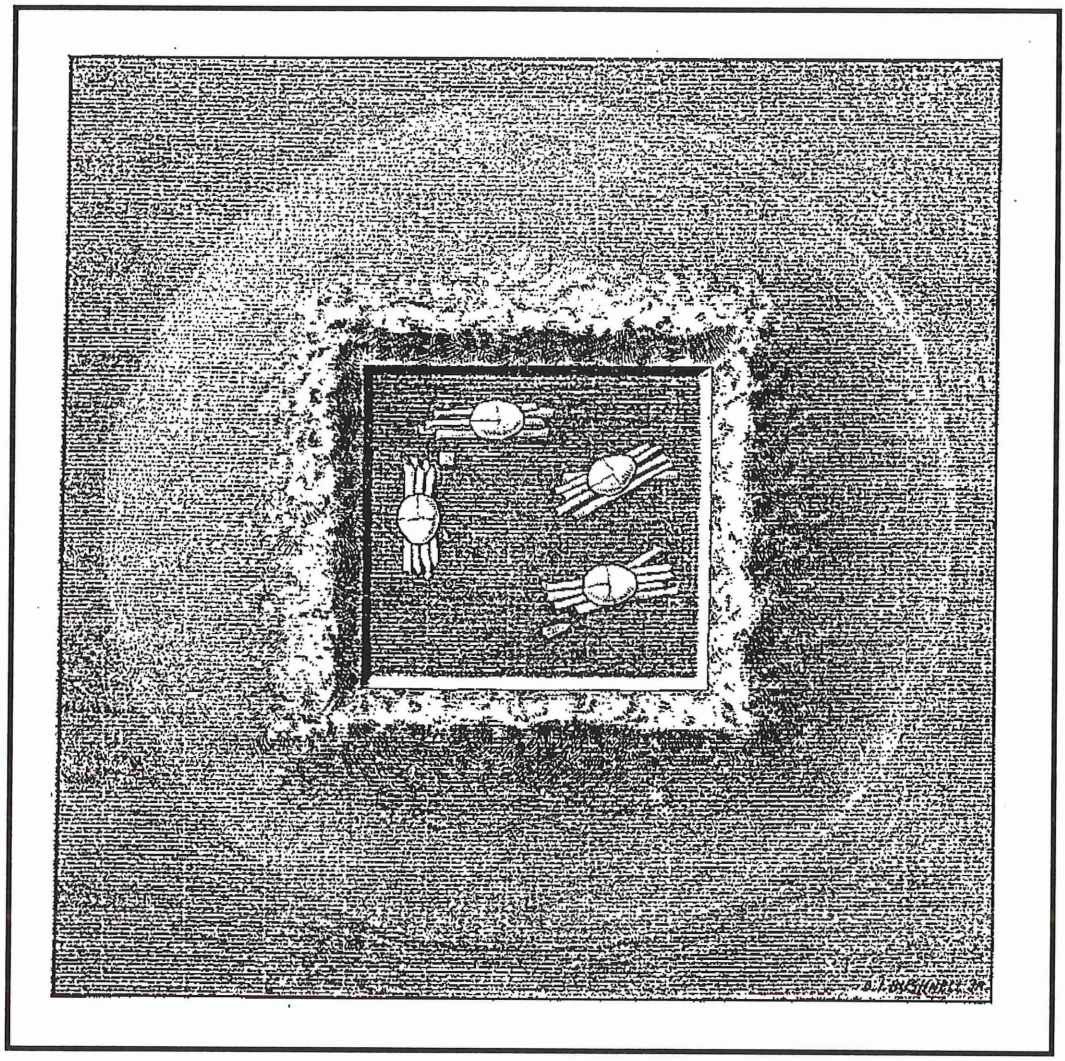


Figure 39. Representation of secondary bundle burials from the Malmo Mounds, from Brower and Bushnell (1900).

Figure 40. Burial mounds at the Crosier site overlooking the Lake Onamia basin. Photo from the Lake Onamia – Trunk Highway 169 Data Recovery Project.

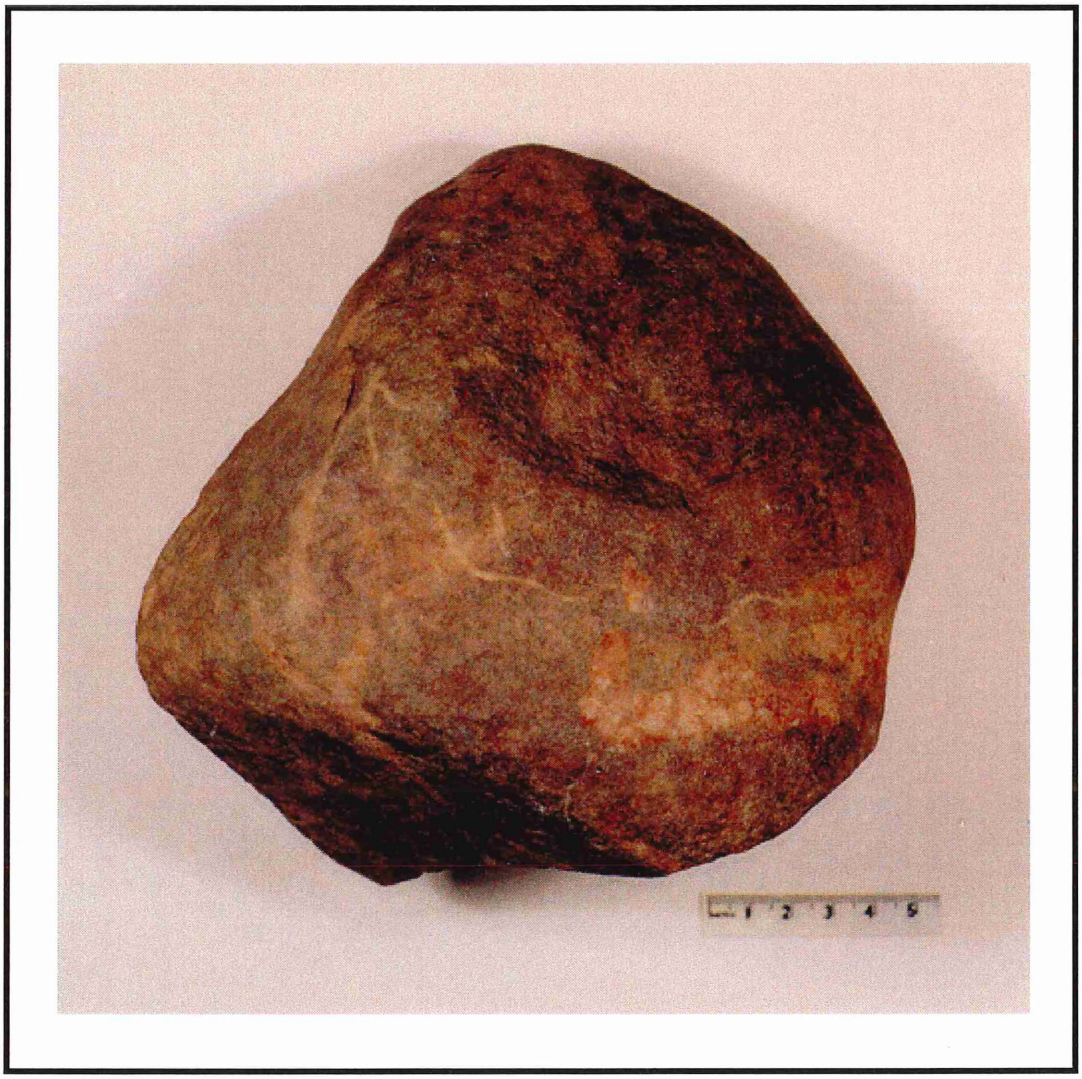


Figure 41. Anvil stone from the Van Grinsven site. Photo from the Lake Onamia – Trunk Highway 169 Data Recovery Project.

96506/FigY.pub

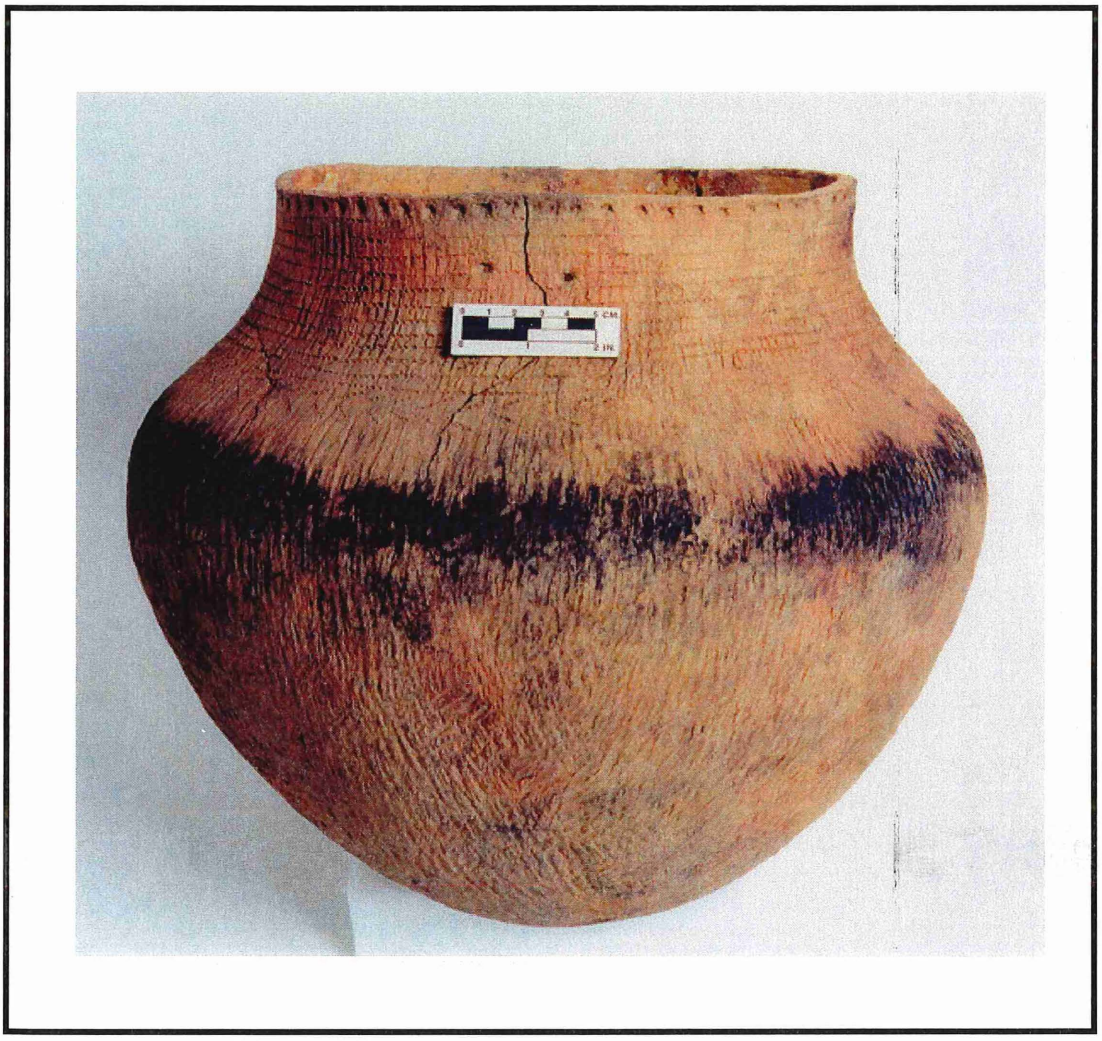


Figure 42. The Fort Poualak Bowl. Photo from the Lake Onamia – Trunk Highway 169 Data Recovery Project.

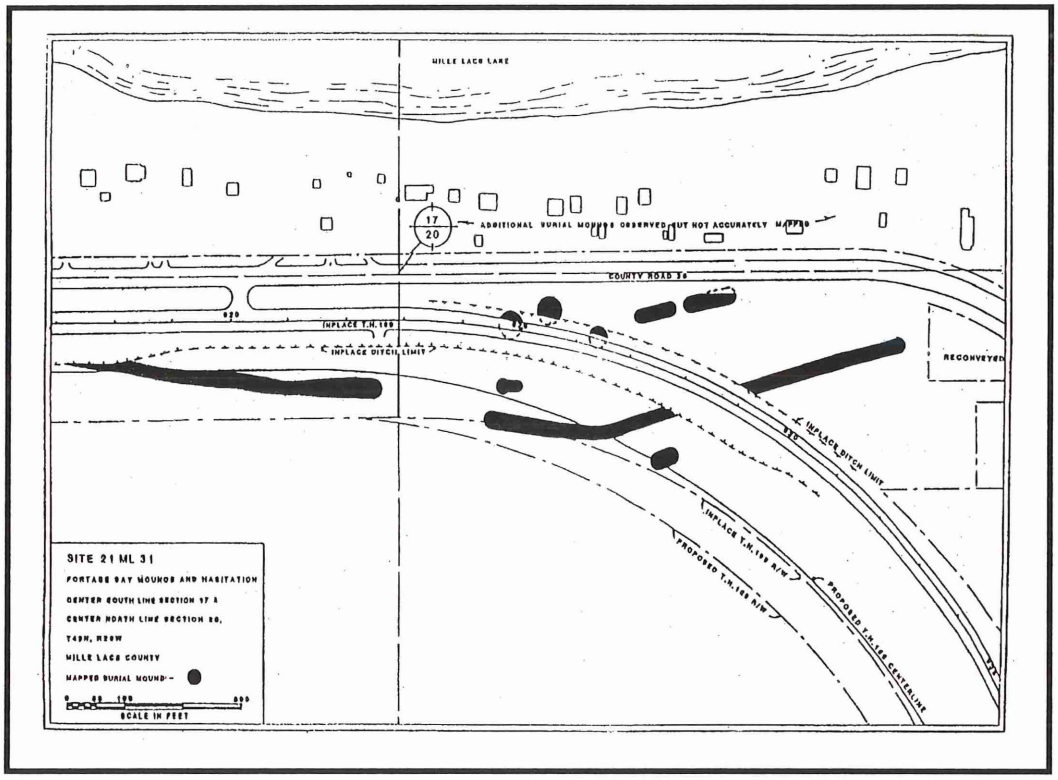


Figure 43. Linear earthworks at Portage Bay (Peterson et al. 1988; Mather 1994).

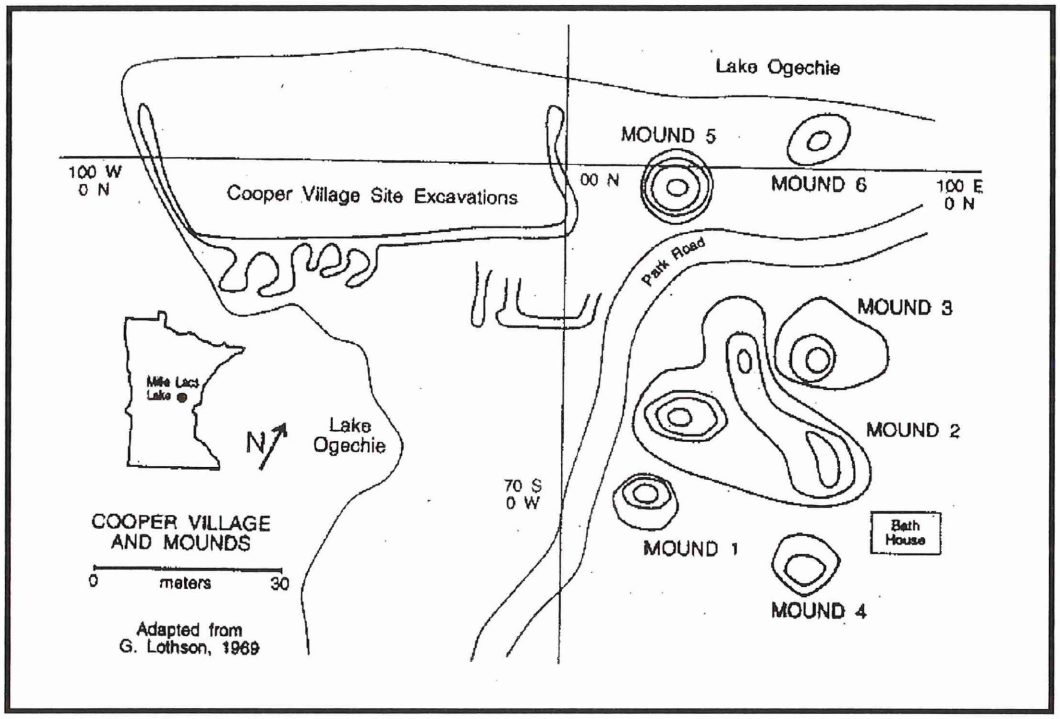


Figure 44. The Cooper village and mounds, from Aufderheide et al. (1994).

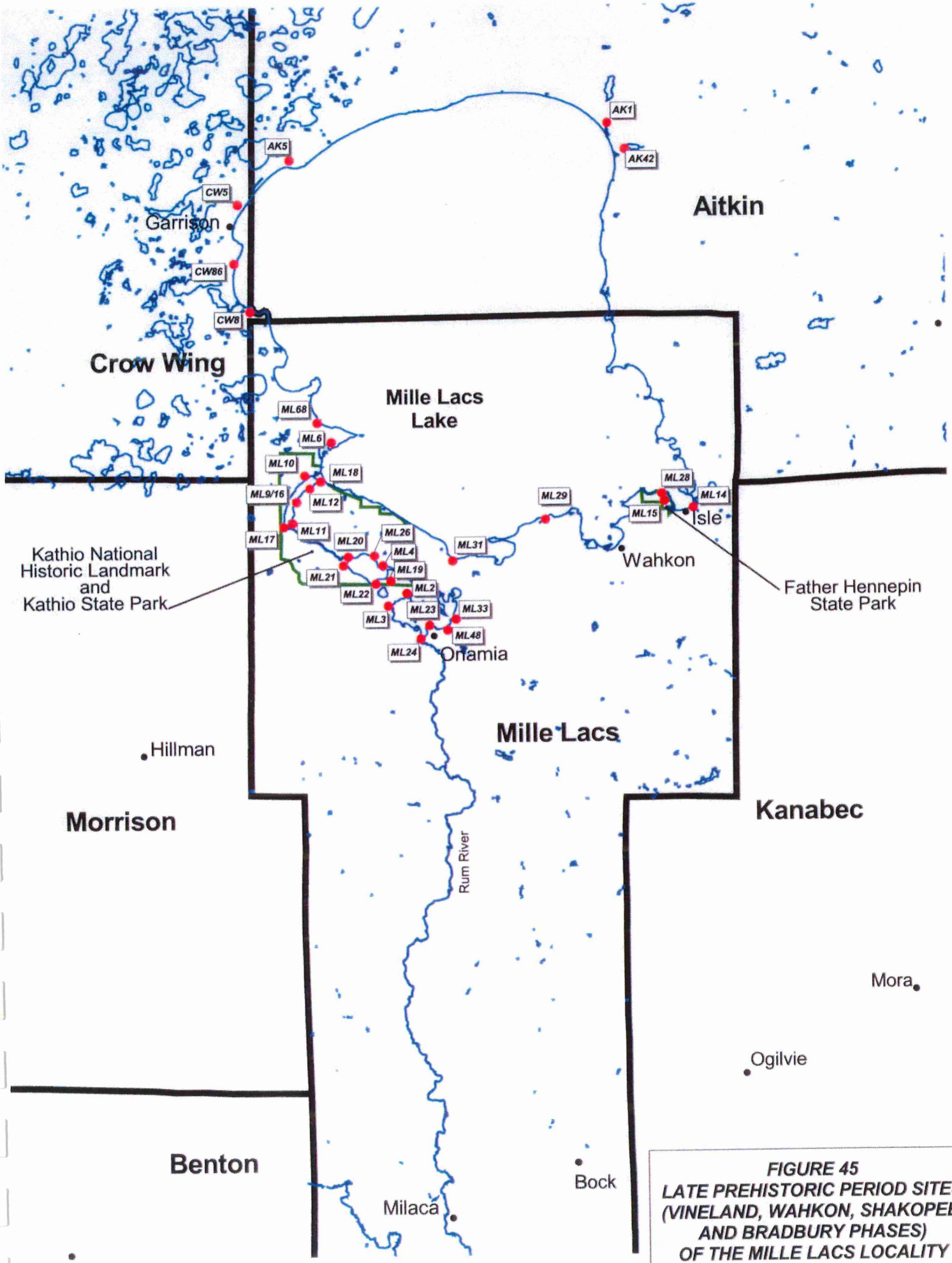


FIGURE 45
LATE PREHISTORIC PERIOD SITES (VINELAND, WAHKON, SHAKOPEE, AND BRADBURY PHASES) OF THE MILLE LACS LOCALITY

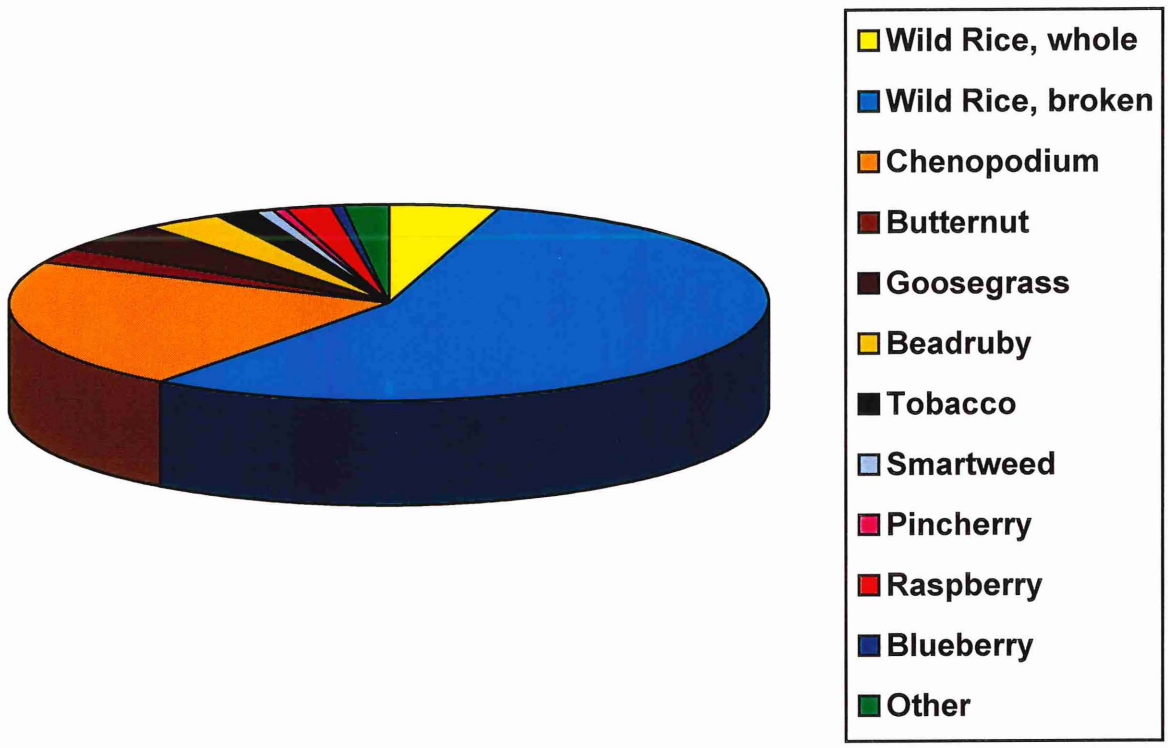


Figure 46: Plants identified from cultural features at the Wilford site (21 ML 12). Compiled from data in Bailey (1997).

Figure 47. Triangular projectile points from the Cooper site.
Photo courtesy of the Wilford Archaeological Laboratory,
University of Minnesota.

Fig_ML9Poin.pub

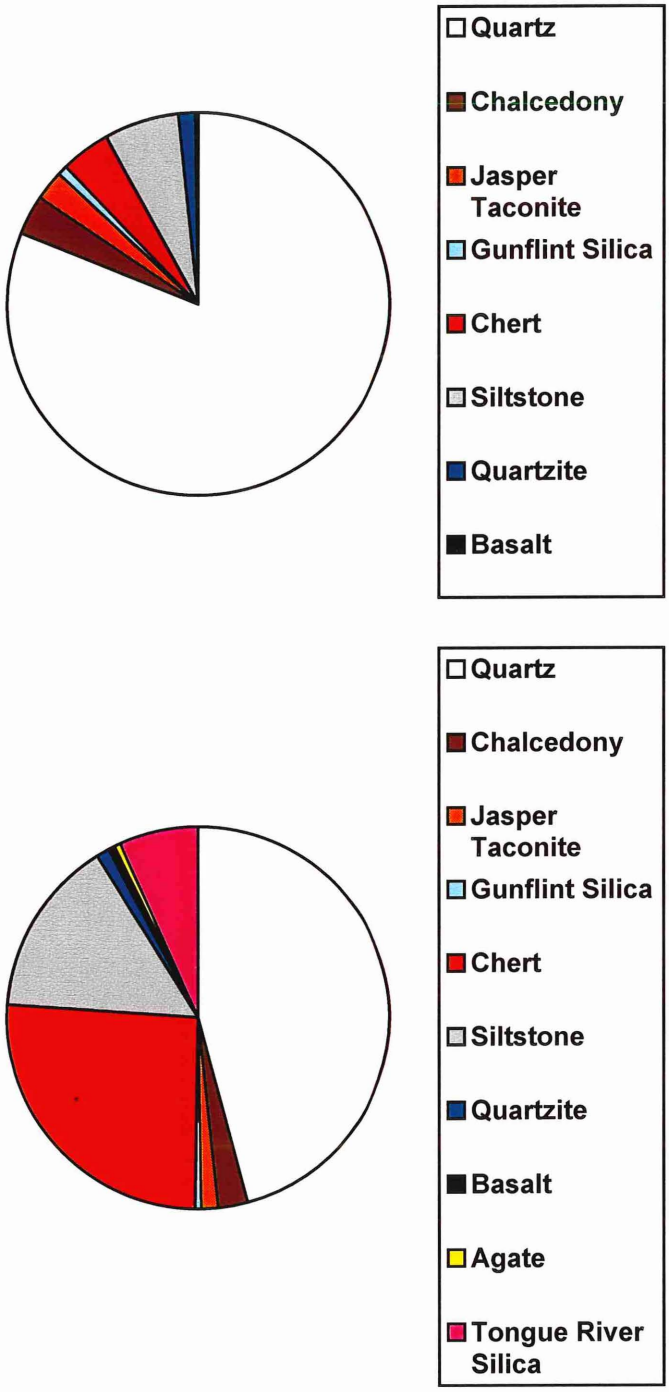


Figure 48: Lithic Raw Materials from the Cooper and Wilford sites (21 ML 12). From data on file at the Wilford Archaeology Lab, University of Minnesota.

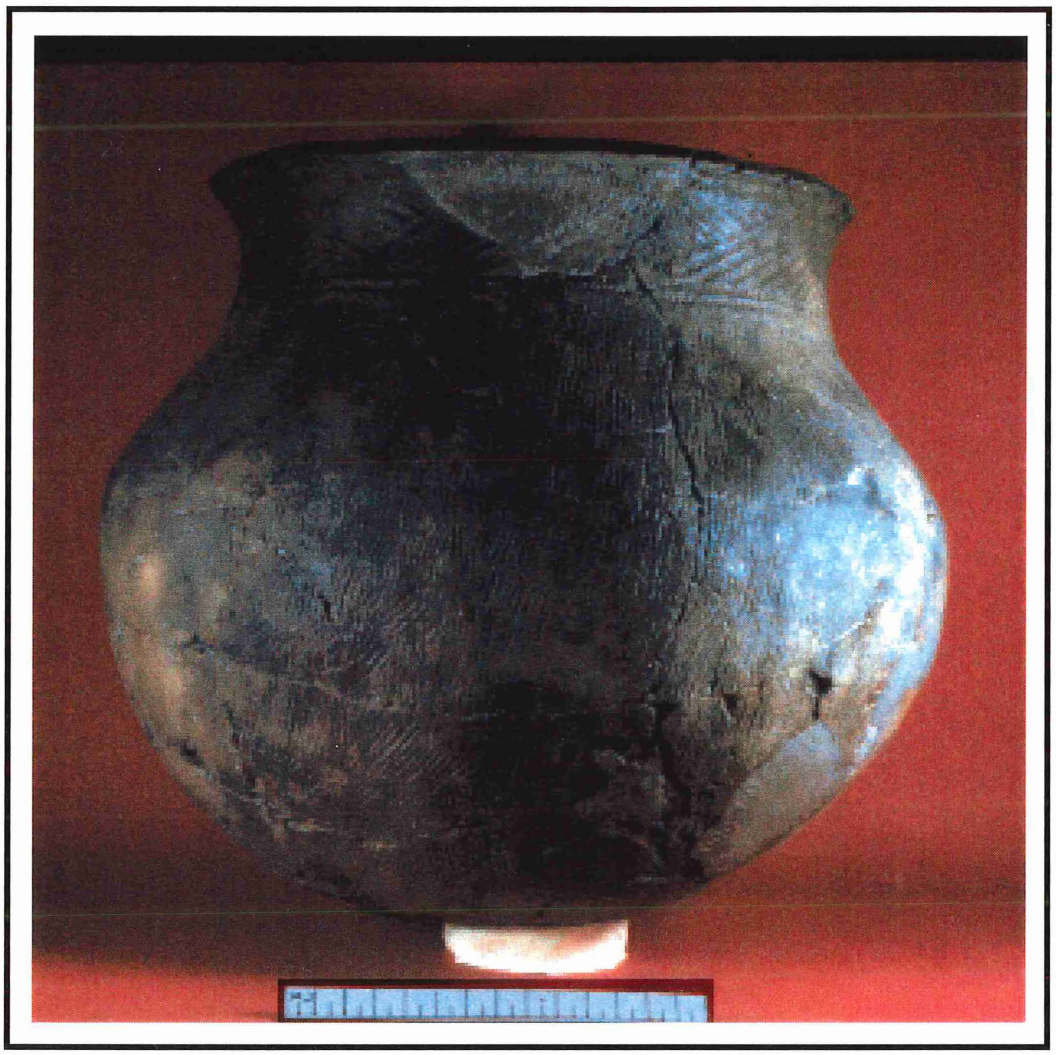


Figure 49. Clam River vessel from the Altern site in western Wisconsin, showing Kathio vessel form. Photo courtesy of the Wilford Archaeological Laboratory, University of Minnesota.

Fig_ClamRiv.pub

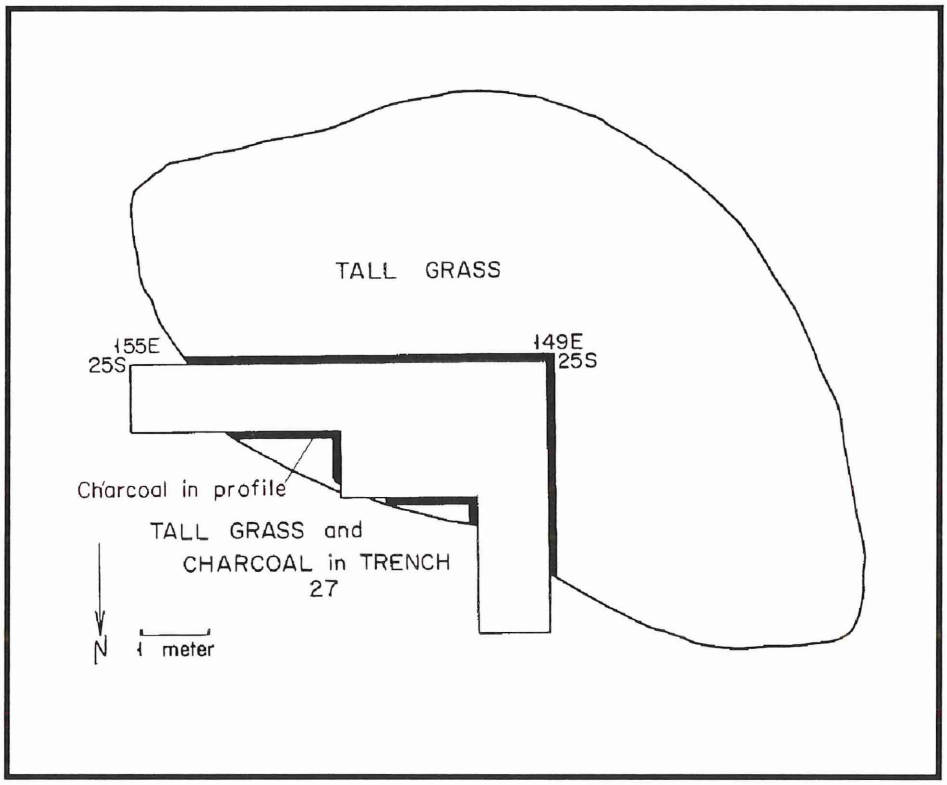


Figure 50. Initial indications of a Wahkon Phase house at Petaga Point, from Bleed (1969).

96506/Fig1.pub

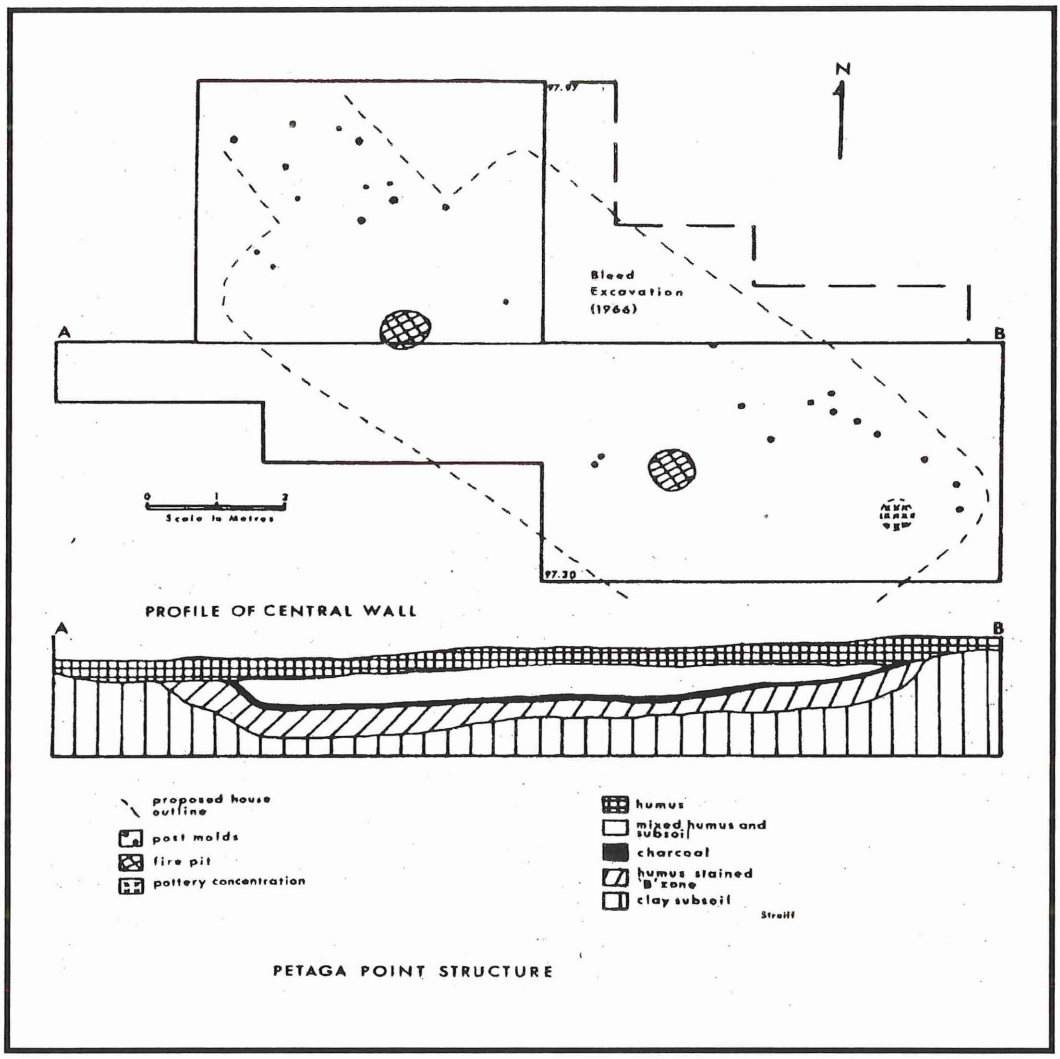


Figure 51. The structure after excavation, from Johnson (1971a).

Figure 52. Dog skull in pit feature at Vineland Bay. Photo courtesy of the Wilford Archaeological Laboratory, University of Minnesota.

Fig_ML7Dog.pub

Figure 53. The Sandy Lake vessel from the Crosier site. Photo from the Lake Onamia – Trunk Highway 169 Data Recovery Project.

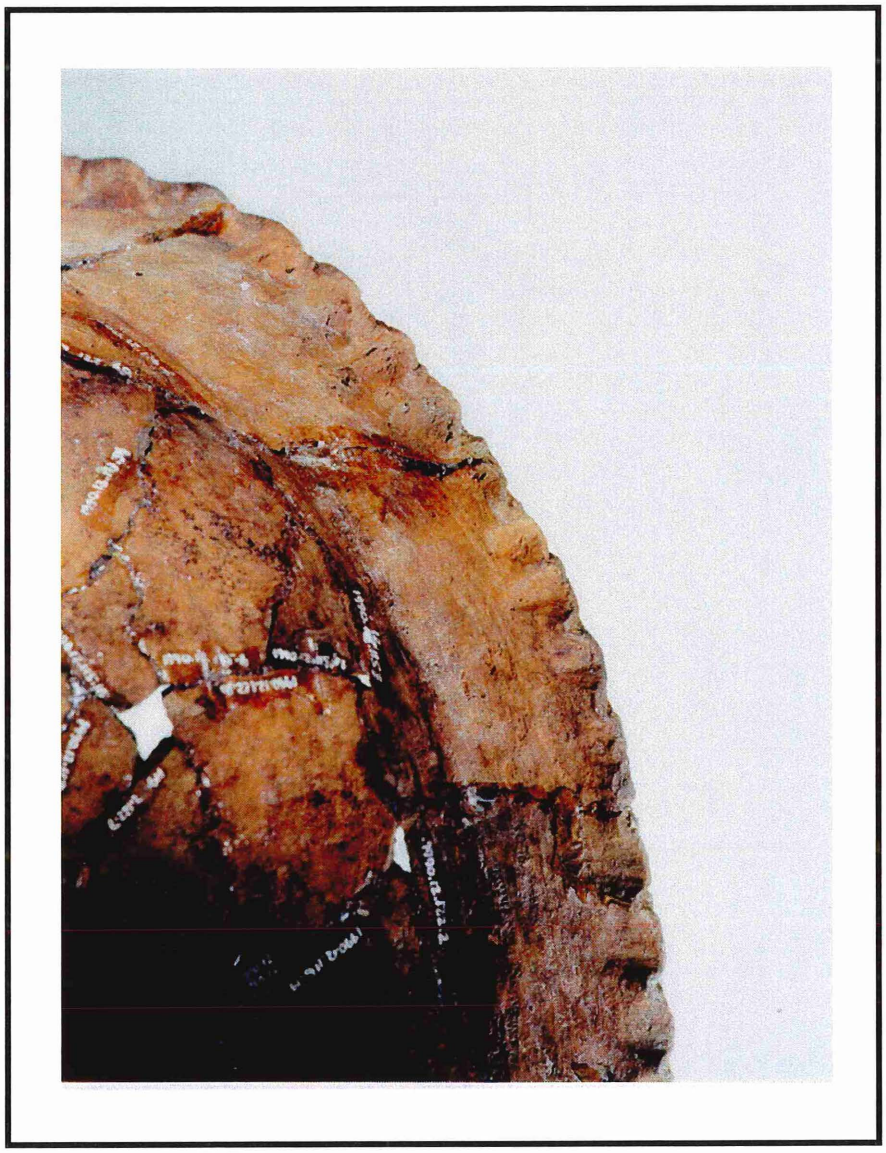


Figure 54. Detail of the Crosier vessel rim. Photo from the Lake Onamia – Trunk Highway 169 Data Recovery Project.

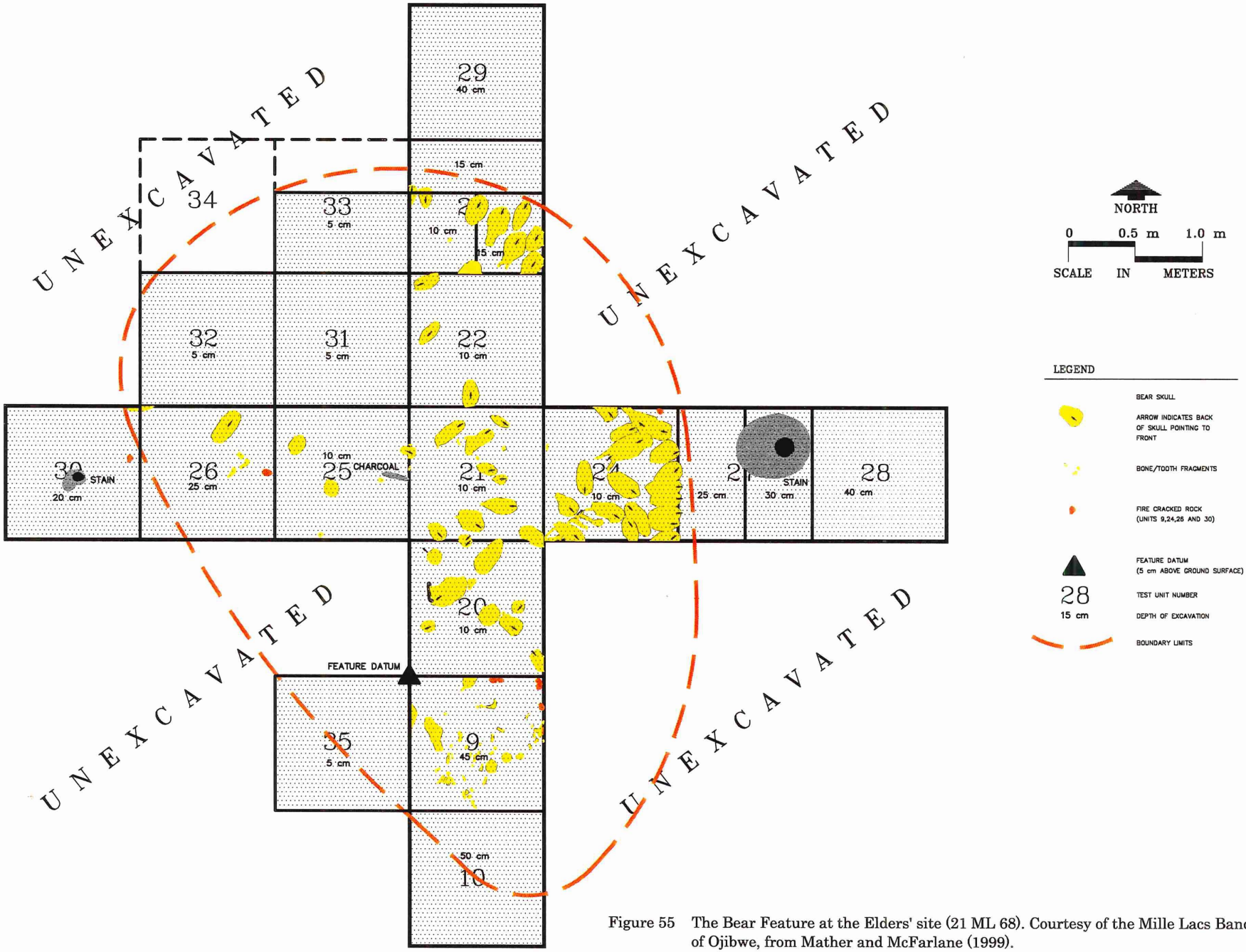


Figure 55 The Bear Feature at the Elders' site (21 ML 68). Courtesy of the Mille Lacs Band of Ojibwe, from Mather and McFarlane (1999).

Figure 56. Excavation of a house feature at the Cooper site. Photo courtesy of the Wilford Archaeological Laboratory, University of Minnesota.

Fig_ML9F283.pub

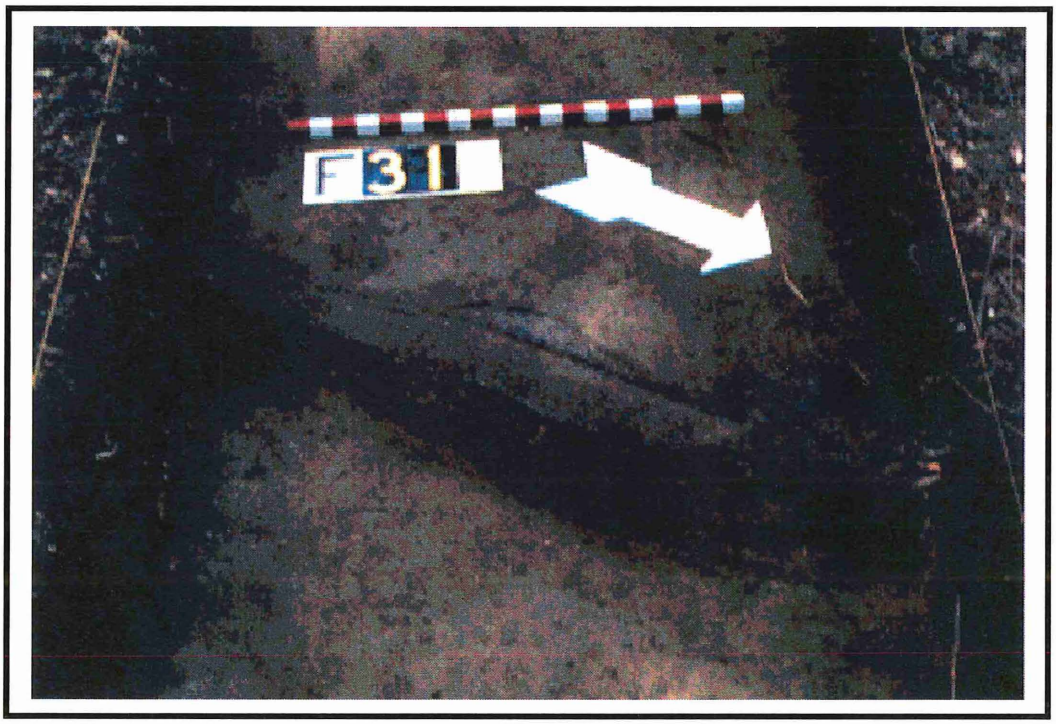


Figure 57. Detail of the palisade excavation at the Cooper site. Photo courtesy of the Wilford Archaeological Laboratory, University of Minnesota.

Fig_ML9Pali.pub

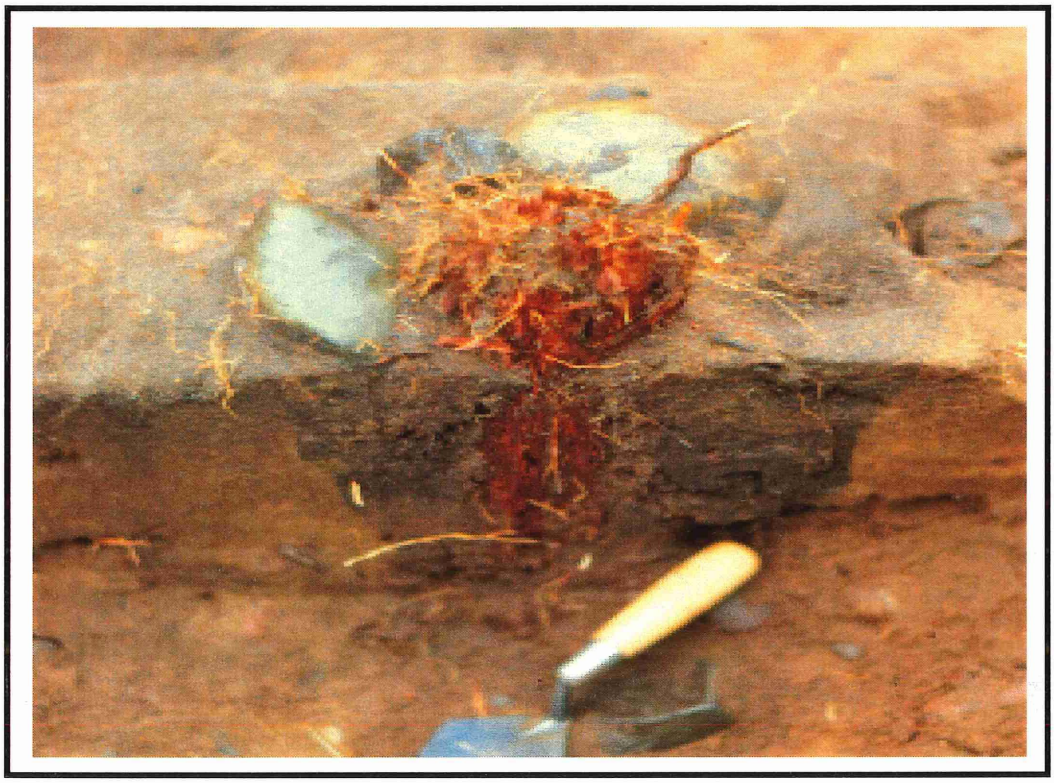


Figure 58. Preserved wooden post at the Griffin site. Photo courtesy of the Wilford Archaeological Laboratory, University of Minnesota.

Fig_ML12Post.pub

Figure 59. Ogechie ceramics from the Cooper site. Photo courtesy of the Wilford Archaeological Laboratory, University of Minnesota.

Fig_ML9Ogec.pub

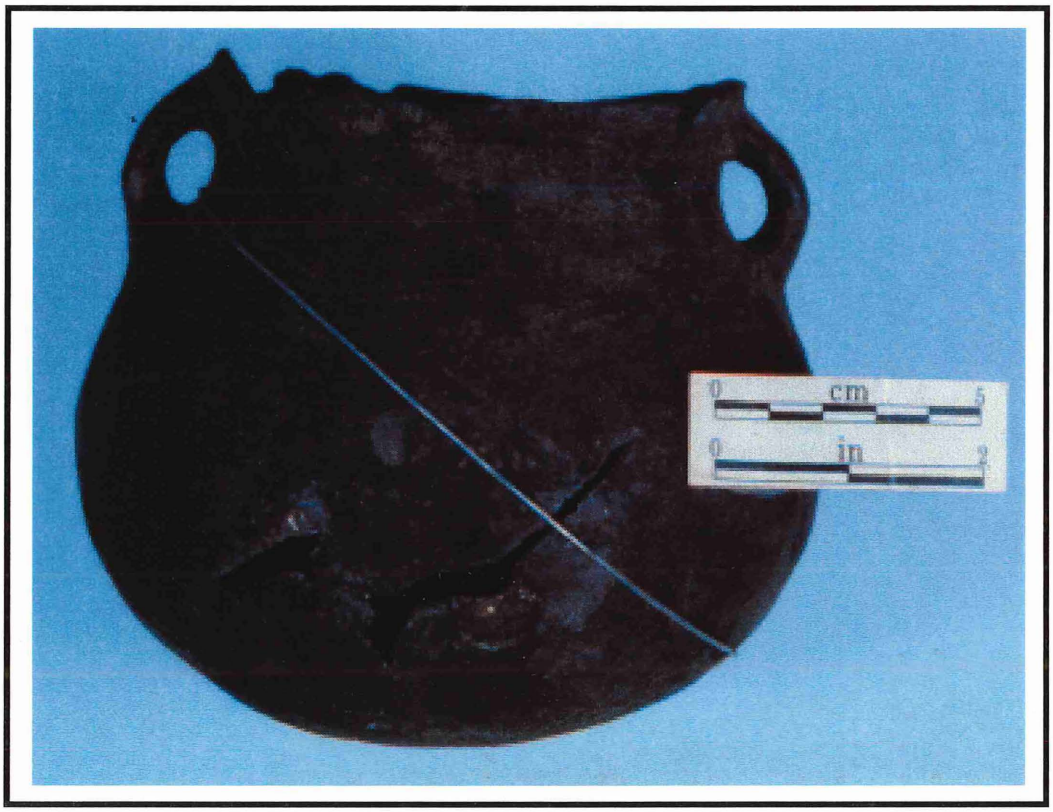


Figure 60. Mortuary vessel from Cooper Mound 1. Photo courtesy of the Wilford Archaeological Laboratory, University of Minnesota.

Fig_ML16Mor.pub

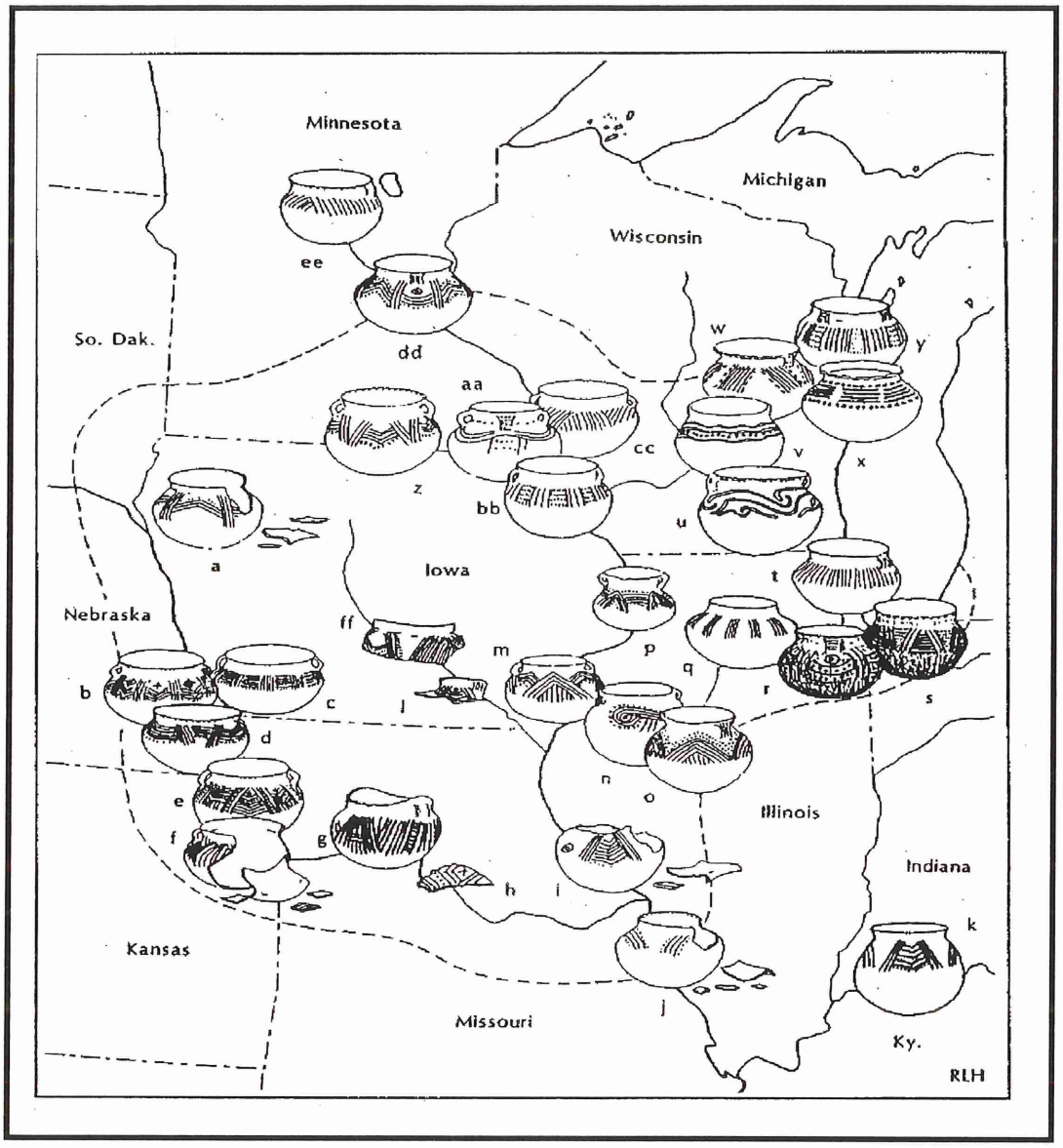


Figure 61. Oneota vessel forms and distribution, "ee" represents Ogechie at the Mille Lacs Locality, from Hall (1991).

FigFF.pub

Figure 62. Scapula hoe in pit feature at the Cooper site. Photo courtesy of the Wilford Archaeological Laboratory, University of Minnesota.

Fig_ML9Scap.pub

Figure 63. Excavation of a large house structure at the Wilford site. Photo courtesy of the Wilford Archaeological Laboratory, University of Minnesota.

Figure 64. Historic artifacts from the Cooper site. Photo courtesy of the Wilford Archaeological Laboratory, University of Minnesota.

Fig_ML9Hist.pub

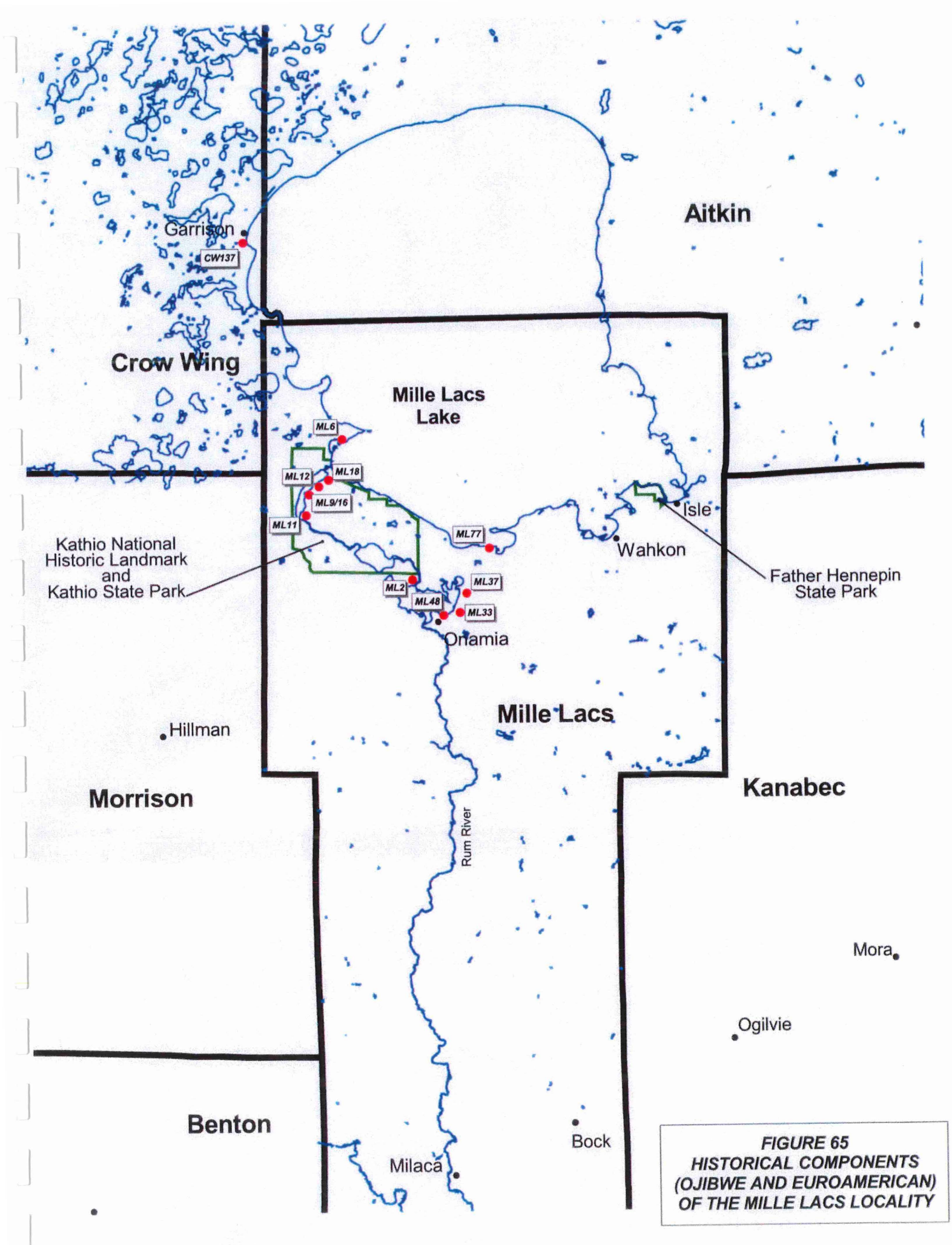


FIGURE 65
HISTORICAL COMPONENTS (OJIBWE AND EUROAMERICAN) OF THE MILLE LACS LOCALITY

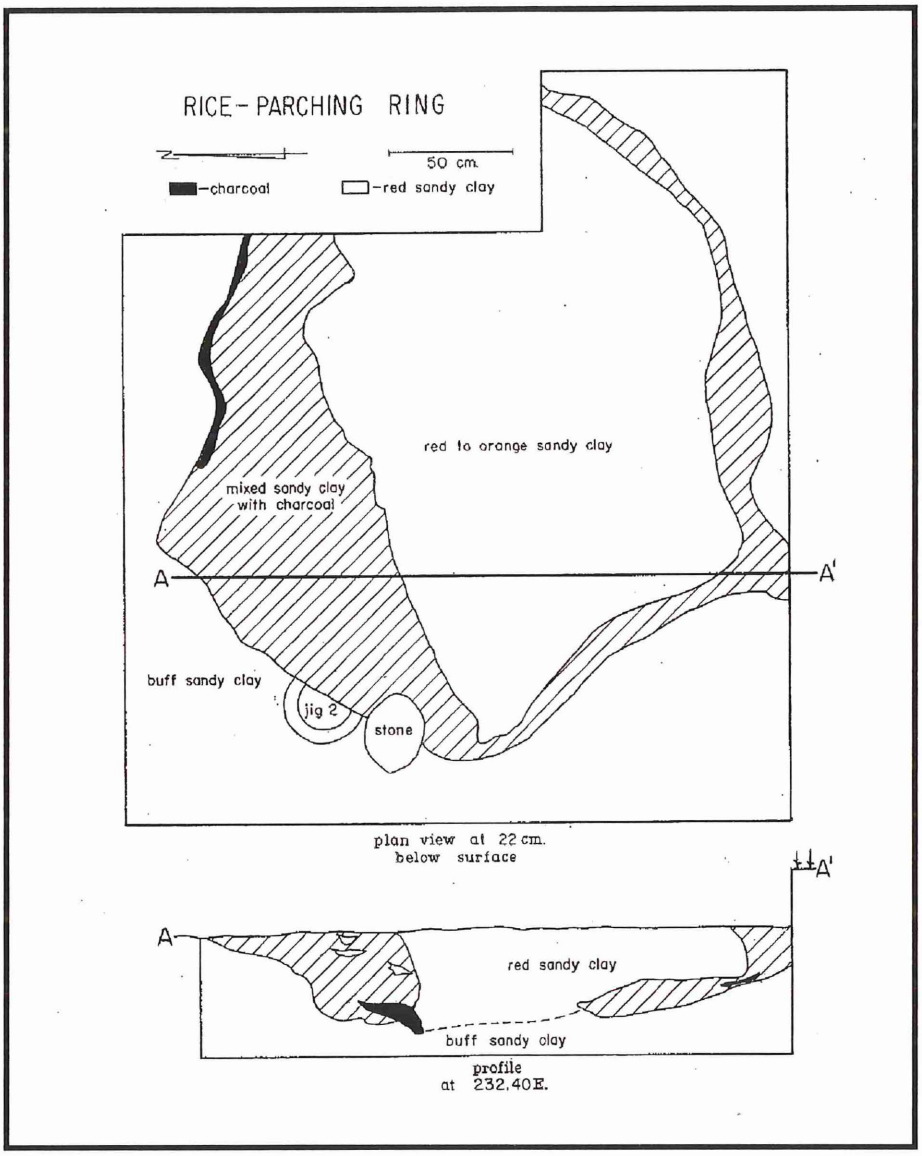


Figure 66. Rice parching ring from Petaga Point, from Bleed (1969).

Figure 67. Definition of parching features at the Crosier site. Photo from the Lake Onamia – Trunk Highway 169 Data Recovery Project.

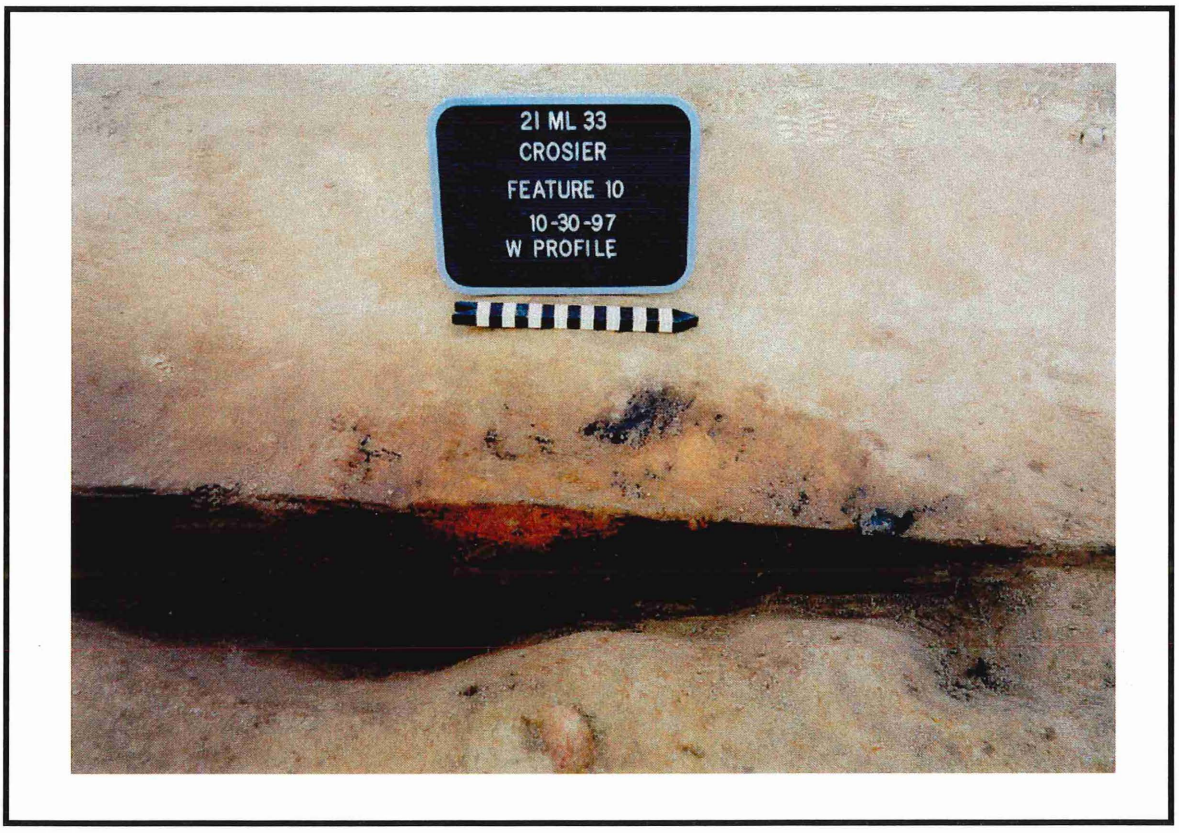


Figure 68. Parching feature at the Crosier site. Photo from the Lake Onamia – Trunk Highway 169 Data Recovery Project.

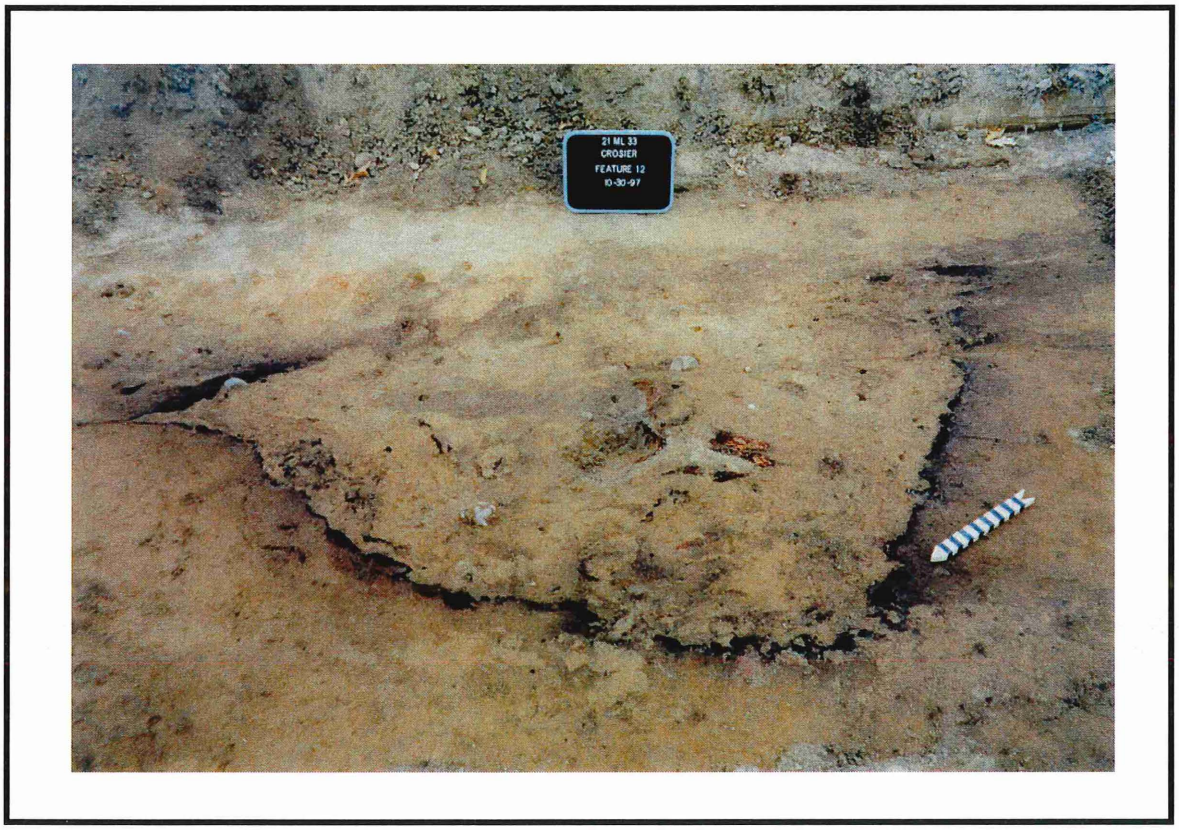


Figure 69. Parching feature at the Crosier site. Photo from the Lake Onamia – Trunk Highway 169 Data Recovery Project.

Figure 70. Parching feature at the Van Grinsven site. Photo from the Lake Onamia – Trunk Highway 169 Data Recovery Project.

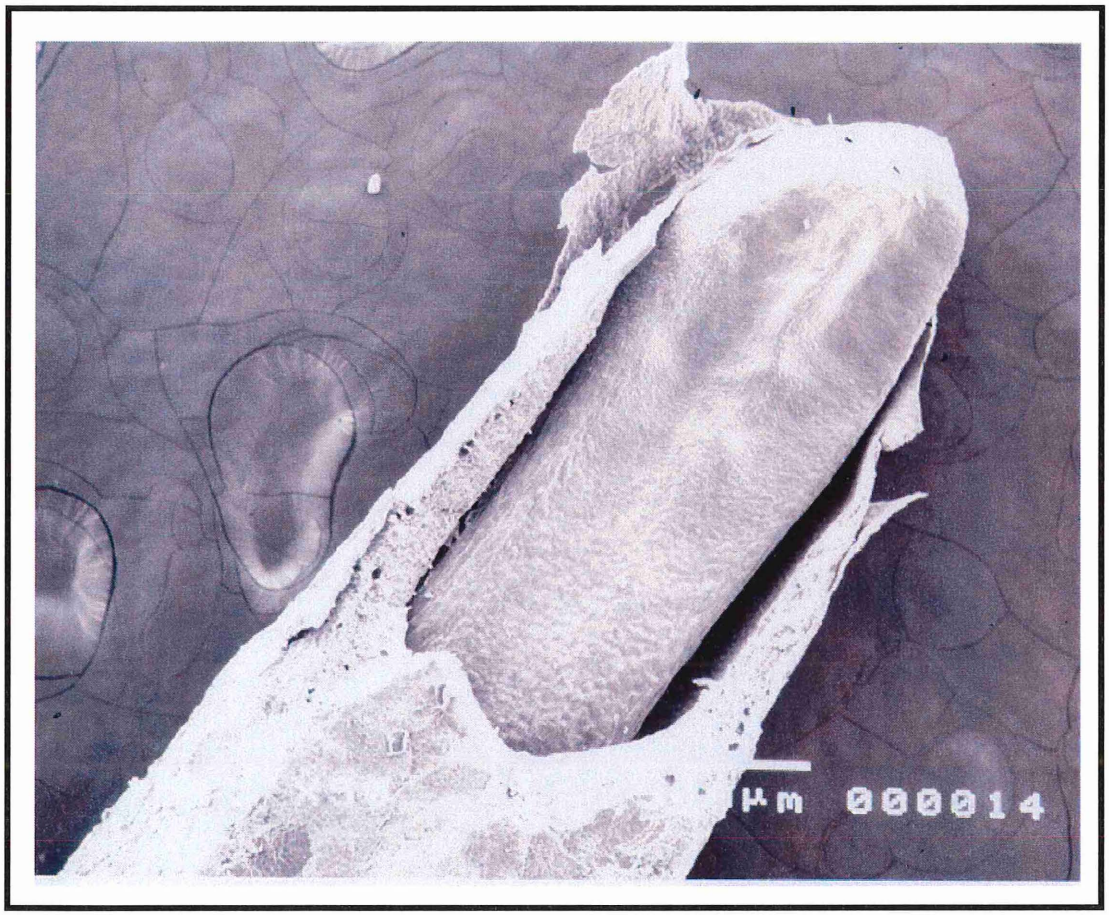


Figure 71. Charred wild rice grain with husk intact. SEM micrograph from the Lake Onamia – Trunk Highway 169 Data Recovery Project.

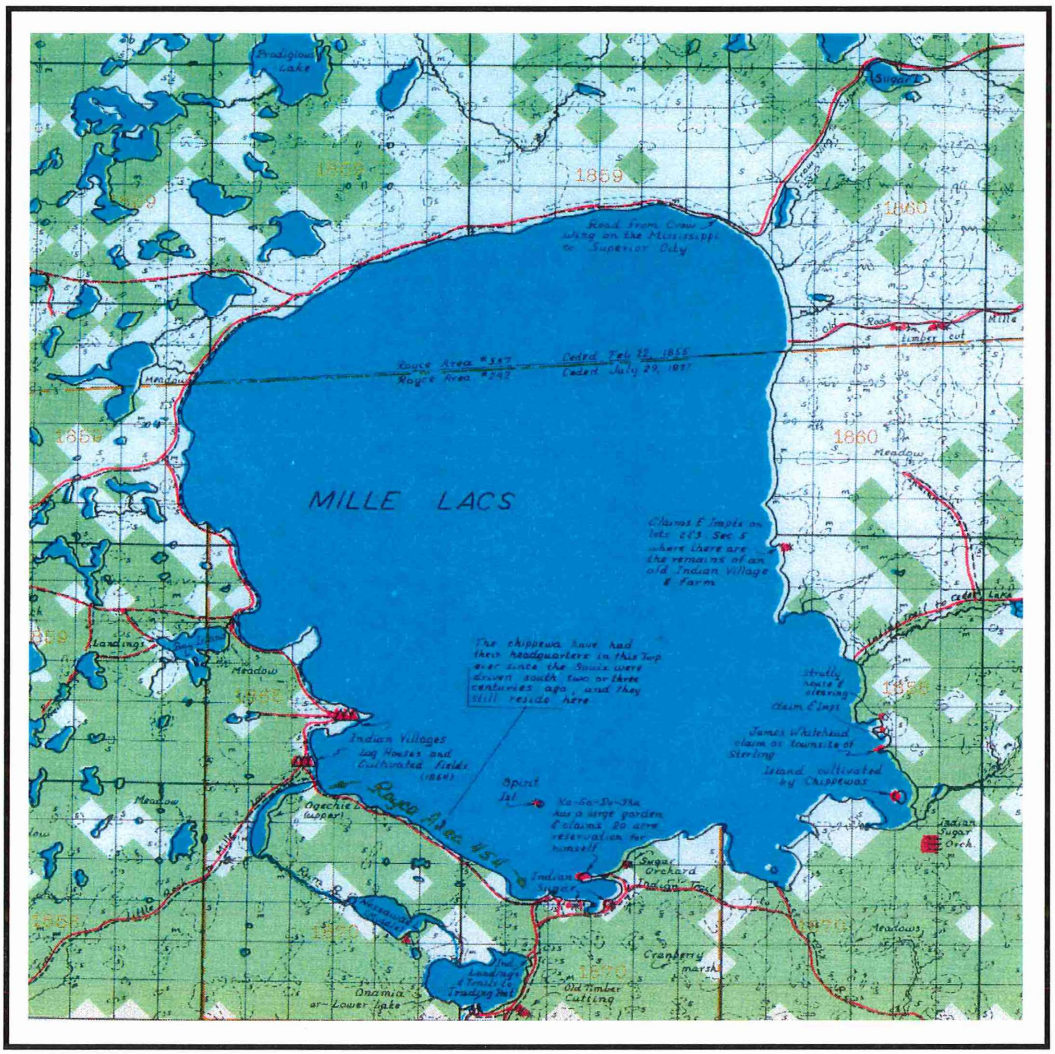


Figure 72. Detail of Trygg (1969) map of General Land Office survey data from the Mille Lacs Locality.

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Figure 73. Definition of house feature at the Ben & Fern Larson site. Photo from the Lake Onamia – Trunk Highway 169 Data Recovery Project.

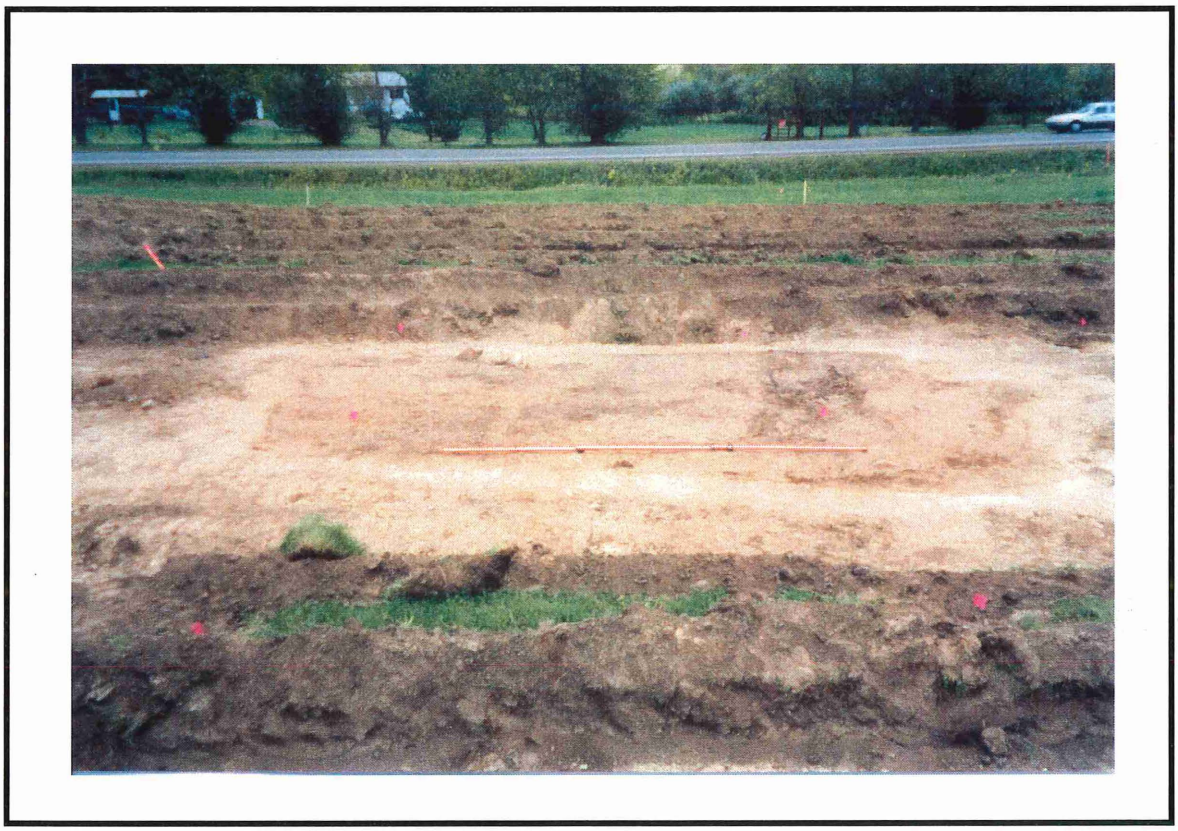

Figure 74. House feature at the Ben & Fern Larson site. Photo from the Lake Onamia – Trunk Highway 169 Data Recovery Project.

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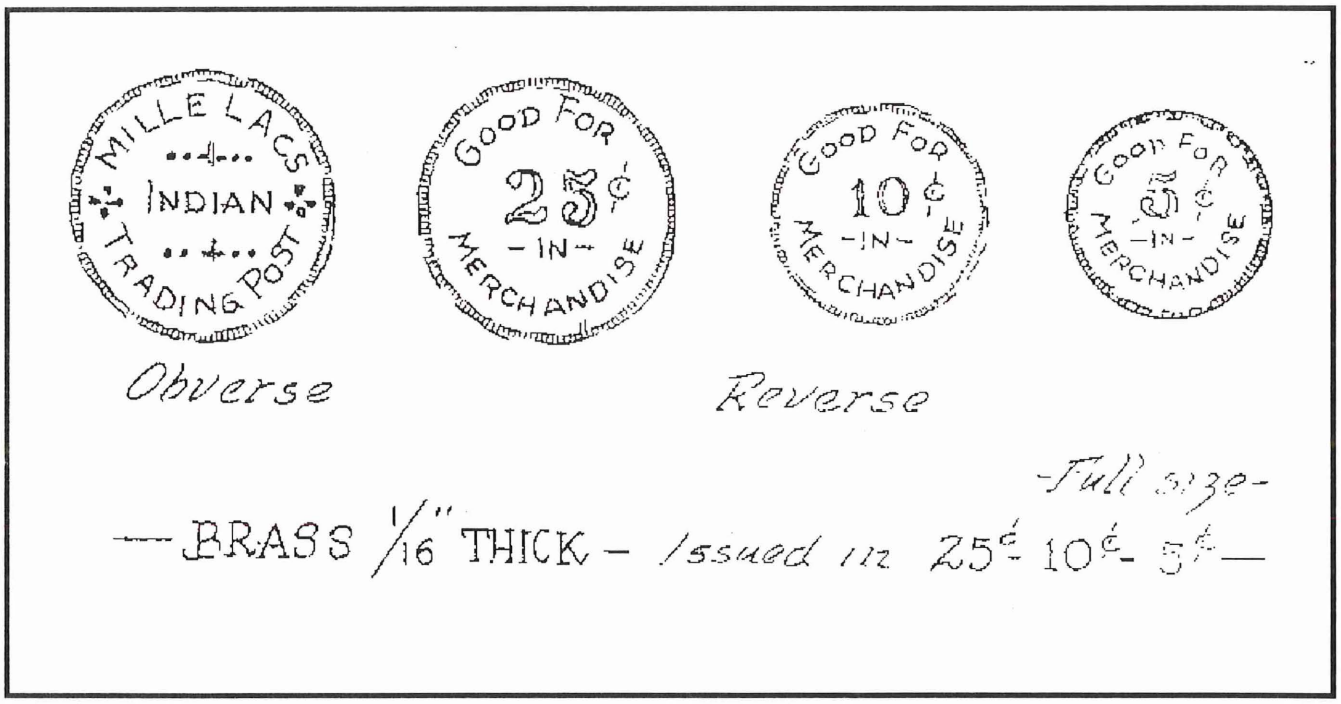

Figure 75. Merchandise tokens from the Ayers Trading Post, from Flaskerd (1962).

96506/FigF.pub