THE MIDDLE IROQUOIAN COLONIZATION OF HURONIA

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ABSTRACT

This archaeological study focuses on the identification and analysis of prehistoric Iroquoian migration patterns, and the examination of the adaptations made by pioneering Middle Iroquoian horticulturalists who colonized Simcoe County in south-central Ontario in the early fourteenth century. Unlike some other areas of southern Ontario where there is clear evidence of in situ development from the Early Iroquoian through to the Late Iroquoian period, the earliest Iroquoian village sites in Simcoe County date to the Middle Iroquoian period.

In order to confirm that the Middle Iroquoian occupation was the result of a migration, an archaeological migration model formulated by David Anthony (1990) was adopted in this study. The Anthony (1990) model contends that migration is a structured process that develops in a predictable manner once it has begun. Several of the general migration patterns identified by Anthony, as well as several new aspects of Iroquoian migrations, were identified in this study.

The results of this study indicate that Iroquoian migrations do evolve in a predictable manner and exhibit several characteristics which are readily identifiable using archaeological data. This includes familiarity with the destination area prior to the actual migration, a leapfrog settlement pattern consisting of settlement clusters, the placement of initial settlement clusters in areas which are easily accessible from the source area, an initial settlement system which has already been introduced in its final format with the

placement of semi-sedentary village sites in strategic locations within resource rich areas, and rapid initial population growth rates in the newly colonized area.

While any archaeological migration process will vary to some extent depending on the physical environment, socio-political organization, technological sophistication and settlement-subsistence patterns of the group involved, the migration patterns identified here are applicable to other suspected migrations involving slash and burn horticulturalists.

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CHAPTER 1

INTRODUCTION

The in situ hypothesis of Iroquoian development has now been the dominant paradigm in Iroquoian archaeology for over forty years. Throughout this period of Iroquoian archaeology there increasingly has been an emphasis placed on the examination of culture change at the local level, involving the analysis of local site sequences. While this approach has contributed greatly to our understanding of Iroquoian development, it has resulted in a heavily biased interpretation of the causes of culture change. By interpreting Iroquoian prehistory as the development of a series of relatively isolated and spatially static local and regional population groups with a long history of in situ development, Iroquoianists have focused solely upon endogenous processes. Until very recently, exogenous processes such as migration and diffusion have largely been ignored.

The application of world systems theory to archaeology beginning in the 1980's has led to the application of core-periphery interaction models (Dincauze and Hasenstab 1989) and interregional interaction models (Jamieson 1992) to Iroquoian archaeology. While these approaches can be criticized for overemphasizing the effects of interregional interaction (Williamson and Robertson 1994), they have heightened our awareness of some of the external factors involved in culture development. A related trend in archaeology has been the reemergence of migration as a valid explanatory mechanism

(Ammerman and Cavalli-Sforza 1984; Anthony 1990; Bettinger and Baumhoff 1982; Rouse 1986; Renfrew 1987; Snow 1995).

In Iroquoian archaeology, it has generally been assumed that prior to European contact Iroquoian groups were spatially static and did not engage in long distance migration. Yet several potential prehistoric examples of long distance Iroquoian migration have been identified, including the establishment of the Middle Iroquoian Nodwell site in Bruce County (Wright 1974), the mid-sixteenth century migration of Neutral groups from southwestern Ontario to the western end of Lake Ontario (Lennox and Fitzgerald 1990), the relocation of an entire late thirteenth century Owasco community from upstate New York to the Hibou site on the north shore of Lake Ontario (MacDonald and Williamson 1995), the possible migration of Early and Middle Iroquoian groups into western New York State (Jamieson 1991; Niemczycki 1986; Wright 1966), and the Middle Iroquoian colonization of Simcoe County (Dodd et al. 1990; Kapches 1981; Latta 1976; Warrick 1990). More recently, the debate over Iroquoian origins had reemerged as a subject of serious study. Snow (1995) has reintroduced an intrusion hypothesis for Iroquoian origins which argues that Iroquoian groups migrated into the lower Great Lakes region from central Pennsylvania around A.D. 900. Linguistic evidence appears to support this hypothesis (Fiedel 1991).

The general skepticism with which Snow's (1995) hypothesis has been received by Iroquoianists in southern Ontario reflects in part the suspicion which surrounds the use of migration as an explanatory mechanism. This is due in part to the continued strict adherence to the in situ paradigm in Iroquoian archaeology, as well as the lack of a suitable theoretical and methodological framework for identifying and examining archaeological

migrations (Anthony 1990). Even if the issue of Iroquoian origins is placed aside, it is clear that migration did play an important role in Iroquoian development. It is not the intent of this study to suggest that exogenous processes such as migration played a primary role in the evolution of Iroquoian culture. Both endogamous and exogamous processes must be considered when interpreting Iroquoian prehistory. However, potentially important processes such as migration should not be ignored simply because we appear to lack the proper tools to investigate them.

The purpose of this dissertation is to apply recently formulated models for the examination of archaeological migrations to the Middle Iroquoian colonization of Huronia (Simcoe County), in order to develop a framework for identifying and analyzing Iroquoian migration patterns. Unlike many other regions in southern Ontario where there is clear evidence of in situ development from the Early Iroquoian (ca. A.D. 900-1280) through to the Middle and Late Iroquoian periods (ca. A.D. 1280-1650), Simcoe County was not permanently occupied by Iroquoian groups until the late thirteenth or early fourteenth century. Despite over 100 years of archaeological research, no Early Iroquoian village sites have been found in this region. It is only in the Middle Iroquoian period that we see the appearance and proliferation of Iroquoian villages in Simcoe County. This suggests that the Middle Iroquoian occupation of Simcoe County was the result of a migration.

This potential migration will be examined in this dissertation by adopting a model for the study of long distance archaeological migrations which has recently been formulated by David Anthony (1990). The Anthony model (1990) was created by synthesizing various aspects of migration models created by anthropologists, demographers, geographers and sociologists as a

result of their analyses of modern migrations. In reviewing the results of recent migration studies, Anthony (1990) came to the conclusion that migration is a structured process that develops in a predictable manner once it has begun, and that a number of general characteristics of modern migrations are potentially identifiable using archaeological data. In applying this model to the Middle Iroquoian colonization of Simcoe County, it is hoped that positive evidence for the migration will be revealed, and that a modified version of the model can be constructed which can be applied to other Iroquoian migrations. The settlement-subsistence patterns of the initial Middle Iroquoian colonists will also be examined in order to gain additional insights into the migration process, and to determine how expanding agriculturists successfully colonized frontier regions.

This dissertation is organized into ten separate chapters. Chapter 2 examines the changing role which migration has played in archaeological explanation, particularly in Iroquoian archaeology. Chapter 3 provides a critique of the different models which have been developed for identifying and examining archaeological migrations. The migration model which has been adopted in this dissertation is also described in detail in Chapter 3. Chapter 4 describes the physical environment and culture history of Simcoe County in order to place the Middle Iroquoian colonization into context. Chapter 5 provides a discussion and rejection of factors other than migration, which may account for the lack of Early Iroquoian village sites in the region, and the sudden appearance of Middle Iroquoian village sites in the late thirteenth or early fourteenth century. Chapter 6 outlines the procedures which were followed in order to identify all of the known Middle Iroquoian village sites in the region, and to place these sites into a relative chronological

sequence. Chapter 7 identifies the potential source area for the colonists, and attempts to identify the basic structural conditions which may have caused the migration through the use of a push-pull model. Chapter 8 describes the results of the application of the Anthony migration model to the Middle Iroquoian colonization of Simcoe County. Chapter 9 utilizes a broadened ecological approach in order to examine some the strategies which were employed by the colonists in order to adapt to this region. Finally, Chapter 10 briefly summarizes the conclusions of this study.

CHAPTER 2
A BRIEF HISTORY OF THE ROLE OF MIGRATION IN ARCHAEOLOGICAL EXPLANATION

EARLY APPROACHES

The role of migration in archaeological explanation can be traced to late nineteenth century Europe when European archaeologists focused their attention on prehistoric trait distributions. These trait distributions formed the basis for the creation of archaeological cultures which were believed to represent distinctive groups of people (Anthony 1990:896). Significant changes in the cultural record were interpreted as the result of the movements of these people and migration became the dominant explanatory paradigm of nineteenth century archaeologists. Similarly in North America, where it was assumed that native culture had changed very little through time, changes that were identified in the archaeological record were also interpreted as the result of the movements of people (Trigger 1989:20). In the Northeast, for example, the spread of the Adena, Hopewell, Mississippian and Iroquoian archaeological cultures were interpreted as representing successive waves of migrants.

With the development of the culture-historical paradigm in the early twentieth century, both migration and diffusion were used to explain cultural change. As Trigger (1989:20) has pointed out, the chronologies for native cultural development were very short prior to the introduction of radiocarbon dating, and thus it appeared that the changes in native cultures occurred very

rapidly. This reinforced the belief that external factors, such as diffusion and migration, were the primary, if not the exclusive, causes of change.

The continued reliance on migration theories well into the twentieth century was due to several factors. Migrationist theories reinforced the belief that racially superior people conquer or assimilate inferior peoples (Adams et al. 1978:497). Also, the emphasis on migration occurred in the colonial period when westerners were migrating to and colonizing several continents on a massive scale (Rouse 1986:16). Finally, archaeology at this time suffered from an overemphasis on artifact traits and index fossils, short chronologies, overperiodization of cultural sequences and a severely limited data base (Adams et al. 1978: 497).

THE NEW ARCHAEOLOGY

As early as the 1940's archaeologists were becoming disillusioned with the culture-historical paradigm. Archaeologists were becoming increasingly dissatisfied with the overly simplistic explanations of culture change which were utilized in normative approaches. Migration and diffusion were gradually replaced by technological and environmental explanations for culture change. There was a general movement away from historical explanation toward more systemic models of analysis. By the 1960's, the New Archaeology had emerged as the dominant paradigm. It was argued that cultural systems remained in equilibrium unless there was a change in the relationship between them and their ecosystem context (Binford 1965). Technological and environmental factors were seen as the primary causes of change within this relationship. This encouraged American archaeologists to focus their attention on the internal systemic relations that existed within

individual societies (Trigger 1989:23). It was believed that the factors which caused change could be identified through an analysis of the local or regional environment, which with its human inhabitants represented a relatively autonomous and complete interactive system (Anthony 1990:505). Factors external to this system, such as migration, were considered to be irrelevant and were therefore ignored.

Within a systemic approach continuities in change became emphasized, while discontinuities which could be caused by migration or diffusion were de-emphasized. This was reinforced by the realization that the previously held impression of discontinuity in the archaeological record was in many cases due to a lack of sufficient archaeological data. The combination of neoevolutionary theories and new archaeological data which demonstrated long term continuity, resulted in an almost universal embracement of in situ developmental theories among North American archaeologists. Migration became a taboo word among processual archaeologists (Anthony 1992:1). In the rare cases where the archaeological record suggested that a migration may have taken place, an emphasis was placed on developing methodologies for identifying migration and its causes (Haury 1958; Rouse 1958). An overriding concern with the methodology of identifying archaeological migrations continues to this day (Rouse 1988; Snow 1995). The structure and process of archaeological migrations was not considered to be a worthy subject of study (Anthony 1990:523).

POST-PROCESSUAL ARCHAEOLOGY

By the 1970's, some archaeologists began to question ecological determinism, and there was a growing trend towards viewing cultural systems

as being open to other neighboring cultural systems (Trigger 1989:26). The development of world systems theory and interregional interaction models (Schortman and Urban 1987), have led to a growing appreciation of the extent to which different cultures affect each others development. Many archaeologists now believe that in order to understand culture change we must examine both endogenous and exogenous factors. A much more holistic approach has been adopted in which each specific cultural entity is influenced by a number of different factors including environmental constraints, cultural traditions, competition with neighboring cultures and external and internal innovation (Trigger 1989:27).

The adoption of interregional interaction models has led to a new awareness of the potential role of migration as one of many external factors that may lead to culture change (Adams et. al 1978). Migration has again emerged as a serious subject for research with several recent studies which examine the spread of technologies, language and/or peoples in Europe (Ammerman and Cavalli-Sforza 1984; Anthony 1990, 1992, 1993; Renfrew 1987; Robb 1991).

Anthony (1990, 1992, 1993) in particular, has been instrumental in developing a new approach to the study of migration and its role in culture change. Anthony (1990:895) has argued that most archaeologists consider migration to be very weak as an explanatory construct because they perceive migration to be unpredictable and difficult to identify. The migration issue has been avoided, not because archaeologists consider it to be unimportant, but because they lack an adequate body of method and theory to incorporate it into explanations of culture change (Anthony 1990:895). The standard classificatory and methodological approaches to migration (Haury 1958; Rouse

1958), have failed to fill this void, and have not led to a greater understanding of how migration itself works. By utilizing ethnographic studies and models developed by geographers and sociologists, Anthony (1990) has created a model which demonstrates that migration should be viewed as a process that develops in a predictable manner. This model provides the methodology for identifying the migration process in the archaeological record, as well as the supporting theoretical framework. The combination of world systems theory, interregional interaction models and more sophisticated approaches to migration provide a more balanced view of the internal and external causes of culture change in archaeological studies.

MIGRATION AND IROQUOIAN ARCHAEOLOGY

The changing role of migration as an explanatory tool in Iroquoian archaeology parallels its history within archaeology in general. Prior to the mid-twentieth century, variability and change in the archaeological record of northeastern North America were believed to have been caused by a series of population movements. In the Great Lakes area, the change from the Archaic to the Middle Woodland Period was attributed to the replacement of an Inuit-like population by Algonquians (Trigger 1970:21). The development of horticulture in the Late Woodland Period was attributed to the replacement of the Algonquians by culturally superior Iroquoian groups moving up from the southeast.

Scholars began to speculate as to the origins of Iroquoian groups almost immediately after missionaries and explorers first came into direct contact with them in the seventeenth century. In 1641, Jesuit missionary Jerome Lalement (Thwaites 1896-1901 21:193-195) was the first to suggest that

Iroquoian groups migrated into southern Ontario from areas to the southeast. Prior to the development of archaeology in the nineteenth century, historical sources and native oral traditions were the main source of information on Iroquoian development. This information was utilized to generate what became known as the Laurentian hypothesis which suggested that Iroquoian groups originated in the St. Lawrence valley (Trigger 1970:9).

The Laurentian hypothesis was replaced in popularity in the late nineteenth and early twentieth centuries by the Southern hypothesis, which had originally been proposed by Lalement in 1641. The basis for this theory was the Iroquoian linguistic affiliation with the Cherokee. Ethnographic evidence also suggested that several basic features of Iroquoian culture such as clans, moieties, and town councils were present in the southeast. On the basis of these general similarities, several researchers identified the Mississippi or Ohio valleys as the original homeland of Iroquoian groups (Lloyd 1904; Parker 1916). The Southern hypothesis was fueled by the general belief that Iroquoian culture had a very shallow time depth in the Northeast, and that horticultural groups could not have developed in situ in northern regions such as the Great Lakes (Trigger 1970:21).

The Southern hypothesis continued to be popular until the 1950's. However, with the end of the Second World War, archaeological research in the Northeast increased substantially and archaeologists were beginning to recognize long term continuities in the archaeological record. James Griffin (1944) was the first to suggest that Iroquoian groups had been living in the Northeast for much longer than previously believed. Nevertheless, migration was still a basic component of Griffin's (1944) proposal that the Iroquois developed from Middle Woodland Hopewellian cultures, and then migrated

north into the lower Great Lakes. Griffin's proposal was supported by Richard MacNeish's (1952) work on Iroquoian pottery types in the lower Great Lakes. MacNeish utilized the direct historical approach to trace similarities in pottery types back through time from contact period Iroquoian sites to Middle Woodland Point Peninsula sites. As a result of this research, MacNeish (1952:89) proposed that there was cultural continuity in the lower Great Lakes from the Middle Woodland period through to the Late Iroquoian period. This proposal became known as the in situ hypothesis of Iroquoian development, and was the first theory on Iroquoian origins that was based solely on archaeological evidence.

Although the in situ hypothesis was to have a great impact on the future direction of Iroquoian archaeology, migrationist theories continued to play an important role in the 1950's and 1960's. While archaeologists quickly accepted the hypothesis that Iroquoian groups had developed in situ in the Northeast, they continued to utilize migration hypotheses to account for Iroquoian culture change and the geographical distribution of Iroquoian groups. Emerson (1954:35) revived the Laurentian hypothesis when he suggested that Iroquoian groups originated near the mouth of the St. Lawrence River, and then migrated along the shores of Lake Ontario into southwestern Ontario. What became known as the MacNeish-Emerson theory of Iroquoian development (Emerson 1961), suggested that Ontario Iroquoian culture began when the St. Lawrence River migrants colonized the north shore of Lake Erie in central southwestern Ontario. Part of this group remained in southwestern Ontario and developed into the prehistoric Neutral, while another group broke off from this nucleus and migrated east to settle in the Toronto area. It was argued that this second group then developed into the

Lalonde culture, which was considered to represent the prehistoric Huron (Emerson 1961:199). From their base in the Humber and Black Creek River valleys, Lalonde groups eventually moved northward into Simcoe County to form a component of the historic Huron population of Huronia. Ridley (1952a, 1952b, 1958, 1963), on the other hand, argued that the Lalonde culture and the historic Huron developed in situ in Huronia, while a splinter group migrated south from Huronia to the Humber and Black Creek River valleys. Ridley (1952a, 1952b, 1958b, 1963) believed that this splinter group eventually migrated westward to the Grand River Valley to develop into the historic Neutral.

Wright (1966) made a significant advance in the conceptualization of Ontario Iroquoian development with the publication of *The Ontario Iroquois Tradition*. Wright (1966) divided Iroquoian prehistory into three stages: Early, Middle and Late. During the Early stage, Wright (1966:22) argued, southern Ontario was occupied by two distinct branches: Glen Meyer in southwestern Ontario and Pickering in south-central and southeastern Ontario. The Middle stage began around A.D. 1300 with the convergence of these two branches, which Wright (1966:53) believed was caused by the conquest and colonization of the Glen Meyer homeland by Pickering groups. The result of this fusion was the Middle stage, which consisted of a broad, homogeneous cultural horizon across all of southern Ontario. The Late stage began around A.D. 1400 with the divergence of the homogeneous cultural horizon into regional groups, which eventually developed into the historically documented Iroquoian tribal entities. From a theoretical perspective, Wright's (1966) seminal work was important because it blended together several different cultural processes to account for Iroquoian development. Wright (1966)

utilized both migration and colonization (Early and Middle Stages), as well as in situ development and diffusion (Middle and Late Stages), to account for the cultural similarities and differences displayed by Late Iroquoian groups.

As a whole, the work conducted by Iroquoian archaeologists in the 1950's and 1960's demonstrates that while the in situ hypothesis had been accepted, migration and colonization were still relied upon to varying degrees to account for Iroquoian culture change. It was not until the 1970's that migration and other external causes were almost totally excluded from the study of Iroquoian prehistory. There were several reasons why external factors such as migration were excluded from Iroquoian research at this time. In part, this reflected the more general trend in the New Archaeology towards emphasizing internal, rather than external, causes of culture change. More importantly, the in situ theory for Iroquoian development stressed local development and had an anti-migrationary bias (Trigger 1970:27). This theory of cultural development minimized the importance of external factors, while stressing the unbroken continuity of local sequences. Also, the increasingly large amounts of archaeological fieldwork which were conducted in the 1960's and 1970's demonstrated that many of the apparent discontinuities in the Iroquoian archaeological record were due to a lack of sufficient archaeological data. There was a growing dissatisfaction among a new generation of Iroquoian archaeologists with the approaches taken by their predecessors. As Ramsden (1977:298) has observed:

> The tendency in the past has been to excavate and analyze sites in relative isolation from their immediate cultural environment, and to make comparisons, instead, with sites that happened to be available in the literature, often located a hundred miles away or more. The questions that prompted these analyses have usually been of a general and historical nature, causing a pre-occupation with

> chronology and broad historical connections at the expense of our understanding of cultural events in local sequences.

Iroquoian archaeologists became convinced that in order to answer their questions concerning culture change and development, they would have to isolate and examine individual site sequences at the local level. In the 1970's and 1980's there were a series of projects which examined local site clusters and followed the movements of one or two communities through time and space. The benefits of this approach were first demonstrated by Tuck (1971) in his study of the evolution of the Onondaga in upstate New York, and was soon followed in southern Ontario by Finlayson and Byrne (1975) and Smith (1987) in the Crawford Lake area, Ramsden (1988, 1990) in the Trent River valley, Finlayson and Poulton (1979) in the Pickering area, Kapches (1981) in the Markham area, and Pearce (1984) in the London area. The emphasis in most of these studies was the interpretation of culture change in terms of internal factors, to the exclusion of external factors. The perception was that Ontario Iroquoian prehistory consisted of a series of relatively isolated, stable communities that had a long history of in situ development, and were largely oblivious to external factors such as migration, colonization, diffusion and trade prior to European contact. Iroquoian archaeologists in fact have contrasted the numerous population shifts and migrations that characterized the contact period, with the supposedly "stable local population" pattern of the prehistoric period (Ramsden 1978:104).

The emphasis which has been placed on in situ development in Iroquoian archaeology is now beginning to wane. Several Iroquoianists have recently applied models to Iroquoian prehistory which emphasize external factors as explanatory mechanisms. Dincauze and Hasenstab (1989) employed

an core-periphery interaction model to argue that the development of cultural traits typical of Iroquoian groups, including corn horticulture, semi-sedentary villages, their socio-political organization, and many aspects of their material culture, were the result of contact with Mississippian groups in the Southeast and Midwest. Jamieson (1992) has used an interregional interaction model to suggest a similar process, in which contact and interaction with these more complex groups led to the "Mississippification" of Ontario populations.

Other Iroquoian archaeologists have begun to question the entire basis for the in situ paradigm. The question of Iroquoian origins has again arisen, with the suggestion by some New York State archaeologists and linguists (Fiedel 1991; Snow 1995) that Iroquoian speaking peoples did not develop in situ in the lower Great Lakes. Linguistic data on the divergence of Eastern and Central Algonquian language groups, and the lack of any clear archaeological evidence linking early horticulturalists with Middle Woodland groups, suggest that Iroquoian groups may have colonized the lower Great Lakes area in about A.D. 900. Iroquoianists are currently reevaluating the archaeological data base in reaction to these recent proposals.

The application of interregional interaction and core-periphery models to Iroquoian prehistory has led to a greater appreciation of the potential impact of external factors on Iroquoian culture change. The reemergence of the debate over Iroquoian origins and the rejection by some archaeologists of the in situ paradigm, have also led to a reevaluation of migration and its role in Iroquoian culture change. The reemergence of migration as a serious subject for study in Iroquoian archaeology has occurred at a time when new, sophisticated models for examining migration (Anthony

1990) are also being developed. The theoretical and methodological approaches that are utilized in this study of the Middle Iroquoian colonization of Simcoe County, Ontario, are a direct result of these recent developments.

CHAPTER 3

MODELS FOR IDENTIFYING ARCHAEOLOGICAL MIGRATIONS

INTRODUCTION

In order to confirm that a significant and abrupt change in the archaeological record was caused by an actual migration of people, it is first necessary to identify the characteristics of prehistoric migrations. Until recently, archaeologists have used an approach which emphasizes the classification of artifact assemblages and the identification of related archaeological cultural units, without attempting to understand how migrations actually took place. More recently, some archaeologists have used contemporary migration studies to develop both a methodology and a supporting theoretical framework for examining migration as a structured process which develops in a predictable manner. The various models which have been applied to the analysis of archaeological migrations are discussed below.

TRADITIONAL APPROACHES TO IDENTIFYING PREHISTORIC MIGRATION

As archaeologists became uncomfortable in the mid-twentieth century with migration as an *ad hoc* explanation for all aspects of culture change, they began to develop a set of criteria by which migration could be identified in the archaeological record (Haury 1958; Rouse 1958; Trigger 1968). The emphasis was on developing strict methodological procedures for confirming

that significant changes in the archaeological record were the result of migration, and not diffusion, or indigenous development.

Haury (1958:64-66) outlined five steps which should be followed in order to identify migration:

1) The migrating people as represented by their material culture must be identified as an intrusive unit in the region they have colonized.

2) The archaeologist must identify the source area for the migrants and, if possible, locate the transportation route they followed into the new region.

3) It must determined that all components of the intrusive culture are contemporaneous.

4) The causes of the migration must be established.

5) Other factors which might account for the sudden appearance of a new cultural assemblage, such as independent invention or diffusion, must be systematically eliminated.

The similar approaches developed by Haury (1958) and Rouse (1958) reflected the belief of archaeologists in the 1950's that the best approach to identifying migration archaeologically was to hone the classification of artifact assemblages, refine cultural chronologies, identify culturally diagnostic traits and link them to ethnohistorically identified linguistic groups (Anthony 1990:897). It was assumed that groups of artifacts, features and settlement types represented actual cultural groups, and therefore the movement of people would be accompanied by the movement of the artifacts, features and settlement types which characterized that culture (Anthony 1992:4). This simplistic correlation between prehistoric archaeological cultures and actual ethnic groups has been brought into question by developments in archaeological method and theory (Hodder 1978; Shennan

1978). More recent research has suggested that material culture is not merely a passive reflection of ethnicity, and that spatial variation in artifact assemblages is a result of a variety of different factors (Hodder 1982, 1986). The Haury-Rouse approach was flawed because of its assumptions regarding material culture and ethnicity. Another major weakness with this model is that it relies heavily on negative archaeological evidence. Apparent discontinuities or significant changes in the archaeological record often only reflect a lack of sufficient archaeological research in any given region.

Because the Haury-Rouse model did not attempt to examine and understand the migration process itself, it failed to produce a comprehensive method for identifying migration (Adams et al. 1978:523; Anthony 1990:896). By focusing upon the identification and proper classification of archaeological units in the absence of an understanding of the mechanics of migration, Haury (1958) and Rouse (1958) failed to connect their methodology with a suitable theoretical framework. The initial identification and examination of potential prehistoric migrations will often involve applying some of the steps outlined by Haury (1958). However, a more detailed examination of prehistoric migrations requires a more thorough understanding of the migration process and its implications for archaeological analysis.

Several researchers have noted that some historically documented large scale long distance migrations in Africa and Europe have not been traceable using archaeological data (Collett 1987; Hodder 1978; Philipson 1974; Trigger 1968). It is suggested here that the failure to recognize these migrations archaeologically is partially due to the inadequacies of the traditional approaches to migration used in these studies. The inadequacies of

the Haury-Rouse approach to migration analysis contributed to the belief by most archaeologists who were active in the 1960's and 1970s that prehistoric migration was very difficult, if not impossible, to identify and verify using archaeological data. As a result, the potential role of migration in culture change was largely ignored because of the lack of a suitable methodological and theoretical framework for examining it. Unfortunately, in the absence of a better alternative some Iroquoian archaeologists have recently applied the Haury-Rouse model to the examination of potential Iroquoian migrations (Snow 1995; Wright 1992).

SHORT DISTANCE MIGRATION AND THE WAVE OF ADVANCE MODEL

Most of the modern examples of migration which have been examined by demographers and geographers have consisted of movements over a relatively short distance within a localized area (Lewis 1982:44). This appears to be due to the effect that distance has upon information pertaining to available opportunities, as well as the low economic costs of short distance relocation (Lewis 1982:45). Also, with an increase in the distance moved comes a decrease in kinship connections and support (Anthony 1990:901).

Short distance migration also appears to have been the most prevalent form of movement prehistorically. Short distance movements have long been recognized by Iroquoian archaeologists working in southern Ontario. Archaeological and ethnohistorical data indicate that Iroquoian village sites were occupied for a period of between 10 and 40 years, after which time the community moved to a new location (Biggar 1922-1936; Heidenreich 1971; Sykes 1980; Thwaites 1896-1901 Vol.10; Warrick 1988b, 1990; Wrong 1939). Iroquoian villages were relocated due to a number of factors related to slash

and burn horticulture including soil exhaustion, firewood depletion, refuse accumulation, insect infestation, and disease (Heidenreich 1971; Starna et al. 1984; Sykes 1980; Thwaites 1896-1901 Vol.10;). The reconstruction of local Iroquoian village relocation sequences indicates that the distance between the old and new village sites rarely exceeded 15 kilometres (Heidenreich 1978:381; Pearce 1984:140-142). On average, most Early and Middle Iroquoian village relocations appear to have involved distances of less than 5 kilometres (Pearce 1984:142; Timmins 1992:457; Warrick and Molnar 1986:30; Williamson 1985:344). Much of this movement appears to have taken place within discrete cultural territories defined by various geographic features such as drainage systems and topographical features (Finlayson and Smith 1982; Pearce 1984; Warrick and Molnar 1986). Accordingly, short distance migration among Iroquoian groups in southern Ontario is tentatively defined here as consisting of village relocations over a distance of less than 15 kilometres for reasons generally associated with resource depletion.

The prevalence of short distance migration and the ease with which it can be recognized archaeologically have led some archaeologists to conclude that all prehistoric migrations fall into this category. The only widely adopted model for migration among archaeologists is one which is based upon frequent short distance movements. This is the wave of advance model developed by Ammerman and Cavalli-Sforza (1973, 1979, 1984).

Ammerman and Cavalli-Sforza (1973, 1979, 1984) attempted to map the spread of Neolithic farmers across Europe by mapping the spread of cultivated cereals found on Neolithic sites. To estimate the time of arrival of farmers at various locations, Ammerman and Cavalli-Sforza (1984:53) used radiocarbon dates associated with sites containing cultivated cereals and measured the rate

of spread from the original source area for these cultigens (Figure 1). The results of their analysis suggested that the rate of spread of early farmers was fairly constant and averaged one kilometre a year, or 25 kilometres every generation (Ammerman and Cavalli-Sforza 1984:57-61). Ammerman and Cavalli-Sforza (1984:62) proposed that the movement of Neolithic farmers into Europe took the form of a population wave expanding outward at a steady rate. They believed that there was a slow, continuous expansion, consisting of the frequent formation of daughter communities at short distances from their original community due to population growth. Ammerman and Cavalli-Sforza

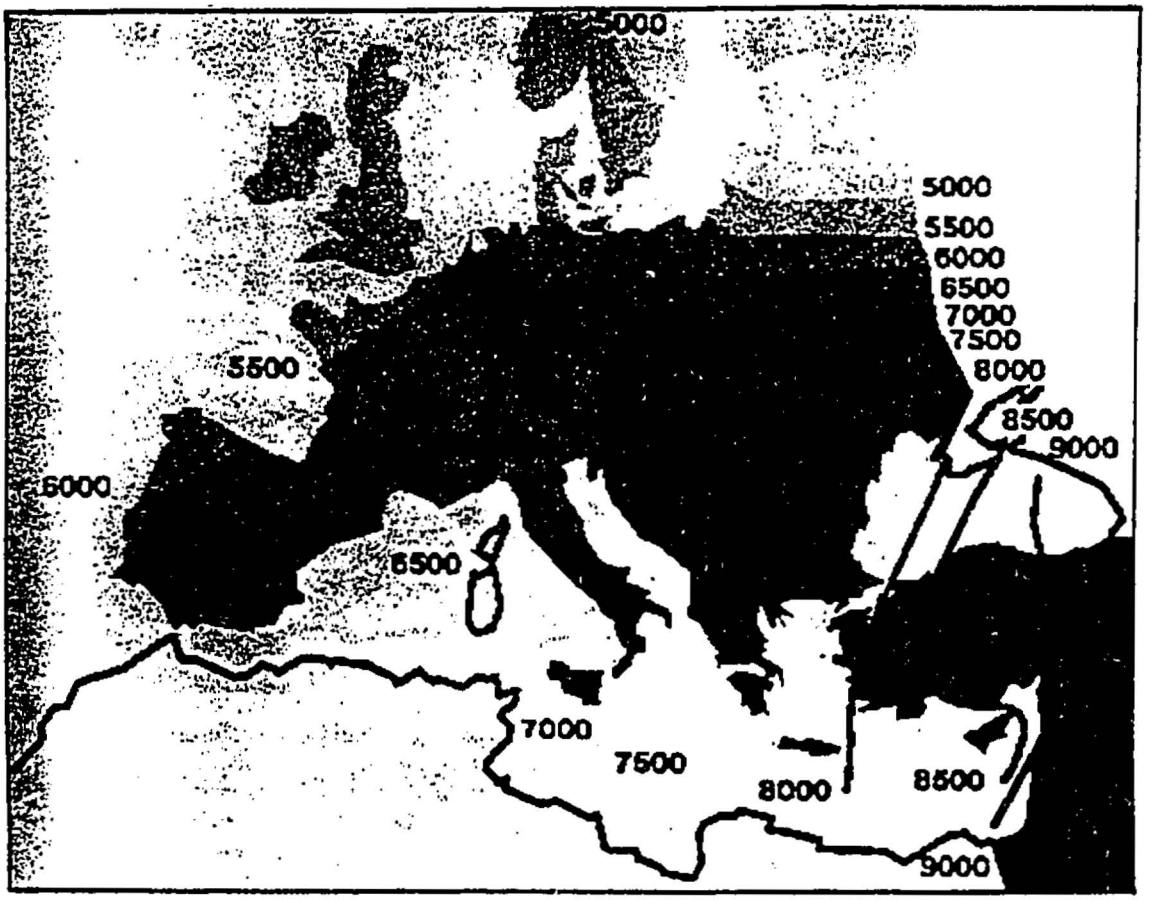


Figure 1. The Wave of Advance Model (after Ammerman and Cavalli-Sforza 1984: Figure 6).

(1984:62) did not believe that the Neolithic colonization of Europe consisted of a intentional long distance colonization. Instead, they proposed that the spread of farming through Europe was the result of a slow continuous expansion along a frontier due to population growth and short distance migration.

Some European archaeologists quickly adopted the wave of advance model in their analyses of the spread of farming across Europe (Renfrew 1987; Rouse 1988). Many archaeologists also utilized the wave of advance model in their analyses of migration and population expansion in different parts of the world. Martin (1973) used a variant of the model in his analysis of the spread of Paleo-Indians into the Americas. Cherry (1981) interpreted population expansion across the Polynesian Islands after 1500 B.C. as resembling a wave of advance. More recently, Young and Bettinger (1992) have modified the wave of advance model for the analysis of the spread of Numic speakers from southeastern California to the Great Basin.

Iroquoian archaeologists working in southern Ontario have also envisaged the movement of Iroquoian communities into new areas as a slow gradual process. It has often been assumed that Iroquoian expansion was usually the result of a constant pattern of village abandonment and relocation, in which communities slowly worked their way up various drainage systems into new territory. The spread of Iroquoian communities into Simcoe County in the Middle Iroquoian period (Latta 1976:55) and in the Contact period (Emerson 1961:181; Heidenreich 1971:89; Trigger 1962:141), has been interpreted as the result of a series of short distance migrations. More recently, Warrick (1990:360) has stated that the Middle Iroquoian expansion into Simcoe County closely resembles the wave of advance model.

The popularity of the wave of advance model has waned considerably over the last ten years. Recent archaeological research on the origins of agriculture in Neolithic Europe has shown that the introduction of farming was much more complex than Ammerman and Cavalli-Sforza (1973, 1979, 1984) envisioned when they formulated their model. The development of agriculture in Europe now appears to have been the result of several interrelating factors including indigenous development, diffusion, and colonization (Barker 1985; Bogucki 1987). One of the few instances in Europe where the appearance of agriculture does appear to have been the result of the actual migration of farmers, was the spread of Linear Pottery culture settlements across central Europe (Bogucki 1987; Kruk 1980; Milisauskas 1986). Archaeologists examining the colonization of these areas of Europe have unanimously rejected the wave of advance model (Barker 1985:253; Bogucki 1988:7; Milisauskas and Kruk 1986:159; Neustupny 1988:456).

The analysis of the spread of Linear Pottery settlements indicates that it was not a gradual, continuous process as suggested by the wave of advance model. Instead, the expansion consisted of a series of long distance migrations that were highly directed towards specific areas which contained suitable resources for agriculturalists (Bogucki 1988:95; Kruk 1980:13; Milisauskas 1986:2). The wave of advance model, because of the considerable breadth of its temporal and spatial scale, masked considerable irregularities in the process of Neolithic expansion (Alexander 1978:14; Barker 1985:253; Broadbank and Strasser 1991:237). The broad temporal scale of the wave of advance model also tends to combine both short and long distance migration, and makes it impossible to distinguish one from the other (Anthony 1990:902).

As Anthony (1990:902) has pointed out:

> The wave-of-advance model might accurately account for the idealized results of diverse population movements averaged over great spans of time (millennia), but it does not adequately describe the dynamics of actual population movements examined on the scale of centuries or less.

Other archaeologists who have examined population expansion elsewhere have also rejected the wave of advance model. The Neolithic colonization of Crete, for example, appears to have been the result of a highly directed long distance migration, in which less desirable locations were skipped over in search of more attractive areas for settlement (Broadbank and Strasser 1991:239).

Long Distance Migration

The term long-distance migration can be defined as the purposeful directional movement by human groups attempting to permanently settle a specific, but relatively distant, location (Broadbank and Strasser 1991:233). Among Iroquoian groups, the most obvious cases of long distance migration occurred in the Late Iroquoian period (ca. A.D. 1400-1650) as a result of European contact, as well as increased intertribal warfare and competition over trade routes (Heidenreich 1971; Lennox and Fitzgerald 1990; Ramsden 1977; Trigger 1985). Examples of long distance Iroquoian migration which occurred in this period include the movement of Neutral groups from southwestern Ontario to the west end of Lake Ontario (Lennox and Fitzgerald 1990), the movement of Huron groups from the north shore of Lake Ontario into Huronia and the Balsam Lake area (Heidenreich 1971; Ramsden 1977; Trigger 1976), and the movement of Huron groups from Balsam Lake into

Huronia (Ramsden 1988). The general characteristics of these migrations are quite similar. They each occurred very rapidly, were oriented towards specific destinations, and involved distances in excess of 50 kilometres. Unlike short distance Iroquoian migration, long distance Iroquoian migration appears to have been caused by exceptional circumstances such as intertribal warfare, competition over European trade routes, and socio-political realignment.

Until recently, there were no models which archaeologists could apply to the examination of prehistoric long distance migration. In many cases, prehistoric examples of long distance migration were misinterpreted through the inappropriate application of the wave of advance model (Ammerman and Cavalli-Sforza 1973, 1979, 1984; Cherry 1981; Renfrew 1987; Rouse 1986; Warrick 1990; Young and Bettinger 1992). The use of the wave of advance model masked long distance migrations as a series of short distance movements.

David Anthony (1990, 1992, 1993) has recently formulated an archaeological model for the examination of long-distance migration. The Anthony model (1990) was formulated by bringing together various aspects of migration models created by anthropologists, demographers, geographers and sociologists as a result of their analysis of modern migrations. By synthesizing the results of recent migration studies, Anthony (1990:895-896) came to the conclusion that migration is a structured process that develops in a predictable manner once it has begun (Figure 2). Anthony's (1990) analysis of modern migration studies indicated that there were a number of general characteristics that were shared by most migration processes. Anthony (1990:898) suggested that many of these characteristics were potentially identifiable using archaeological data, assuming that regular patterns in modern migrations were applicable to prehistoric migration.

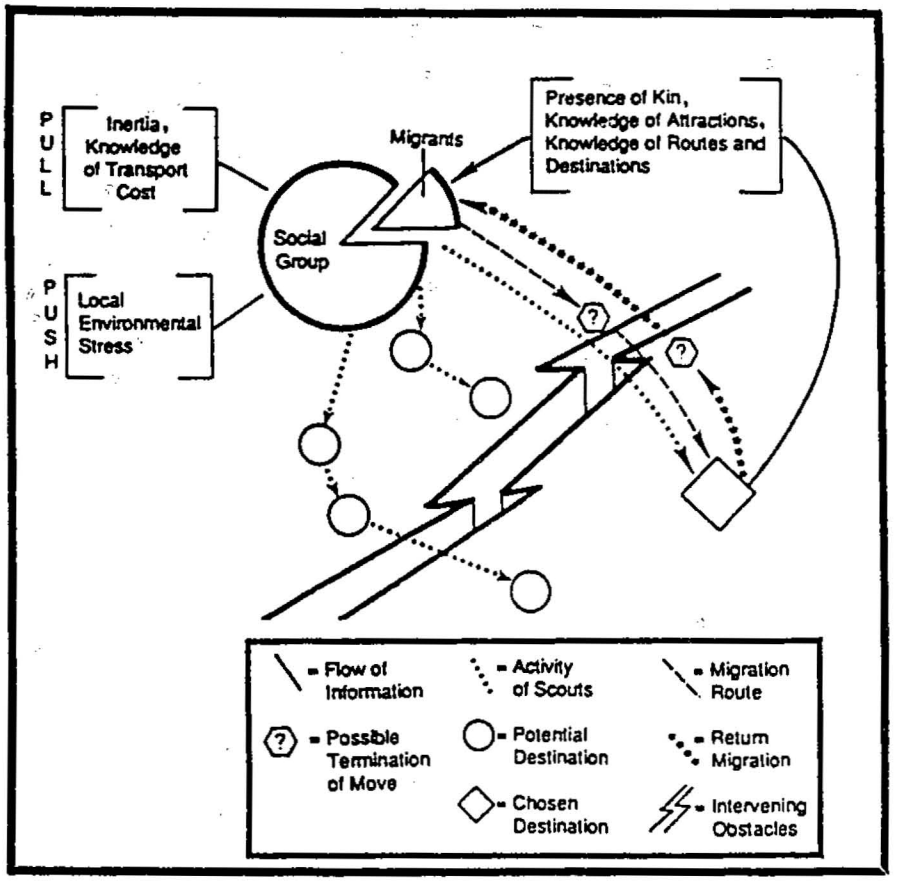


Figure 2. D. Anthony Migration Model (after Anthony 1990: Figure 1).

The general migration patterns which Anthony (1990) has suggested are identifiable in the archaeological record can be summarized under six general headings: conditions favoring migration, leapfrogging, migration streams, return migration, migration frequency and migration demography. Each of these characteristics of migration is briefly described below following the model established by Anthony (1990:899-905);

Conditions Favoring Migration

The most common aspect of previous approaches to the examination of archaeological migrations has been the emphasis which has been placed upon

identifying the causes of the migration. Unfortunately, this is the one aspect of migration which is almost impossible for archaeologists to reconstruct adequately.

Studies of recent migrations have shown that the causes of migration are very complex (DeJong and Gardner 1981). The decision to migrate is also the result of a very complex decision-making process and involves both macrofactors and microfactors (Gardner 1981:61). Macrofactors include various aspects of the physical and social environment such as environmental change, resource availability, resource competition, and kinship structure. Microfactors include the level of the decision-making unit, community and individual value systems, goals and motives. Thus, the decision to migrate is based upon a number of interrelated factors and "multiple motives" (DeJong and Fawcett 1981:39). It is because of this complexity that it is very difficult to identify the underlying causes of migration even in the case of modern migrations with living migrants (DeJong and Fawcett 1981:43). Due to this complexity, it is unlikely that the proximate causes of archaeological migrations can be identified (Anthony 1990:898).

Demographers and geographers have attempted to identify the causes of migration by utilizing various forms of a push-pull model. Negative push factors in the place of origin and positive pull factors in the destination area are identified and evaluated in order to reconstruct the various interrelated factors which may have caused the migration (Lee 1966). These factors are often ranked, weighted and quantified by using cost benefit analysis, regression models and principal component analysis (Lewis 1982; Rodgers 1970; Speare 1971). Unfortunately, the extremely large and detailed data bases

which are required to perform these types of analyses are simply not available to archaeologists studying prehistoric migrations (Anthony 1990:898).

Due to the difficulty in identifying the proximate causes of archaeological migrations, it would appear to be more productive to limit the examination of causality to reconstructing the general structural conditions which favor migration. This can be achieved through the application of a push-pull model. The archaeologist must reconstruct the positive pull factors in the destination area and the negative push factors in the source area. The greater the difference between the pull factors in the destination area and the push factors in the home area, the greater the likelihood that migration will take place (Davis 1974:93; Lee 1966:51). The greater the differences between the source and destination areas, the greater will be the attractiveness of the new region (Lewis 1966:56).

The push and pull factors which are most often associated with migration are economic in origin (Lewis 1982:117; Schwartz 1970:176). Significant economic differences between the source and destination areas such as population density, carrying capacity, and resource potential, often precede long distance migration. In general, long distance migration most often occurs between areas which exhibit significant differences in productivity (Anthony 1990:900). Other factors which may increase this difference in productivity, such as environmental change, warfare, or technological change, will also increase the likelihood of migration (Anthony 1990:900).

In reconstructing the push and pull factors associated with migration causality, it must be remembered that a simple tally of the push and pull factors is inadequate for identifying all of the relevant structural conditions

(Lewis 1966:51). Potential intervening obstacles between the source and destination area, as well as the distance involved must also be taken into consideration. Changes in transportation technology for example, by reducing the cost of movement, may make long distance migration more likely (Anthony 1990:900). Also, it is the perception of the push and pull factors by the potential migrants, not the actual factors themselves, which ultimately leads to the decision to migrate (Lee 1966:51). The decision to migrate is a result of perceived reality, rather than a simple response to actual structural conditions (Mangalam and Scharzweller 1970:11). Hence, the decision to migrate is a subjective act, and may not always be a rational response to structural change (Lee 1966:50; Mangalam and Scharzweller 1970:11). The prehistoric perceptions of the structural conditions are virtually impossible to identify archaeologically. Finally, pull factors only apply to those destination areas of which the potential migrants are aware. The mobility of the migrants is restricted to potential destination areas which are within their information sphere. This usually consists of areas where the migrants themselves, or their friends and relatives, have resided or visited (Greenwood 1970:383).

It is partially because of these complicating factors that the push-pull model of migration causality has been criticized by some researchers as being an overly simplified approach to a complex process (Lewis 1982:101). The production of a "shopping list" of the factors which may have motivated a group to migrate does reduce the decision-making process to a very basic level of analysis. Nevertheless, given the limitations of identifying the proximate causes of archaeological migrations, the push-pull model can be useful in identifying some of the basic structural conditions underlying prehistoric migration.

A more relevant issue for archaeologists utilizing the push-pull model is its tendency to emphasize the economic causes of migration (Anthony 1990:898; Lewis 1982:113). Several documented migrations appear to have been caused largely by ideological factors. The migration of the Helvetii in 58 B.C. in western Europe appears to have at least been partially motivated by their desire to gain prestige through warfare and territorial expansion (Anthony 1990:898). In Mesoamerica, elite Mayan groups often expanded into new regions in order to create new opportunities for increasing their social position within their kin-based prestige system (Anthony 1993:7; Fox 1989). Orme (1981:67) has suggested that the expansion of the Iban of Borneo into virgin forested areas was motivated by both economic and ideological factors, including the prestige which would be gained by clearing and occupying new territory.

Despite its limitations, the push-pull model for examining prehistoric migration causality is an improvement on the previous approaches archaeologists have used. In the past, archaeologists have often focused upon individual causes of migration, usually revolving around population pressure and resource depletion in the home region (Ammerman and Cavalli-Sforza 1984:62; DeAtley 1984:17; Hamond 1981:215; Hess 1979:128; Milisauskas and Kruk 1989:406; Rouse 1986:181; Schwartz 1970:176; Wood and McAllister 1980:180). The push-pull model encourages an examination of multiple factors and recognizes that these factors are closely interrelated. The push-pull model also forces archaeologists to look at structural conditions in both the home region and destination area.

Leapfrogging

Several studies have shown that modern long distance migrations of farming communities into new territory create a leapfrog pattern of settlement (Lee 1966:55; Lefferts 1977:43; Simkins and Wernstedt 1971:7). This pattern is known as channelized or chain migration to demographers and geographers (Lewis 1982). In the course of long distance migration, less desirable areas are bypassed in favor of more optimal locations. As a favorable area becomes colonized, subsequent migration becomes focused on the specific location occupied by the initial colonists (Lee 1966:55). This creates an expanded area of settlement around the initial pioneering communities (Simkins and Wernstedt 1971:26).

The archaeological settlement pattern produced by the leapfrog pattern will consist of clusters or islands of settlement in attractive locations, surrounded by large unoccupied areas (Anthony 1990:903). The areas which are avoided may not be conducive to settlement by agriculturalists, or may be simply less well known to the potential migrants than alternative locations (Anthony 1993:10). The analysis of the spread of Neolithic Linear Pottery farming communities across central Europe indicates that it resembles the leapfrog pattern much more closely than it does a wave front (Kruk 1980:13; Milisauskas 1986:2; Bogucki 1987:5). The communities are often clustered in areas containing fertile soils in river valleys along flood plain areas. The Neolithic colonization of Crete involved the avoidance of less attractive islands between Crete and the mainland (Broadbank and Strasser 1991:239). In all of these cases, the archaeological evidence suggests that these were well planned, highly directed long-distance migrations.

Prior to the actual migration of large groups to specific destinations, there is a crucial period where information is gathered concerning the potential destination areas. In general, people do not migrate to an area which they know nothing about. People are much more likely to move to areas about which they have some information (Greenwood 1970; Brown et al. 1977). The search for potential locations for colonization is limited to those places with which people are familiar, either through first hand experience or through communication with others who have visited the location. Human movement is therefore restricted and controlled by knowledge of various geographic regions (Brown et al. 1977:335). Migration from one place to another also declines as the distance between the two increases, partially because knowledge concerning a particular locality also tends to decrease with distance (Greenwood 1970:375; Simkins and Wernstedt 1971:94). After an area is initially and successfully colonized, the flow of information to the home community increases, resulting in an increase in migration volume as the more conservative members of the community join the migration (Simkins and Wernstedt 1977:118).

Information concerning the potential destination areas and transportation routes are often transmitted to the home community by advance scouts (Lefferts 1977:44). In other cases, this information is transmitted as a result of an earlier penetration of an area by merchants, trappers or mercenaries (Anthony 1990:902). Archaeological evidence for long distance migration should therefore be supported by archaeological evidence of an earlier penetration of the region by the cultural group which eventually colonized the area (Anthony 1990:902).

Migration Streams

Migrants tend to proceed along well defined routes or streams towards very specific destinations (Lee 1966:54; Lewis 1982:51). The initial migrants overcome various intervening obstacles between the source and destination areas, creating pathways for subsequent migrants (Lee 1966:54). As Greenwood (1970:383) has pointed out, "people follow in the path of people who have gone before them". Anthony (1990:903) has suggested that because the migration route is very well defined, archaeologists should be able to identify it. The migration route may contain linear distributions of archaeological sites associated with the migrants, consisting of small temporary transient sites.

The creation and maintenance of the migration stream depends upon continued communication between actual and potential migrants (Simkins and Wernstedt 1971:61). Information regarding destination areas and migration routes is sent back to the family and friends of the initial migrants (Greenwood 1970:375). The restriction of information along kinship lines creates a migration stream which flows from a restricted point of origin (Anthony 1990:903). Simkins and Wernstedt's (1971:52) study of the migration of farmers in the Philippines found that the first 10% of the migrants to a uninhabited valley could be used to predict the origins of all subsequent migrants. Potential migrants have a very strong tendency to move to the same location occupied by their friends and family (Greenwood 1970:383; Simkins and Wernstedt 1971:61). Given the highly restricted destination and source areas for migrants, it may be possible for archaeologists to identify the original homeland of a colonizing group (Anthony 1990:903). The artifact assemblage associated with the initial colonists should be identical to that

which is associated with archaeological sites in the area from which they migrated.

Return Migration

Most migrations produce a counter-stream or return migration to the place of origin (Lee 1966; Schwartz 1970). Some individuals may not be able to adjust to the new conditions of the destination area, and therefore return to their homeland or seek a new destination (Schwartz 1970:180). Or, the return migration may be a result of a re-evaluation of the positive and negative factors which initiated the migration in the first place (Lee 1966:55).

The return migration contributes in part to continued contact between the source and destination areas, which may be identifiable archaeologically. For example, evidence of the initiation of long distance trade between the two areas following the initial migration may reflect the effects of return migration (Anthony 1990:904).

Migration Frequency

Several studies of recent migrations have shown that migrants are often people who have migrated previously (Lee 1966; Morrison 1971; Myers et al. 1967). People who have a past history of migration are more likely to migrate again at some time in the future (Lee 1966:53; Myers et al. 1967:122). The greater the length of time spent residing in one location, the greater are the social and economic ties to that area. The greater the length of residence in one location, the greater is the inertia which is created by that stability (Myers et al. 1967:122). Frequent moves reduce the strength of social and

economic ties and residential inertia, and therefore increase the likelihood of future moves (Anthony 1990:904; Myers et al. 1967:122).

The tendency for migrants to be predisposed to further migration has important ramifications for the examination of prehistoric migration. Anthony (1990:905) has pointed out that the high levels of migratory activity that are associated with certain periods of human history, such as the Iron Age Celtic expansions, may reflect this aspect of the migration process. Given the recent suggestion that Iroquoian peoples were originally migrants to the lower Great Lakes region (Fiedel 1991; Snow 1995), this aspect of human behavior may help in part to explain subsequent Iroquoian migration activity within the region.

Migration Demography

Several studies of expanding farming communities in Bolivia, Thailand, and the Philippines, have shown that the initial colonists consist largely of young adult male scouts (Hess 1979:147; Lefferts 1977:44; Simkins and Wernstedt 1971:48). The male scouts are soon followed by small incomplete family units consisting of young adults and their infant children (Lefferts 1977:41).

Younger people are more likely to migrate because they tend to have weaker ties to their original community than do older members of the community (DeJong and Fawcett 1981:30). Young adult males are often the most mobile segment of the community (Lewis 1982:83). Anthony (1990:905) has suggested that the initial colonists associated with prehistoric migrations could be identified through an analysis of the age and sex structures of mortuary assemblages associated with pioneering communities.

CHAPTER 4

THE NATURAL AND CULTURAL ENVIRONMENTS OF SIMCOE COUNTY

NATURAL ENVIRONMENT

Simcoe County is located in south-central Ontario and covers an naturally bounded area of approximately 2,675 square kilometres (Figure 3). Simcoe County is bordered to the north by Georgian Bay and the bare rock of the Canadian Shield, to the east by Lake Simcoe and Lake Couchiching, to the south by the Holland Marsh and the Oak Ridges Moraine, and to the west by Georgian Bay and the Niagara Escarpment.

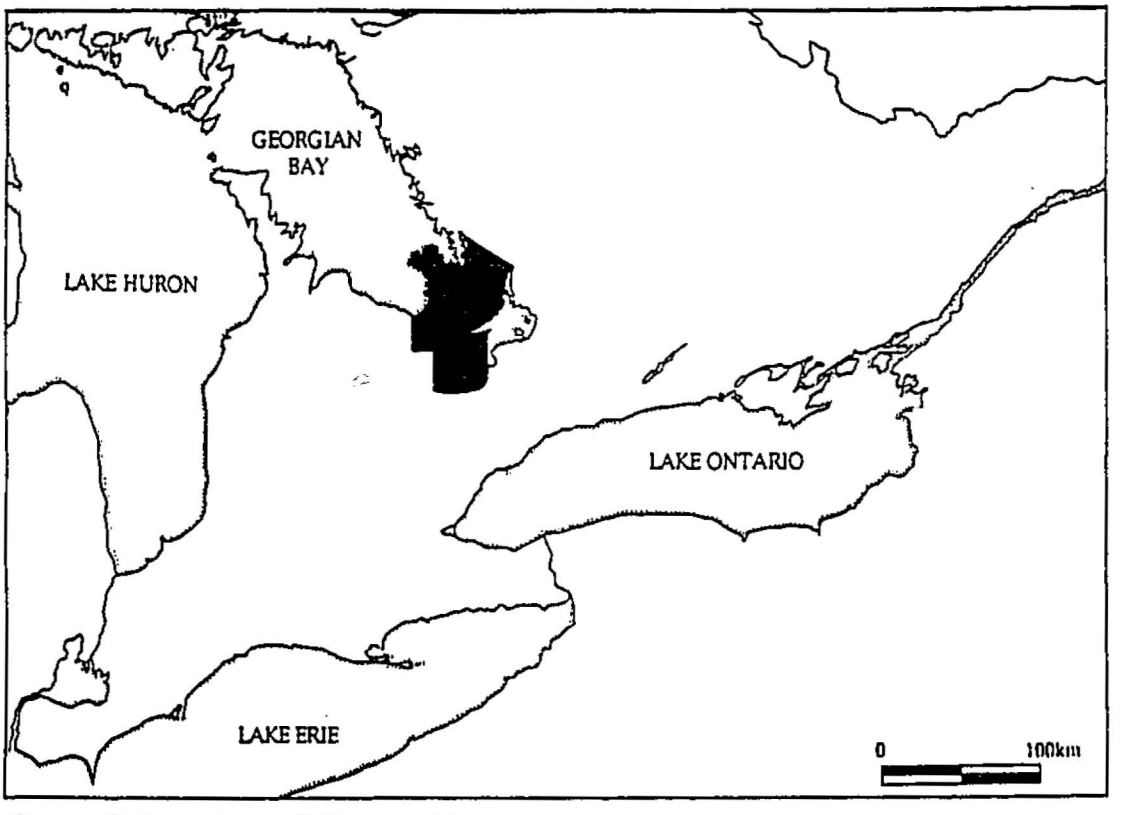


Figure 3. Location of Simcoe County.

Simcoe County is in the "Simcoe and Kawartha Lakes" climatic region (Brown et al. 1980). This area has a mean annual frost free period of 130-140 days (temperature above 0 degrees Celcius), and a mean annual precipitation of 77 centimetres (including a mean annual snowfall of 154-200 centimetres). This area is in the "Huron-Ontario" section of the "Great Lakes-St. Lawrence" forest region (Rowe 1972). This is a mixed forest region dominated by sugar maple and beech, basswood, eastern hemlock, white pine, and balsam fir. Less common species include white and red ash, yellow birch, white and bur oak, butternut, butternut hickory, hop-hornbeam, black cherry, sycamore, black oak, blue-beech, silver maple, slippery and rock elm and black ash.

The major physiographic regions in Simcoe County are the "Simcoe Uplands" and the "Simcoe Lowlands" (Figure 4). The Simcoe Uplands consist of a series of broad rolling till plains which were islands in glacial Lake Algonquin (Chapman and Putman 1984:182). The upland till plains stand 60 metres above the adjoining lowland lake plains. The upland areas are encircled by a series of bluffs, terraces and minor beaches which form steps down the hillsides. The numerous terraces and shorelines were created by the rising and falling water levels of several successional glacial lakes which existed between 10,000 and 2,500 B.C. The upland till plains have a gently rolling topography and are dotted in a few places by small swampy depressions. However, the sandy soils of the uplands are so well drained that streams are rare on the crowns of the uplands (Chapman and Putnam 1984:182). The main source of water on the uplands are the numerous springs which issue from part way down the upland slopes and feed the permanent lowland streams. The dominant soils of the uplands are the sandy loams and loamy sands of the Varsey, Tioga and Bondhead Series. These are well drained

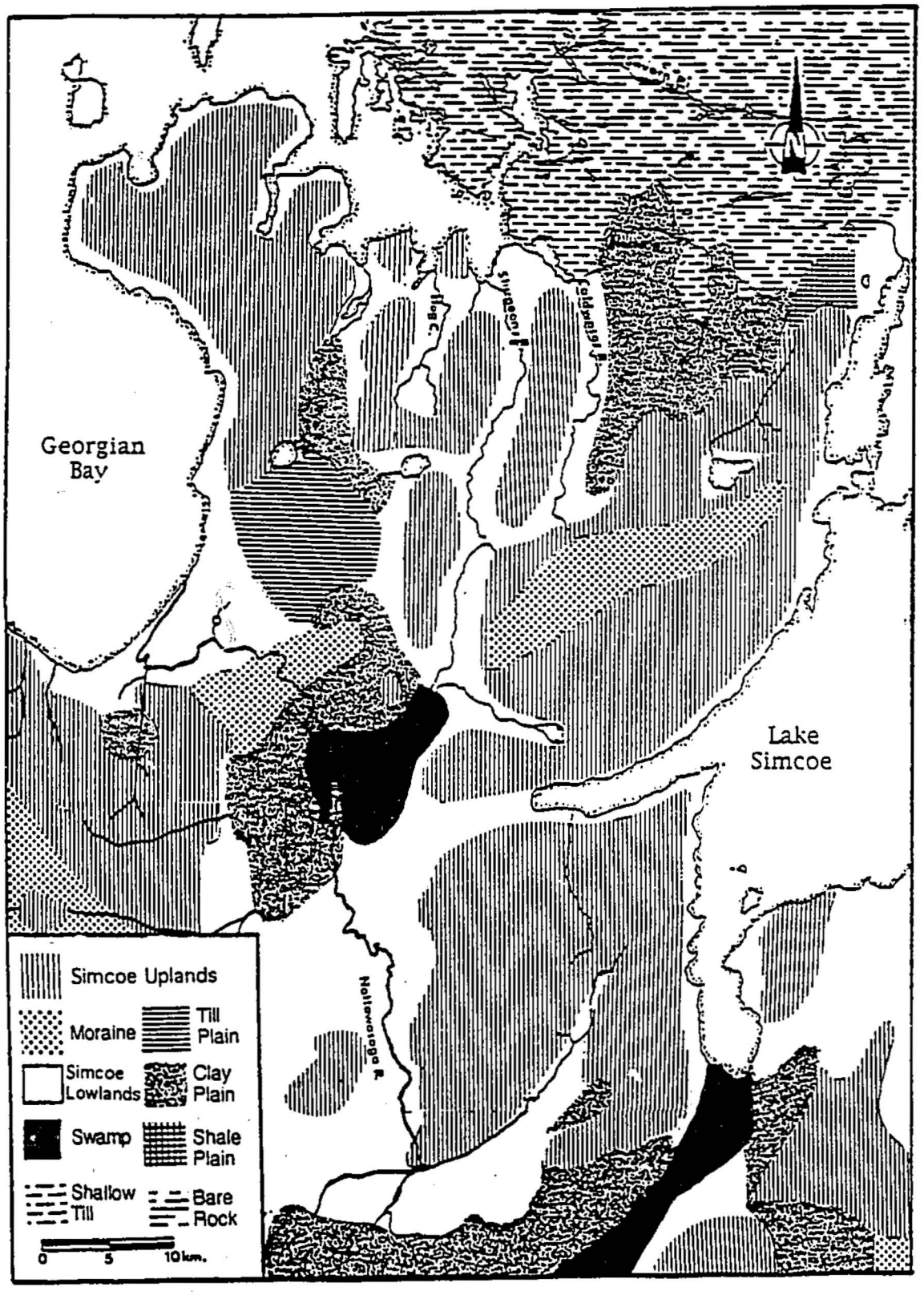


Figure 4. Physiographic Regions of Simcoe County.

soils with a low moisture holding capacity and relatively low to moderate natural fertility (Hoffman et al. 1962). On the class scale of 1 (excellent) to 7 (extremely poor) which has been established by Environment Canada (1967) for determining the capability of soils to sustain modern agriculture, the Simcoe Upland soils range from Class 1 to Class 3. The records of the surveyors who surveyed Simcoe County in the early nineteenth century indicate that the well drained upland soils supported at that time a dense forest of maple, beech, and basswood, with pine, oak, elm, and hemlock as secondary dominants (Heidenreich 1971:63).

The Simcoe Uplands are separated by a series of steep sided, flat-floored valleys and basins which comprise the Simcoe Lowlands. The Simcoe Lowlands were flooded by glacial Lake Algonquin and have a flat to gently rolling surface covered by sand, silt and clay (Chapman and Putnam 1984:176). The Simcoe Lowlands fall into two natural divisions, the Nottawasaga Basin to the west and the Lake Simcoe Basin to the east. The Lake Simcoe Basin is the lowland area surrounding Lake Simcoe and Lake Couchiching. This is a narrow lowland terrace bordered by the two lakes and the adjacent upland areas. This lowland terrace contains poorly drained silts and clays which support swampy areas interspersed with hemlock, maple and basswood. The southern end of the Lake Simcoe Basin includes a broad valley which was once a shallow extension of the lake, but which now contains the Holland Marsh and Holland River.

The Lake Simcoe Basin is connected with the Nottawasaga Basin near the City of Barrie by a flat floored valley and other similar valleys between the uplands in northern Simcoe County. The Nottawasaga Basin area of the Simcoe Lowlands contains large clay plains of poorly to imperfectly drained soils,

which supported large bogs and extensive swamps. Many of these swampy areas have now been drained with the exception of the Minesing Swamp, which is one of the largest remaining wetland areas in south-central Ontario. The sand plains of the Nottawasa Basin contain sandy loam and loamy sands dominated by the Tioga and Alliston series. These are imperfectly to well drained soils of low natural fertility and are rated as Class 3 soils for modern agriculture (Environment Canada 1967). The broad-floored sand plain valleys which separate the upland areas are also quite swampy, and the sand plains in general are slower to drain and slower to warm up in the spring than the upland till plains. The early nineteenth century pre-settlement vegetation of the poorly drained areas of the Simcoe Lowlands contained cedar swamp, and wetlands comprised of cedar, alder, black ash, soft maple and willow, as well as small pockets of tamarack, pine, hemlock, birch, fir and elm (Heidenreich 1971:70). The better drained lowland sand plains contained maple, beech, basswood, pine, elm and hemlock (Heidenreich 1971:70).

Other notable physiographic regions in Simcoe County are the Edenvale and Oro Moraines. The Edenvale Moraine is a morainic ridge located in the western section of the county consisting of a strip of better drained sandy soils surrounded by poorly drained lowland clay plains (Chapman and Putnam 1984:180). The Oro Moraine in the eastern section of the county is a typical glacial kame moraine consisting of a broad belt of sand hills, with varied topography and very little surface water. It supported a pre-settlement forest of open areas of beech, maple, basswood, pine and oak (Heidenreich 1971:70). The northeastern section of the county slowly grades into the Precambrian Shield of central and northern Ontario. A narrow band of land located just north of the Northern River represents an western extension of

the Carden Plain. The Carden Plain is a flat to undulating limestone plain with rocky ridges and some shallow till which is not suitable for agriculture (Chapman and Putnam 1984:185). Mid-way between the North and Severn Rivers the Precambrian Shield begins. This region consists of exposed, bare, rocky ridges and very shallow till which is also incapable of supporting agriculture.

Simcoe County is surrounded on three sides by water. The numerous creeks and rivers in the region all drain into Georgian Bay, Lake Simcoe or Lake Couchiching. The largest river is the Nottawasaga, which drains most of the southern and eastern part of the county, and flows northward into Georgian Bay. The Boyne, Pine and Mad Rivers in the western section of the county originate on the Niagara Escarpment and flow eastward into the Nottawasaga River. The uplands in the northern part of the county are drained by the Wye, Sturgeon, Coldwater and North Rivers which flow in a northerly direction into Georgian Bay. The upland areas in Vespra and Innisfil Townships are drained by the Willow and Innisfil Creeks which flow westward into the Nottawasaga River.

Mammal species which were once common in Simcoe County and have been found in archaeological faunal assemblages include beaver, black bear, cottontail rabbit, eastern chipmunk, fisher, marten, mink, muskrat, porcupine, raccoon, red squirrel, snowshoe hare, white-tailed deer and woodchuck. Resident bird species included ruffed grouse, spruce grouse and wild turkey, and migratory ducks, Canada geese and passenger pigeon. The rich fisheries of Lake Simcoe, Georgian Bay, and the numerous sluggish rivers of Simcoe County contained bass, catfish, freshwater drum, lake sturgeon, lake

trout, muskellunge, northern pike, pickerel, sucker, sunfish, yellow perch and whitefish (MacCrimmon and Skobe 1970; Scott and Crossman 1973).

SIMCOE COUNTY CULTURE HISTORY

Archaeological surveys by Storck (1979) and Stewart (1984) along the strandline areas of glacial Lake Algonquin in southern Simcoe County have demonstrated that the human occupation of Simcoe County dates back to the Paleo-Indian (ca. 9000-8000 B.C.) period. The nature of subsequent Archaic (ca. 8,000-800 B.C.) and Early Woodland (ca. 800 B.C.-300 B.C) period occupations in Simcoe County is poorly understood. To date, there has not been an archaeological excavation conducted on a single component Archaic or Early Woodland site in Simcoe County. However, numerous archaeological survey projects have indicated that Simcoe County was occupied during these periods (Hunter 1907; O'Brien 1976; Hunter 1976; Warrick 1988a; Stewart 1984; Storck 1979; Sutton 1991).

The Middle Woodland period (ca. 300 B.C.-A.D. 700: Figure 5) in Simcoe County is also poorly understood, although numerous Middle Woodland sites have been located (O'Brien 1975; Conway 1973; Cooke 1990). The cluster of Middle Woodland sites located on the lower portion of the Nottawasaga River have been assigned to Saugeen, Point Peninsula or independent Middle Woodland complexes (Wright 1967:117-119; Finlayson 1977:607; Spence and Fox 1986:36). The Nottawasaga River has also been identified as the possible border between the Saugeen complex of southwestern Ontario and the Point Peninsula complex of south-central Ontario (Spence et al. 1990:148). The difficulty in assigning the Nottawasaga River sites to a particular complex is largely due to the fact that we have very little archaeological data from them. Only two sites

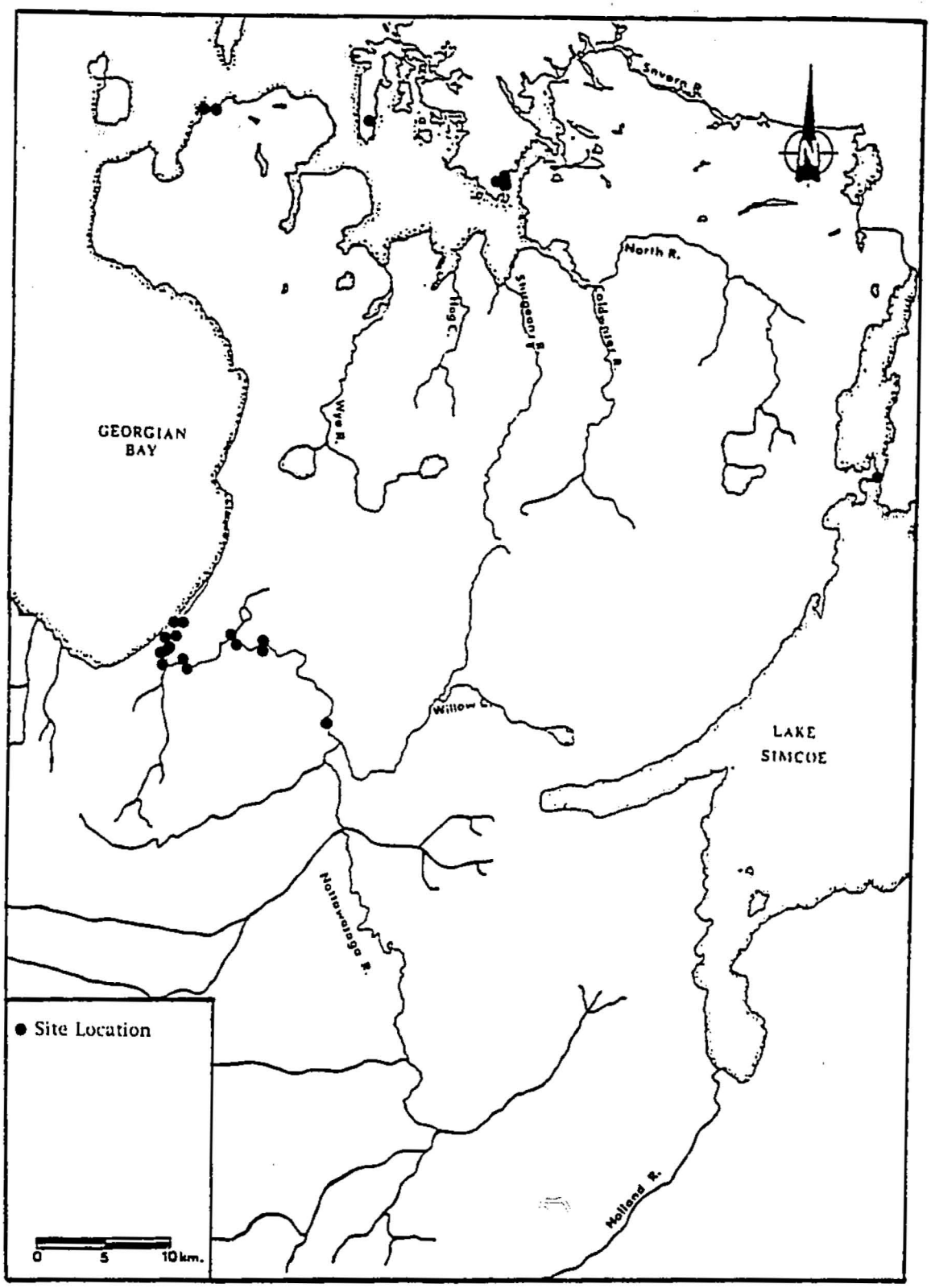


Figure 5. Middle Woodland Sites in Simcoe County.

with Middle Woodland components, the Schoonertown site (Conway 1975) and the Dougall site (Wright 1972a), have been excavated in Simcoe County. Both sites were seasonally occupied fishing camps. The Schoonertown site was briefly occupied in the spring to exploit fish spawning in the Nottawasaga River (Conway 1975).

Most of the other Middle Woodland sites which have been located in Simcoe County have a similar lacustrine orientation, indicating that they probably served a purpose similar to that of the Schoonertown and Dougall sites. Reconstructions of Saugeen Complex Middle Woodland settlement-subsistence patterns indicate that in the spring, microbands that had wintered separately gathered at rapids to exploit spawning fish. The macroband than broke up in the summer to separately exploit various resources along the Lake Huron shore, before moving back into the interior in late fall (Finlayson 1977:574-575). Almost all of the Middle Woodland sites which have been identified in Simcoe County to date appear to represent spring fishing camps. Sites representing other aspects of the settlement-subsistence system have yet to be found. This suggests that the interior of Simcoe County may have only been occupied seasonally by Middle Woodland groups. Alternatively, it is also possible that smaller Middle Woodland sites occupied during other phases of the subsistence cycle are present in the inland regions of Simcoe County, but simply have yet to be located.

The period between the end of the Middle Woodland period and the beginning of the Early Iroquoian period (ca. A.D. 700 to 900) is an archaeological blank in Simcoe County, and most of south-central Ontario (Warrick 1990:175). At the western end of Lake Ontario this gap is filled by the Princess Point Complex (Stothers 1977), a Late Woodland culture which grafted

limited corn agriculture onto a Middle Woodland settlement-subsistence system in the area between the Credit River and the Grand River. Stothers (1977: 154-156) has suggested that the Princess Point Complex appears suddenly in the archaeological record of the area, and was the result of a migration from Ohio, Illinois and Indiana. Other researchers have suggested that there is evidence of cultural continuity with indigenous Middle Woodland cultures (Spence and Fox 1986). At present the supporting evidence for both the in situ and migration hypotheses is considered to be somewhat tenuous (Fox 1990a:186). However, there does appear to be clear continuity between the Princess Point Complex and subsequent Early Iroquoian developments at the western end of Lake Ontario and in the Grand River area (Fox 1990a:174; Smith and Crawford 1995:68).

No sites containing Princess Point material have been found in south-central Ontario east of the Credit River. Warrick (1990:175) has argued that this apparent hiatus in south-central Ontario between the end of the Middle Woodland (ca. 300 B.C.-A.D. 700) and the beginning of the Early Iroquoian periods (ca. A.D. 900-1280) is simply due to the failure of archaeologists to locate sites dating to this time. A contributing factor is that the Middle Woodland period is one of the most poorly dated periods of Ontario prehistory (Spence and Fox 1986; Spence and Pihl 1984). An opposing view is offered by Snow (1995), who argues that this gap reflects a lack of cultural continuity between the Middle Woodland and Early Iroquoian periods. Snow (1995) believes that the Iroquoian occupation of the southern Great Lakes region was the result of a migration of Iroquoian peoples from the southeast around A.D. 900.

In the Early Iroquoian period in southern Ontario, we see for the first time the establishment of more permanent villages or base settlements. Early Iroquoian groups utilized a mixed settlement-subsistence system involving long term occupations of villages in order to grow and harvest corn, along with seasonally occupied fishing, hunting and gathering camps (Williamson 1990). While portions of the village population would be dispersed at different times of the year for various subsistence related activities, the adoption of corn agriculture allowed the entire community to congregate in the village for the winter. Isotopic analysis of human bone from Early Iroquoian sites indicates that prior to the twelfth century, corn constituted approximately 30% of the diet (Schwarz et al. 1985:199).

Although the issue of Iroquoian origins continues to be debated, we do see clear evidence of in situ development from the Early Iroquoian period (ca. A.D. 900-1280) through to the Middle (ca. A.D. 1280-1400) and Late Iroquoian (ca. A.D. 1400-1650) periods throughout much of southern Ontario (Finlayson 1985; Pearce 1984; Kapches 1987; Williamson 1985, 1990). In south-central Ontario, Early Iroquoian village sites are clustered along the north shore of Lake Ontario and in the Rice Lake area (Figure 6). To date, no Early Iroquoian village sites have been identified in Simcoe County.

Only four sites in Simcoe County are known to have Early Iroquoian components: the Dougall site (Wright 1972a), the Methodist Point site (Smith 1979), the Severn Bridge site (Timmins 1993) and Sainte Marie (Tummon and Gray 1992). All four of these sites are multi-component and are located beside major bodies of water (Figure 7). The Early Iroquoian components at these sites have been interpreted as representing seasonally occupied fishing, hunting and trading camps (Wright 1972a; Smith 1979; Timmins 1993). The

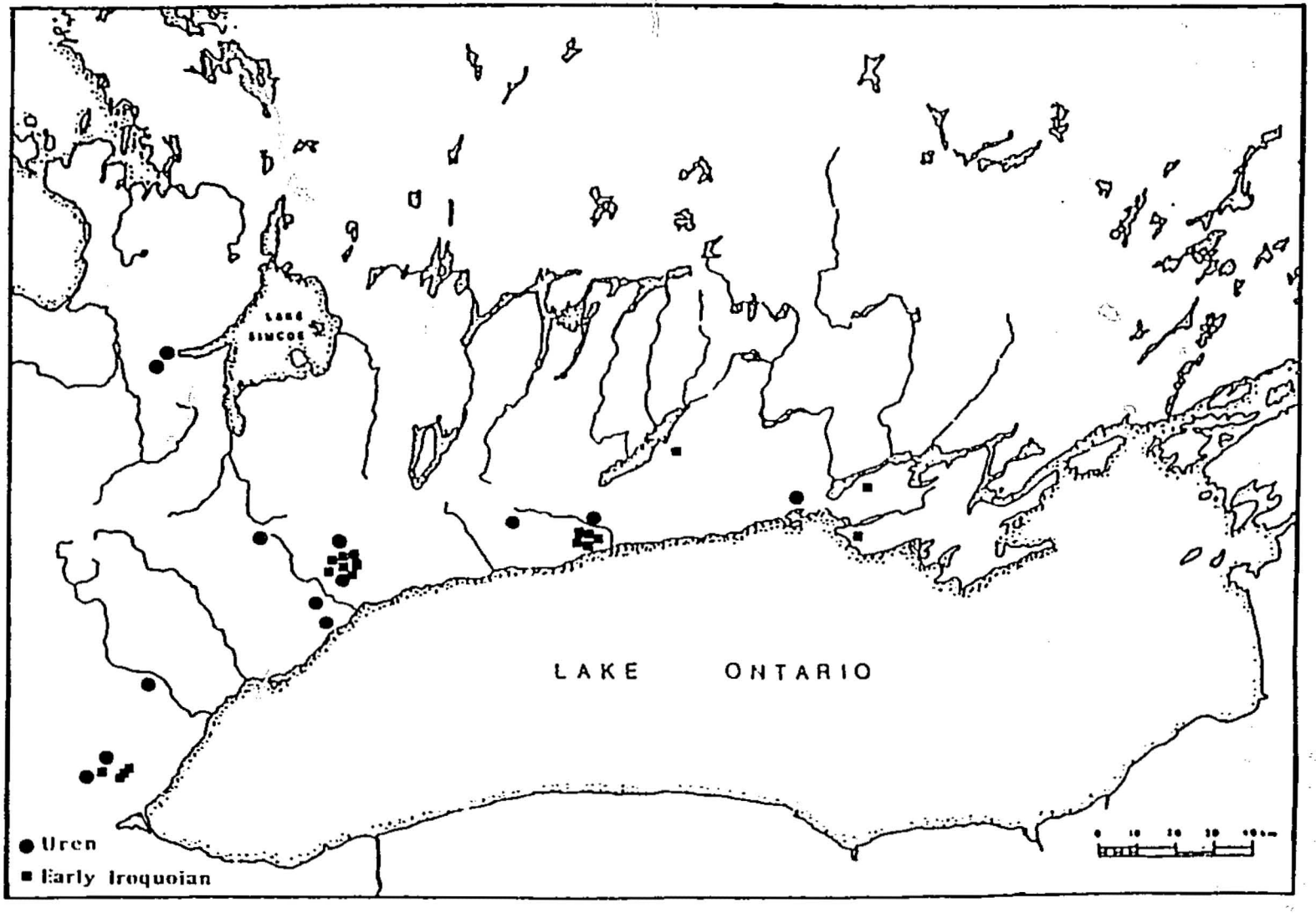


Figure 6. Early Iroquoian and Uren Village Sites in south-central Ontario. (modified from Warrick 1990: Figures 45 and 49).

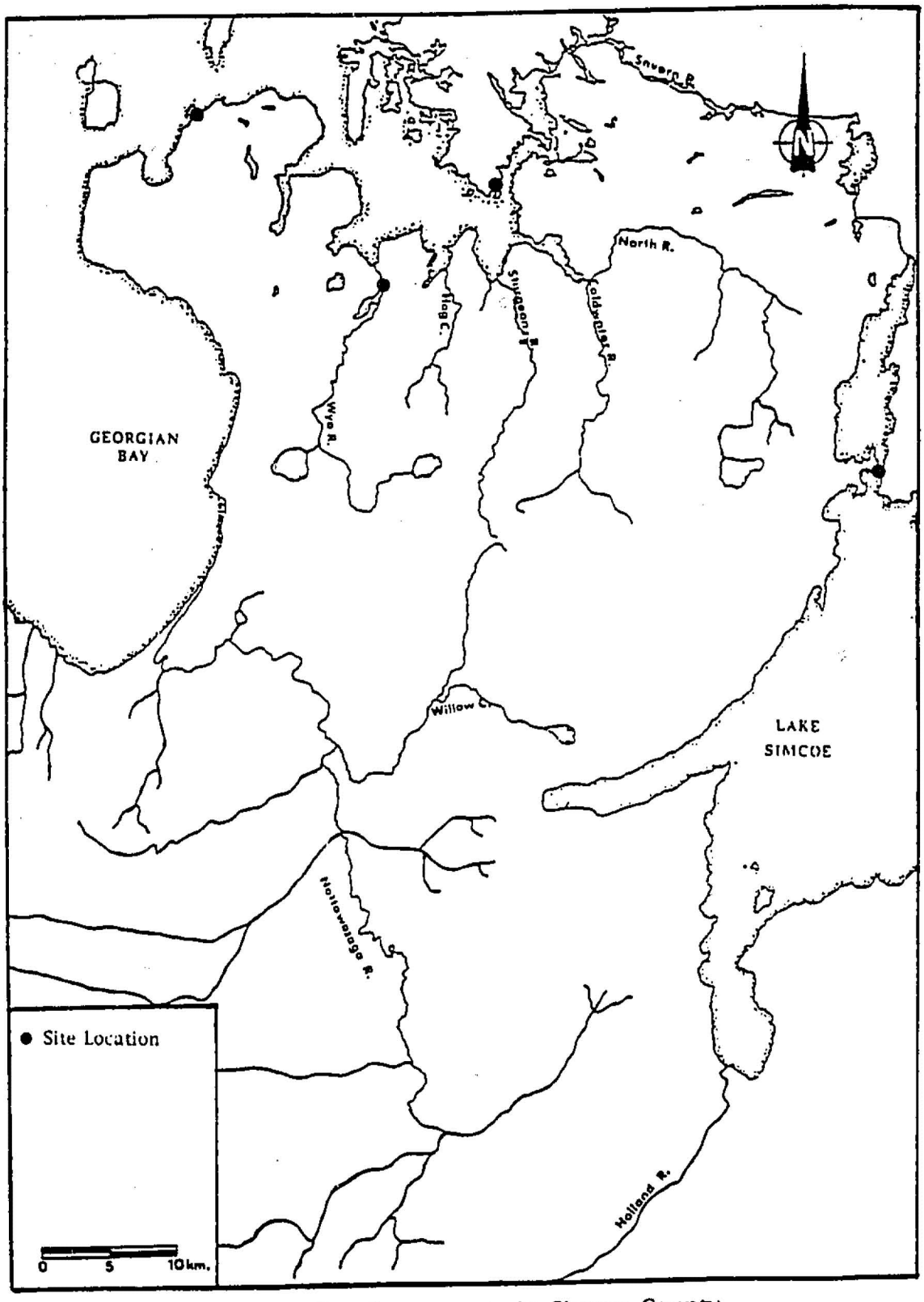


Figure 7. Early Iroquoian Site Components in Simcoe County.

presence of small Early Iroquoian material culture assemblages on these sites suggests that Early Iroquoian groups were seasonally exploiting the rich fishing resources of Simcoe County, as well as engaging in some trade with northern Algonkian groups. It is also quite possible that some of these site components are non-Iroquoian, and the presence of Early Iroquoian ceramics is the result of the diffusion of Iroquoian ceramic traditions northward to Algonkian groups. This issue will be discussed in more detail in Chapter 7.

It is only in the Middle Iroquoian period (ca. A.D. 1280-1400) that we see the establishment of semi-permanent Iroquoian village sites in Simcoe County (Figures 6 and 8). This process occurred at a time when there appear to have been significant economic, socio-political and material culture changes among Iroquoian groups in southern Ontario. There was a rapid increase in population at this time, which resulted in the construction of larger houses and villages, and the more intensive use of village sites over a shorter period of time (Dodd et al 1990; Warrick 1990; Williamson 1990). Smaller Early Iroquoian communities became amalgamated into larger, segmented multi-lineage Middle Iroquoian villages which were occupied all year around (Pearce 1984; Timmins 1992). The rapid distribution of a homogeneous ceramic tradition across most of southern Ontario at the end of the thirteenth century also suggests increased inter-regional interaction at this time (Timmins 1990; Williamson and Robertson 1994). Although the causes of these changes remain obscure, they were probably related to an increasing reliance on cultigens (Warrick 1990), an expanding network of trading and social relationships (Timmins 1992; Williamson and Robertson 1994), and possibly an increase in warfare (Wright 1966, 1992; Trigger 1985).

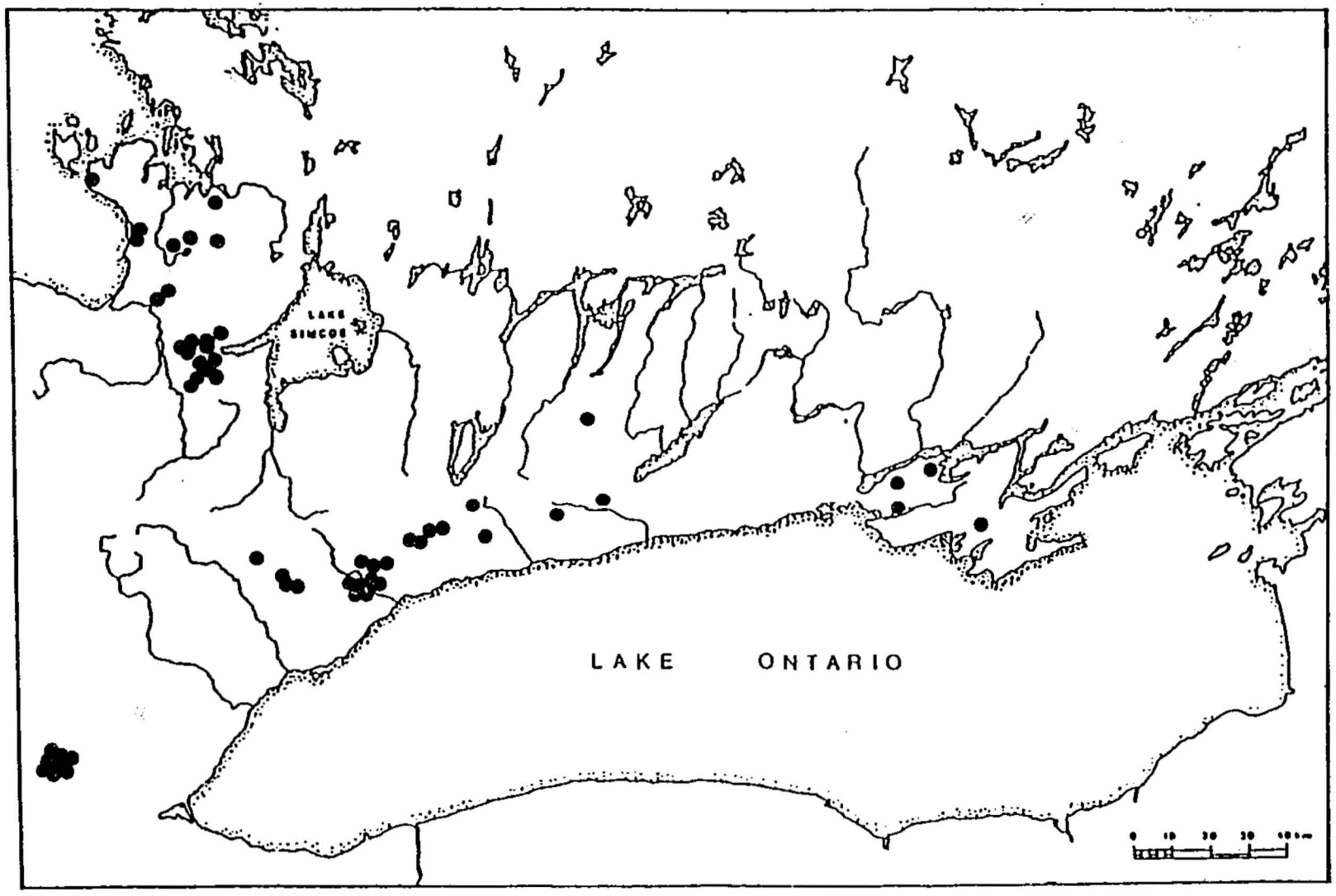


Figure 8. Middle Iroquoian Village Sites in south-central Ontario. (modified from Warrick 1990: Figure 50).

The permanent Middle Iroquoian occupation of Simcoe County continued to be consolidated during the subsequent Lalonde (ca. A.D. 1400-1550) and Contact (ca. A.D. 1550-1650) periods, until the Huron and Petun were dispersed by the New York State Iroquois. This would suggest that, unlike areas along the north shores of Lake Ontario and Lake Erie, Middle and Late Iroquoian groups did not develop in situ in Simcoe County. Instead, the Middle and Late Iroquoian occupation of Simcoe County appears to have been the result of a migration from the south (O'Brien 1975:44; Latta 1976:55; Kapches 1981:308; Warrick 1990:350).

Alternatively, some archaeologists have argued that Simcoe County was occupied continuously by Iroquoian groups beginning in the Early Iroquoian period (Ridley 1963:53; Wright 1966:23; Trigger 1976:156). This assumption was based on the results of Ridley's (1954) work at the Frank Bay site, located far to the north of Simcoe County on Lake Nipissing. This was a multi-component stratified campsite which included the entire Iroquoian cultural sequence from the Early Iroquoian period, through to the Middle Iroquoian, Lalonde and Contact Periods (Ridley 1954:41-45). On the basis of the small Early Iroquoian ceramic component at the Frank Bay site, Wright (1966:41) included Simcoe County within his geographical distribution map of Pickering Branch Early Iroquoian sites (Figure 9). Wright (1990:499) still contends that there are probably undetected Early Iroquoian villages "hidden in the woodlots" of Simcoe County, which resulted in the spread of their ceramic tradition northward to sites such as Frank Bay.

The identification of Early Iroquoian ceramics at Frank Bay and other sites in northern Ontario was originally assumed by archaeologists to reflect the actual presence of Iroquoian trading, hunting and fishing parties (Ridley

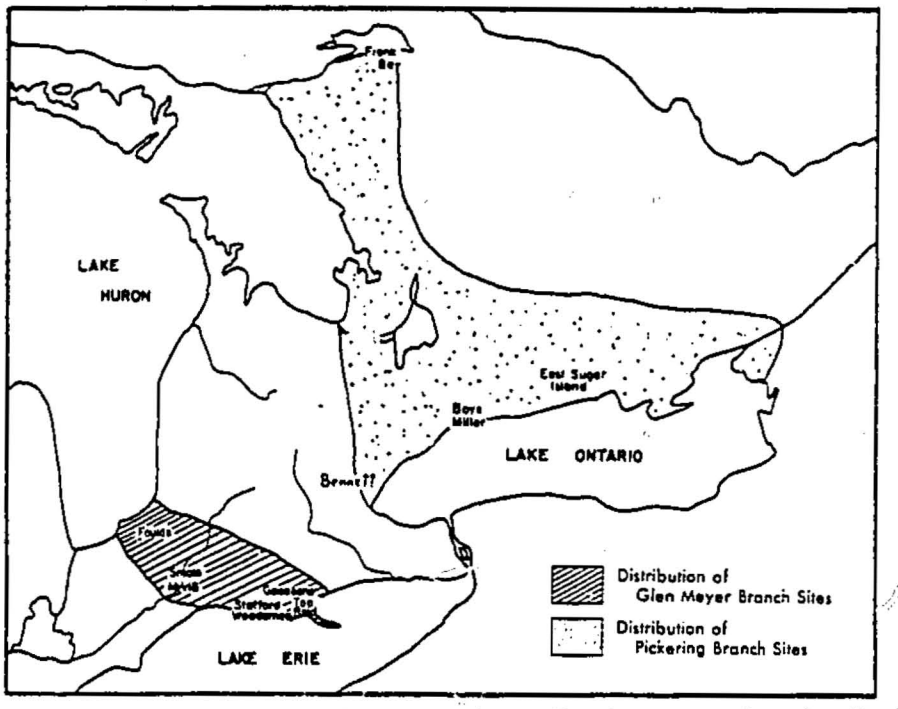


Figure 9. Wright's (1966: Map 2) distribution map for the Early Iroquoian period.

1954; Hurley and Kenyon 1970). Most archaeologists now believe that this material represents Algonquian copies of Iroquoian ceramics, resulting from the diffusion of Iroquoian ceramic traditions northward (Trigger 1976:170; Dawson 1979:17). With the exception of the Iroquoian-like ceramics, the remainder of the artifact assemblages from these sites is typical of Algonquian groups (Dawson 1979). This is also true of the Frank Bay site, where all of Ridley's (1954) "Iroquoian components" also contained Algonquian Blackduck ceramics (Dawson 1979:17). The existence of Algonquian copies of Early Iroquoian ceramics at Frank Bay does not imply that there were Early Iroquoian village sites in Simcoe County. It has already been shown that no Early Iroquoian village sites have yet been found in the region. However, some seasonally occupied, Early Iroquoian special purpose sites have been

found in Simcoe County. It is therefore much more likely that the spread of Early Iroquoian ceramics northward was the result of direct and indirect contacts between Algonquian groups and Iroquoian traders, fishers and hunters in the Simcoe County region.

CHAPTER 5

ARCHAEOLOGICAL BLACK HOLES AND THE MIGRATION HYPOTHESIS

INTRODUCTION

Part of the process of determining whether the Middle Iroquoian occupation of Simcoe County was the result of a migration is the elimination of other factors which might account for the apparent lack of Early Iroquoian village sites. Areas which are archaeological blanks in a synchronic or diachronic landscape, or which lack certain site types for a particular settlement-subsistence system, have been referred to as "archaeological black holes" (Groube 1981). Groube (1981:189) has identified several factors which may account for archaeological black holes:

1) Natural site destruction
2) Human site destruction
3) Ecological constraints
4) Socio-political and demographic constraints
5) Archaeological survey bias

Each one of these factors must be considered in order to account for the apparent lack of Early Iroquoian village sites in Simcoe County.

1) Natural Site Destruction Or Invisibility

Various geomorphic and hydrological processes such as volcanic activity and changes in water levels can result in the erosion or burial of

archaeological deposits. In general, Simcoe County and the rest of southern Ontario have been geomorphically stable since the end of the Wisconsinan glacial stage 10,000 years ago (Karrow and Warner 1990: 21). Severe geomorphic events such as volcanic eruptions or earthquakes which can bury or destroy archaeological sites are extremely rare or absent in the Simcoe County region.

However, hydrological processes have been very active in causing significant sedimentation and erosion in Simcoe County. The region has been subjected to a series of fluctuating water levels caused by the expansion and retreat of several different glacial lakes in the Lake Huron basin between 11,000 and 4500 B.P. (Terasmae 1979; W.D. Fitzgerald 1985; Eschman and Karrow 1985). While the sedimentation caused by these hydrological processes has probably buried numerous low lying Paleo-Indian and Archaic period sites, they would not have affected sites dating to the Iroquoian period. However, Larsen (1985) has shown that there have also been cyclical fluctuations in the water levels of Lake Huron over the last 1000 years. The results of these changes in water levels may have affected archaeological sites which were located along Georgian Bay during this period. At the Severn Bridge site (Timmins 1993), a thin layer of waterlain sterile sand was found over portions of the site. This suggests that at least some lacustrine oriented sites occupied at this time in Simcoe County have been buried by alluvial deposits.

While it is possible that some Iroquoian fishing camps have been rendered invisible by alluvial deposits, it is very unlikely that changes in the water levels of Lake Huron can account for the lack of Early Iroquoian village sites in Simcoe County. Early Iroquoian village site locations identified elsewhere in southern Ontario are situated well inland from major bodies of

water on well drained sandy soils (Kapches 1987; Williamson 1990). It is only the special purpose fishing camps of Early Iroquoian groups which are located immediately adjacent to major bodies of water (Kapches 1987; Williamson 1990). Thus, it appears that the natural destruction or burial of archaeological sites can be eliminated as a factor which could account for the lack of Early Iroquoian village sites in Simcoe County.

2) Human Site Destruction

It is very unlikely that the lack of Early Iroquoian village sites is due to human destruction of these sites in Simcoe County. Simcoe County is still largely a rural landscape, with less than 15% of its surface area occupied by residential, commercial or industrial developments (Figure 10). Although the establishment and expansion of urban areas such as the City of Barrie have undoubtedly destroyed a number of archaeological sites, there is no evidence to suggest that site destruction has been disproportionately associated with any particular cultural period. Urban areas and recreational properties in Simcoe County tend to be concentrated along major bodies of water. This has probably resulted in the destruction of a large number of seasonally occupied lacustrine oriented sites.

Unlike Neolithic village settlements located in other regions of the world, such as in western Europe (Champion et al. 1984) and Mesoamerica (Saunders et al. 1979), Iroquoian village sites have rarely been covered by subsequent occupations. Iroquoian villages were relocated every ten to fifty years due to soil and resource exhaustion, refuse accumulation and disease (Heidenreich 1971; Starna et al. 1984; Fitzgerald 1986; Warrick 1988a; Williamson 1990; Saunders et al. 1992). The continuous relocation of Iroquoian

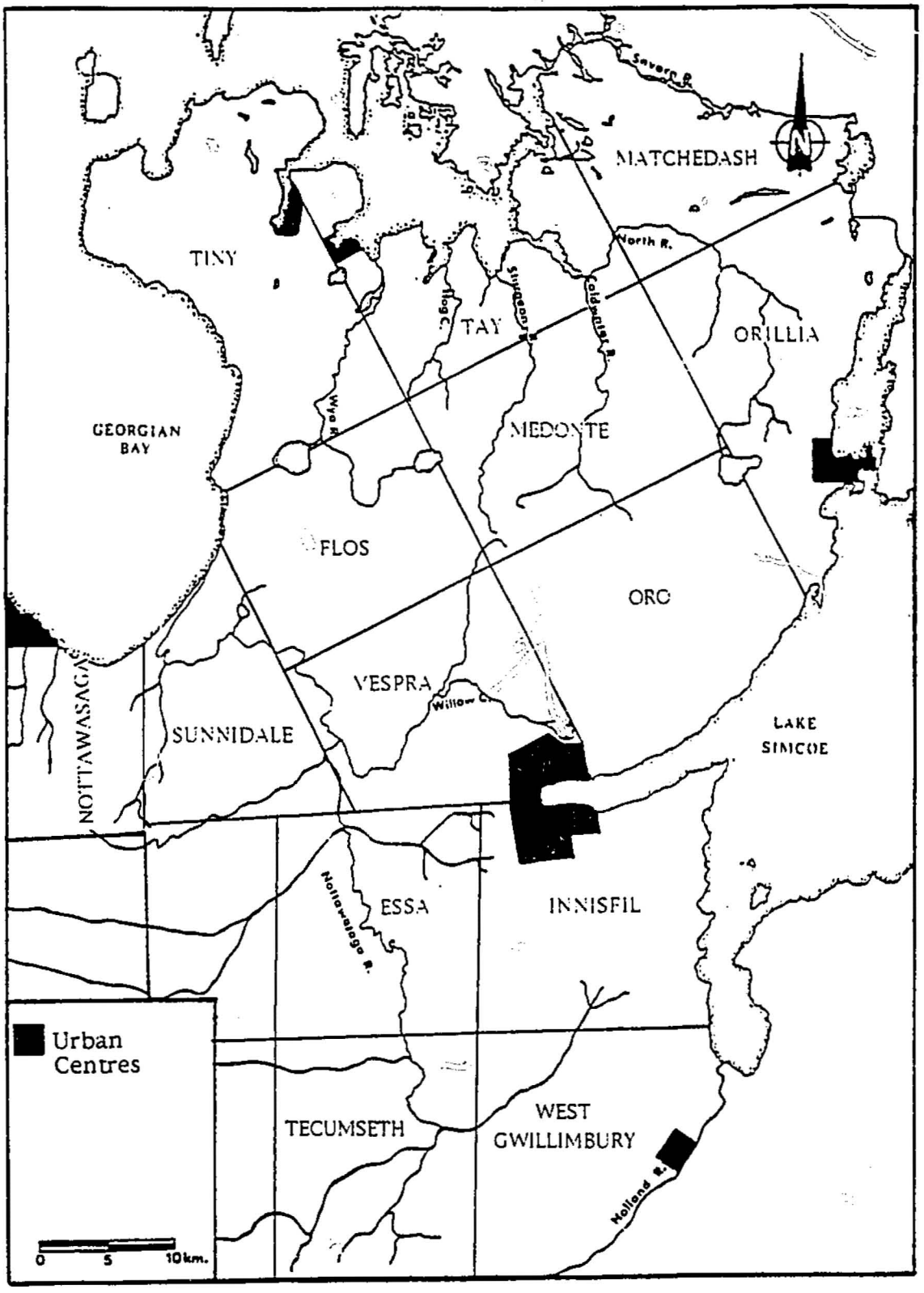


Figure 10. Urban areas in Simcoe County.

villages after relatively short periods of occupation across the landscape has rarely resulted in the superimposition of one village upon another. Of the 137 Iroquoian village sites registered for Simcoe County as of 1991, there are only three site locations (Fitzgerald-Train, Hunter Tay#18, and Gwynne) which consist of two superimposed Iroquoian villages (Ridley 1966,1971; Kenyon 1970; O'Brien 1976; Latta 1985a).

3) Ecological Constraints

There is no evidence to suggest that there would have been any ecological constraints to Early Iroquoian settlement in Simcoe County. Simcoe County contains large areas of well drained upland sandy soils which are suitable for slash and burn horticulture. This region also has a number of different environmental zones including large bodies of water, extensive shorelines, bays, wetlands and upland mature forest. This type of natural environment would have supported a rich variety of flora and fauna. In many ways Simcoe County contained a more diverse resource base than the area inhabited by Early Iroquoian groups located along the north shore of Lake Ontario.

Although Simcoe County is in a marginal region for sustainable corn agriculture, its mean annual frost free period of 130 to 140 days is sufficient for the 100 to 120 days required for native flint corn (Fecteau 1985:24). Also, the duration of the growing season in Simcoe County may have been longer during the Early Iroquoian period than it is today. Climatic reconstructions suggest that the period from A.D.1000 to 1200, often referred to as the Neo-Atlantic period, was warmer and wetter than it is today (Baerris et al. 1976; Bryson and Padoch 1980).

4) Socio-Political And Demographic Constraints

Cultural groups often avoided inhabiting certain regions because of various types of socio-political constraints (Groube 1981:191). These uninhabited regions often acted as buffer zones or territorial boundaries between competing groups (Deboer 1981:365). Buffer zones reduced interaction and conflict, and acted as resource reservoirs. Deboer (1981:376) has suggested that cultural discontinuities in local archaeological sequences may reflect fluctuations in the distribution of buffer zones and not necessarily population replacement or abandonment.

During the Early Iroquoian period the vast area of the Canadian Shield was occupied by various Algonquian hunting and gathering bands (Dawson 1979). Algonquian bands such as the Odawa, also occupied the Bruce Peninsula and the south shore of Georgian Bay in Simcoe County (Fox 1990b). There is no evidence of any type of conflict or competition between Algonquian and Early Iroquoian groups which would have required the maintenance of a buffer zone between them in this region. To the contrary, Iroquoian horticulturalists and Algonquian hunters and gatherers appear to have entered into a mutualistic relationship beginning in the Early Iroquoian period in south-central Ontario. Ethnohistorical accounts from the seventeenth century indicate that Iroquoian groups traded ceramic pots, chert, corn, fishnets and tobacco to the Algonquians in exchange for native copper, dried berries, furs, dried fish, reed mats and meat (Heidenreich 1971: 230;). The Severn River area along the border of the Canadian Shield in northern Simcoe County appears to have acted as a frontier in which much of this trading took place (Trigger 1985; Timmins 1993). The location of Early Iroquoian special purpose camps in northern Simcoe County, and the presence of Early Iroquoian ceramics on

Algonquian sites in northern Ontario, indicates that the exchange of goods and certain cultural traits dates back to the prehistoric period (Heidenreich 1971:230; Trigger 1976:174; Dawson 1979). The evidence for a mutually beneficial relationship between Algonquian and Iroquoian groups which dates well back into the prehistoric period, argues against the existence of socio-political constraints to Iroquoian expansion into Simcoe County.

Ethnographic and ethnohistoric data indicate that territorial boundaries and buffer zones often marked the outer limits of relatively closed, unified cultural groups. The integrity of the cultural group was enhanced by the existence of territorial markers and buffer zones (Groube 1981:191). We know from the ethnohistoric references for southern Ontario in the seventeenth century that buffer zones, utilized as hunting territories, separated neighboring tribal groups (Trigger 1985:98). However, there is no evidence to suggest that a tribal level of socio-political organization and territoriality existed in the Early Iroquoian period. It appears that Early Iroquoian socio-political organization did not extend beyond relatively autonomous individual villages or small village clusters (Timmins 1992; Williamson and Robertson 1994). It is believed that Early Iroquoian socio-political organization represented an extension of Middle Woodland period macrobands of 200-400 people (Trigger 1976:134; Williamson 1990: 318). Wright (1966:22) has suggested that there were two distinct Early Iroquoian "branches" or tribal groups in southern Ontario, the Glen Meyer in southwestern Ontario and the Pickering in south-central Ontario. However, more recent research indicates that the Glen Meyer and Pickering complexes represent "two ends of a continuum of spatial variability extending across southern Ontario" (Williamson 1990:295). The lack of a pan-regional political

or cultural identity among Early Iroquoian groups would not have been conducive to the maintenance of a common territorial boundary or buffer zone. Algonquian groups also lacked the scale and level of social organization required in order to maintain a common territorial boundary between their region and the area occupied by the Early Ontario Iroquois.

The lack of any Early Iroquoian village sites in Simcoe County may simply be due to demographic factors. Paleodemographic reconstructions of Early Iroquoian population levels in south-central Ontario show that population levels increased rapidly, from approximately 2,000 people in A.D. 900 to 9,000 people in A.D. 1300 (Warrick 1990:342). As the reliance on cultigens such as corn, beans and squash increased, village size and population levels also dramatically increased. It is quite possible that prior to the rapid increase in population levels at the end of the Early Iroquoian period, Iroquoian groups simply did not require the additional territory that Simcoe County would have provided.

5) Archaeological Survey Bias

Introduction

One of the most common causes of blank areas on archaeological site distribution maps is inadequate or biased archaeological fieldwork. The field methods employed by archaeologists, as well as their objectives and interests, have a direct impact on the types of archaeological sites which will be identified in any given region. A bias towards a particular cultural period or site type will lead to a distorted view of a region's culture history.

With few exceptions, most of the archaeological research in Simcoe County over the past 150 years has been focused upon the late sixteenth and

early seventeenth centuries, when the northern half of Simcoe County was occupied by the historically documented Huron and Petun. At that time, the Petun occupied Nottawasaga Township in the extreme northwestern corner of the county, while four to five Huron tribal groups occupied a much larger area to the east. The Huron are one of the most widely recognized native groups in Canada. This is a result of the extensive ethnohistoric data base which was created by the European explorers and missionaries who traveled to Huronia in the early to mid-seventeenth century. The works of the explorer Samuel de Champlain (Biggar 1922-1936), the Recollet Gabriel Sagard (Wrong 1939), and the Jesuit missionaries who worked in Huronia from A.D. 1634 to 1650 (Thwaites 1896-1901) provide valuable insights into Huron culture. Most of the archaeological research which has been conducted in Simcoe County has been motivated by attempts to elucidate aspects of this ethnographic record.

Previous Archaeological Research In Simcoe County

Following the mid-seventeenth century collapse of the Petun and the Huron Confederacy, and the subsequent withdrawal of the Jesuit missionaries, there was a lapse in the study of native culture in Simcoe County. This began to change when Simcoe County was settled by European farmers in the early nineteenth century. As more and more land came under the plough, the early settlers soon began to find evidence of the former native and European occupation. This evidence consisted of artifact surface scatters, ossuaries, iron trade axes, and the ruins of former mission sites. Members of the Jesuit order soon became interested in these finds and were anxious to relocate the former mission sites.

The first recorded researcher was Father P. Chazelle, who investigated mission site locations in Huronia between 1842 and 1844. He was followed by Father F. Martin in 1855, and Dr. J.C. Tache, who between 1860 and 1865 visited various native settlement and ossuary sites (Latta 1985a:161-162). Andrew F. Hunter (1899, 1901) and Reverend R.E. Jones (1908) also attempted to identify mission site locations utilizing ethnographic data, early maps, and the results of Hunter's extensive archaeological survey of Simcoe County. A similar project was carried out in Nottawasaga Township on Petun mission sites (Lawrence et al. 1909). The interest in identifying the location of mission sites continues to this day (Heidenreich 1966, 1971; Latta 1985a, 1988).

Attempts to identify mission locations and correlate them with known archaeological sites were only one component of Andrew F. Hunter's (1889, 1899, 1900, 1901, 1902, 1903, 1904, 1907) exhaustive archaeological survey of Simcoe County. Hunter combed through most of Simcoe County between 1885 and 1904 in his search for archaeological sites. Through a combination of visiting reported site locations and relying upon unverified verbal reports of artifact finds from farmers and landowners, Hunter recorded the general location, size and age of over 600 possible archaeological sites within Simcoe County. While the vast majority of the sites reported by Hunter consist of Middle to Late Iroquoian (ca. A.D. 1280-1650) village and cabin sites, there are some sites in his inventory which date to the Archaic (ca. 8,000-800 B.C.) as well as Early and Middle Woodland (ca. 800 B.C.- A.D. 700) periods. Although much of Hunter's data is imprecise by modern standards, his work is considered by some to represent " the most comprehensive survey of a historical tribal area so far carried out in North America" (Trigger 1985:61). A similar study was carried out in the late nineteenth century in Nottawasaga

Township by David Boyle (1889). Through a combination of field walking and door to door interviews, Boyle recorded the location of ten village and twenty-one ossuary sites associated with the Petun.

Following the completion of canonization proceedings in 1930 for the Jesuit martyrs who were slain in Huronia in A.D. 1649, there was renewed interest in locating the sites which were associated with these events (Latta 1985a:163). This resulted in extensive excavations by William Fox (1941, 1949), W.J. Wintemberg (1946), Kenneth Kidd (1949) and Wilfred Jury (1948, 1958, 1959, 1960, 1962) at suspected mission sites such as St. Louis, St. Joseph, St. Ignace II and St. Marie in the period between 1936 and 1965. Other important historic sites mentioned in the ethnographic literature, such as Cahiague (McIlwraith 1946,1947; Emerson 1962) and the Ossossané ossuary (Kidd 1953), were also excavated.

A notable exception to this trend towards excavating historically documented sites was the work of Frank Ridley (1952a, 1952b,1954, 1958a, 1958b, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975). Beginning in 1942, Ridley began to investigate the prehistoric Iroquoian occupation of Simcoe County through a combination of archaeological survey and test excavations. Ridley (1952a, 1958a, 1958b, 1963) was able to demonstrate that there was a substantial Iroquoian population residing in Simcoe County in both the Middle Iroquoian (ca. A.D. 1280-1400) and Lalonde (ca. A.D. 1400-1550) periods. Between 1966 and 1975 Ridley also re-investigated over 150 of the site locations first reported by A. Hunter. This survey resulted in the relocation of over 100 Iroquoian village sites in Simcoe County. Ridley recorded the precise size, location, integrity and age for each of these sites.

The other archaeological surveys conducted in Simcoe County in the 1950's and 1960's also attempted to relocate Iroquoian village sites which had been first identified by Andrew Hunter. R.E. Popham (1950) and Emerson and Popham (1952), attempted to locate Hunter's Innisfil Township sites in order to examine the sixteenth century migration of Iroquoian groups into Simcoe County. An archaeological survey project in the Penetang Peninsula, called the "Penetang Project" (Hurley and Heidenreich 1969; Latta 1973), relocated twenty Iroquoian sites which had originally been reported by Hunter and Ridley. The remainder of the archaeological research carried out at this time was site specific and consisted of limited excavations at a number of Iroquoian (ca. A.D. 1280-1650) village sites such as Warminster (Emerson 1962; McIlwraith 1946, 1947), Webb (Ridley 1952a, 1952b,1973; Harper 1952), Barrie (Ridley 1958a), Forget (Jury 1959), Bosomworth (Emerson 1959), Copeland (Channen and Clark 1965), Beswetherick (Channen and Clark 1963), Ellesmere-Morrison (Channen and Clark 1963), Sopher (Noble 1968), Maurice (Tyyska 1969), Robitaille (Tyyska 1969) and Fournier (Russell 1967).

In the 1970's the direction of archaeological research in Simcoe County began to shift towards archaeological resource management and salvage archaeology. Several archaeological survey and test excavation projects were directed towards locating and assessing the significance of archaeological sites prior to their possible destruction by various subdivision, highway and recreational developments.

Roberta O'Brien (1976) conducted an extensive survey in the northern portion of the Penetang Peninsula to determine the extent of the area's archaeological resources prior to the development of a provincial park. By excavating shovel test pits at 40-45 metre intervals, O'Brien located a series of

site types occupied during the Middle Woodland (ca. 300 B.C.-A.D. 700), Early and Middle Iroquoian (ca. A.D. 900-1400), Lalonde (ca. A.D. 1400-1550) and Contact (ca. A.D. 1550-1650) periods. O'Brien (1975), Conway (1973), and Cooke (1990) conducted archaeological surveys along the lower portions of the Nottawasaga River near Georgian Bay, in advance of urban development in that area. Their work demonstrated that there was a major Middle Woodland occupation in this area. James Hunter (1976, 1977) carried out an extensive assessment of archaeological sites which would be potentially destroyed by highway construction in northern Simcoe County, and urban expansion in the Barrie area. By relocating sites originally reported by A. Hunter and F. Ridley, as well as conducting a pedestrian and test pit survey at 40-45 metre intervals, J. Hunter examined over 50 archaeological sites. While the majority of these consisted of post-thirteenth century Iroquoian village sites, some Middle Woodland and possible Archaic period sites were also located.

Several important research oriented projects were also completed in Simcoe County at this time. Conrad Heidenreich's (1971) Ph.D. dissertation, *Huronia: A History and Geography of the Huron Indians 1600-1650*, was published. Heidenreich's thesis focused on the natural geography of Simcoe County, Huron ethnohistory, and archaeological data relating to the Contact period. In 1975, Charles Garrad (1975) summarized his extensive analysis of the Petun, demonstrating that the Petun homeland, unlike Huronia, was not occupied by Iroquoian groups until the sixteenth century. The majority of the 18 Petun village sites which Garrad had located, and obtained artifact samples from, dated to the Contact period. Martha Latta's (1976) Ph.D. dissertation *The Iroquoian Cultures of Huronia: A Study of Acculturation Through Archaeology*, reconstructed the Iroquoian culture history of Huronia with an emphasis on

the consequences of European contact. The examination of the Contact period in Huronia was continued by Clark Sykes' (1983) Ph.D. dissertation on the nature and function of intra-community exchange systems in seventeenth century Huron society.

In the 1970's and 1980's several universities conducted long term archaeological field schools at the Contact period sites of Le Caron (Johnston and Jackson 1980), Ball (Knight 1978, 1987) and Auger (Latta 1985b). Other research oriented excavation projects provided valuable information on Iroquoian campsites (Smith 1979), and Lalonde period village settlement patterns (Stopp 1985). During the 1980's there was an concomitant increase in development and archaeological consulting activity in Simcoe County. Major salvage excavations were carried out at a number of Middle Iroquoian, Lalonde and Contact period village sites including the Alonzo (Ontario Ministry of Citizenship, Culture and Recreation), Bidmead (Ontario Ministry of Citizenship, Culture and Recreation), Wiacek (Lennox et al. 1986; MacDonald et al. 1991), Molson (Molnar 1986), Dunsmore (Williamson 1990b), Carson (Archaeological Research Associates Inc.; Varley 1993) and Hubbert (MacDonald et al. 1991) sites.

In 1985 and 1986 Gary Warrick (1988a) carried out a major archaeological survey project in upland portions of southern Simcoe County. The purpose of this project was to relocate A. Hunter's Iroquoian village sites in Innisfil Township, as well as to determine the extent of Iroquoian occupation farther south in West Gwillimbury Township. The results of this survey were to be used for archaeological resource management in the Barrie area, as well as for Warrick's (1990) Ph.D. dissertation on Huron- Petun paleodemography. Warrick pedestrian surveyed a total of 1200 hectares at 10-

25 metre intervals in areas where either Hunter had reported finding village sites, or in areas which were considered to be of high potential. This project resulted in the examination of 38 archaeological sites, including 14 Iroquoian villages, 8 Iroquoian camp or cabin sites, and several campsites dating to the Archaic, Early Woodland and Middle Woodland periods (Warrick and Molnar 1986; Warrick 1988a).

In 1991, R. Sutton (1991) conducted a systematic stratified pedestrian archaeological survey in south-central Simcoe County (Figure 11). The objective of this survey project was to redress some of the biases of previous archaeological surveys in Simcoe County. It was hoped that an intensive survey encompassing both upland and lowland physiographic regions would result in the identification of a wider range of site types and cultural periods. This survey relied upon the pedestrian survey and intensive surface collection of ploughed fields because this method provides valuable information on site size, function and age at a fraction of the cost of test pitting (Lewarch and O'Brien 1981:320). Also, recent studies of archaeological survey projects which have involved the use of test pits, have shown that they are biased against the discovery of small, low density sites (Nance and Ball 1986). A non-random survey strategy was adopted because of the patchiness and irregular size of ploughed fields in the survey area.

The survey area covered 6,100 hectares in portions of Vespra and Essa Townships. The survey area was stratified into areas of upland sand till, lowland sand plain and lowland clay plain. All available ploughed fields within this area were then pedestrian surveyed at five metre intervals. A total of 652 hectares were surveyed, representing 10.7% of the total survey area. This included 341 hectares of upland sandy till, 259 hectares of the lowland

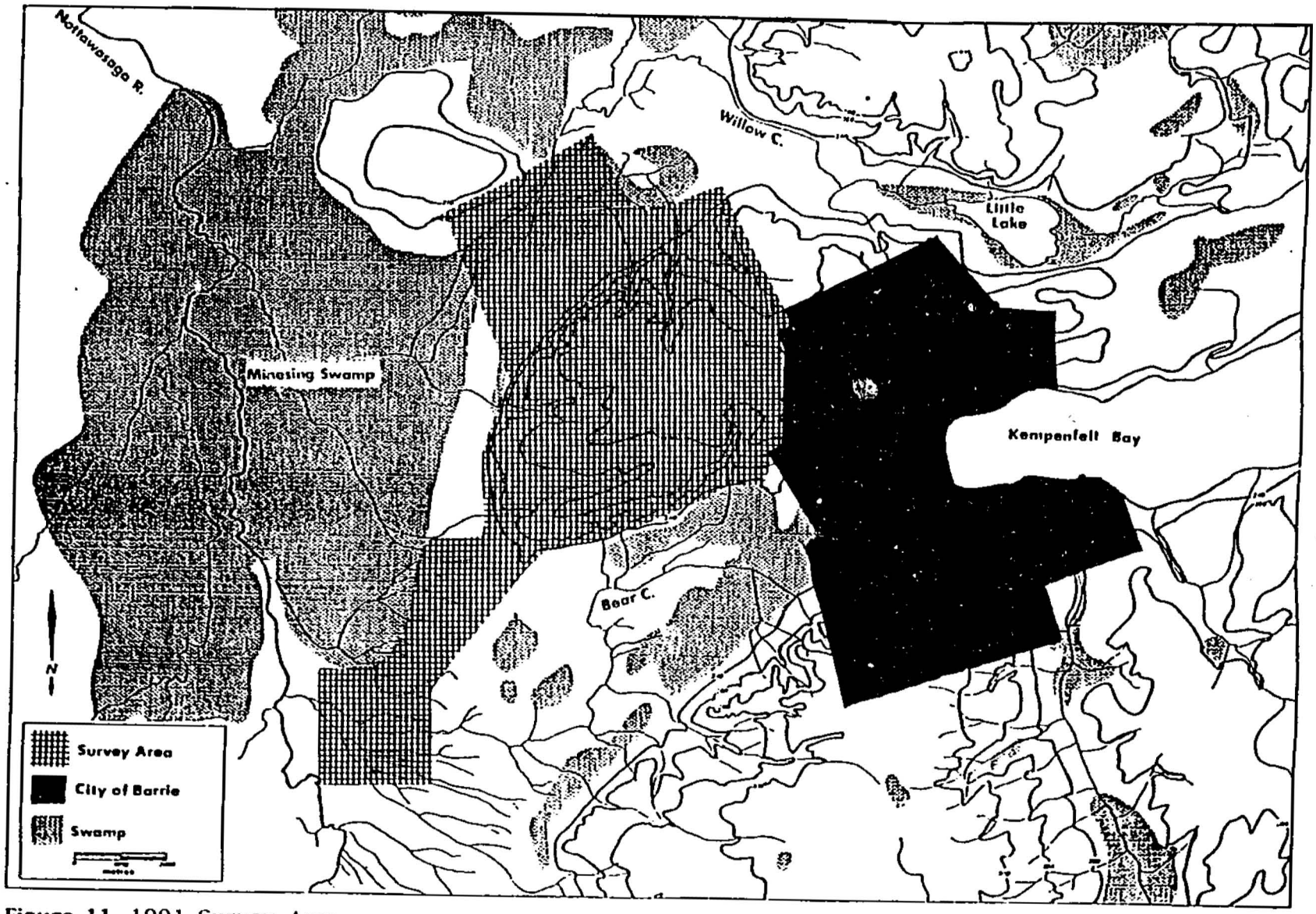


Figure 11. 1991 Survey Area.

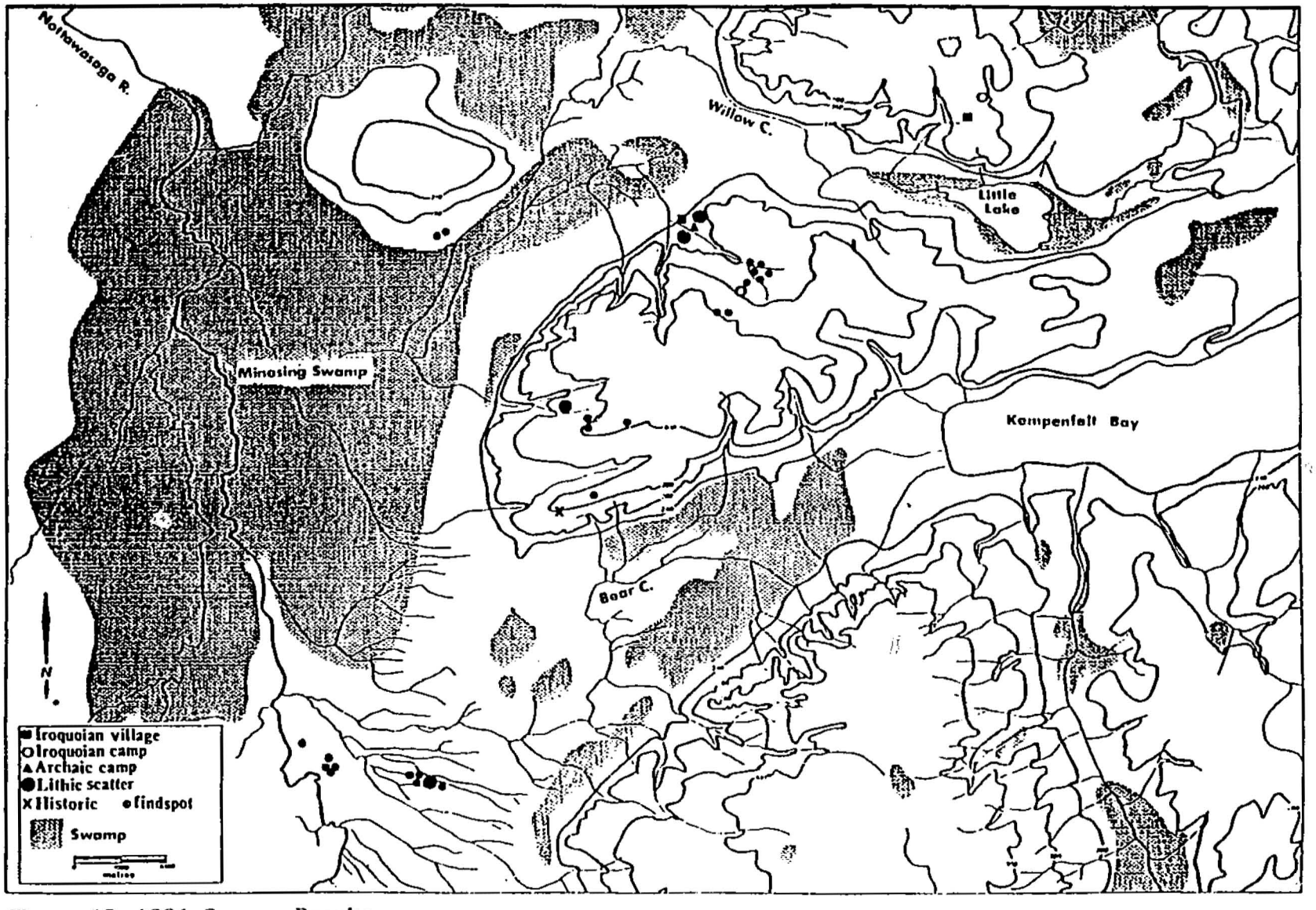


Figure 12. 1991 Survey Results.

sand plain, and 52 hectares of the lowland clay plain. A total of 13 new archaeological sites and 26 isolated findspots were located, including two Late Iroquoian villages, two Middle to Late Iroquoian campsites, one Archaic campsite, and six lithic scatters of unknown cultural affiliation (Figure 12). No Early Iroquoian material was located.

Conclusions

As this brief outline of previous archaeological research in Simcoe County has shown, the predominant objective often has been to locate and excavate Iroquoian village sites dating to the Contact period. Most of the regional settlement pattern data have been generated by traditional survey methods which consisted of selective field walking and interviews with local residents (Boyle 1889; Hunter 1889, 1899, 1900, 1901, 1902, 1903, 1904, 1907; Lawrence et al. 1909). With a few exceptions (O'Brien 1975, 1976; Conway 1973; Cooke 1990; Sutton 1991), the objective of subsequent archaeological survey projects has been to relocate the Iroquoian village sites originally found by these early surveys (Popham and Emerson 1952; Ridley 1966, 1967, 1968, 1969, 197[illegible]71, 1972, 1973, 1974, 1975; Hurley and Heidenreich 1969; Latta 1973; Hunter 1976, 1977; Warrick and Molnar 1986; Warrick 1988a). With the exception of Sutton (1991), all of the major archaeological surveys have been extensive, rather than intensive. Reported pedestrian and test pit survey intervals range between ten and forty-five metres (O'Brien 1976; Hunter 1976,1977; Warrick and Molnar 1986; Warrick 1988a).

The interests and traditional survey methods of archaeologists working in Simcoe County have resulted in a regional site settlement pattern data base which is heavily biased towards Iroquoian village sites. The bias

towards easily recognizable village site locations is typical of any region where traditional survey techniques have prevailed (Plog et al. 1978:386). The lack of high intensity archaeological surveys has also resulted in the underrepresentation of smaller Iroquoian special purpose camp or cabin sites, as well as Pre-Iroquoian sites.

It is doubtful that the absence of any known Early Iroquoian village sites in Simcoe County is a result of these biases. Although Early Iroquoian village sites located elsewhere in southern Ontario are generally smaller than Middle and Late Iroquoian villages, they still would have been easily visible on the ploughed landscape of Simcoe County. The more permanent nature and relatively high artifact densities of site locations such as Early Iroquoian villages make them relatively easy to identify. Traditional survey techniques are more than adequate for the identification of this type of site. The more permanent the site type, the more likely it is that its absence from a region reflects reality, and not archaeological survey bias (Plog et al. 1978:386; Groube 1981:194).

It is also important to point out that many of the archaeological survey projects conducted in Simcoe County have identified a small but diachronically representative sample of Iroquoian and pre-Iroquoian special purpose sites. Surveys by A. Hunter (1889, 1899, 1900, 1901, 1902, 1903, 1904, 1907), Ridley (1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975), O'Brien (1976), Hunter (1976,1977), Warrick (1988a) and Sutton (1991) all have located some small Iroquoian camp and cabin sites, as well as Archaic, Early and Middle Woodland camp sites. This indicates that even traditional archaeological surveys will locate a small sample of sites which are small in size and have a low artifact density. The only logical explanation for the lack of Early Iroquoian village

sites in a data base which includes a range of Pre-Iroquoian camp sites, Early Iroquoian special purpose sites, and Middle and Late Iroquoian villages and special purpose sites, is that this site type is not present in Simcoe County.

The systematic elimination of other explanations for the lack of Early Iroquoian village sites in Simcoe County lends further support to the migration hypothesis. More positive evidence in support of the migration hypothesis will be provided in Chapters 7 and 8.

CHAPTER 6

SETTING THE STAGE: ESTABLISHING THE SPATIAL AND TEMPORAL POSITION OF SIMCOE COUNTY MIDDLE IROQUOIAN VILLAGE SITES

IDENTIFYING SIMCOE COUNTY MIDDLE IROQUOIAN VILLAGE SITES

A necessary first step in the analysis of Middle Iroquoian migration processes in Simcoe County is the identification of Middle Iroquoian village site locations and the placement of those sites in a relative chronology. The process of identifying potential Middle Iroquoian sites in the existing data base for Simcoe County included the examination of a wide range of sources. A master list of potential Middle Iroquoian sites was initially compiled based on the data available in the Archaeological Data Base of the Ontario Ministry of Culture, Tourism and Recreation. Sites which were identified in the data base as belonging to the Middle Iroquoian period were added to the master list. A variety of published and unpublished archaeological research and consulting reports which were relevant to the study area were also examined in order to refine the master list. This included the work of Harper (1952), Ridley (1958, 1966-1975), Channen and Clark (1965), Wright (1966, 1972a), O'Brien (1975, 1976), Smith (1979), Hunter (1976, 1977), Ramsden (1977), Kapches (1981), Cooke (1990), Warrick (1988a, 1990) and Bursey (1993). Any site which had been identified by a researcher as belonging to the Middle Iroquoian period was added to the master list.

The next step was to eliminate from the list special purpose sites such as fishing sites, cabin sites, camp sites and isolated findspots. While these site

types contain important information for reconstructing Middle Iroquoian settlement-subsistence patterns, it is the village sites which are relevant to the analysis of a permanent colonization. Iroquoian village sites represent permanent settlements which were occupied all year around. The presence of a village site in a specific area indicates that a long term, sedentary movement has taken place. The analysis of village sites is also essential to accurately determine past population sizes (Warrick 1990), which is another necessary component of an analysis of the migration process.

In general, Iroquoian village sites can be identified by their size, location, settlement patterns and artifact assemblages (Finlayson 1985; Lennox 1984; Noble 1975; Williamson 1983). Unfortunately, the only data available for most of the Middle Iroquoian sites in Simcoe County are their size and location. This, however, is sufficient for identifying their probable function. Iroquoian village sites are, in general, over 0.25 hectares in size (Warrick 1990:219). Most Iroquoian sites smaller than 0.25 hectares in size consist of special-purpose sites. However, a tentative determination of site function on the basis of site size alone can be misleading. The Methodist Point site (BfHa-2), a multi-component fishing site located in the northwest corner of Simcoe County, had an estimated size of 2.7 hectares (Smith 1979). It is the location of this site which sets it apart from Middle Iroquoian village site locations in Simcoe County. The Methodist Point site was located on the low-lying shoreline of a major body of water, below an adjoining upland area. This is typical of other Late Woodland or Iroquoian fishing sites in the region (Wright 1972a). All of the sites which have been identified as Middle Iroquoian village sites in the region are located on well drained upland areas, often overlooking more exposed low lying shorelines or poorly drained

wetlands. The final total of 24 Simcoe County Middle Iroquoian village sites identified in this study all consist of sites which are greater than 0.25 hectares in size and are located in upland physiographic regions.

The next step in the process was to confirm that the village sites identified by previous researchers as being Middle Iroquoian did in fact belong to that cultural horizon. The Middle Iroquoian period was originally formulated by Wright (1966) to represent a rather homogeneous cultural horizon which was widely distributed in southwestern and southcentral Ontario. The ceramic assemblages from contemporaneous Middle Iroquoian sites are remarkably similar to one another across this large geographic area. In his original formulation of the Middle Ontario Iroquoian period, Wright (1966) separated the Middle Iroquoian period chronologically into two substages, the Uren substage and the Middleport substage. During the Uren substage typical ceramic assemblages consisted of collarless and incipient collared vessels, decorated with incised, push-pull and linear stamped horizontals and combinations of horizontal and oblique motifs. The pipe assemblages from Uren substage sites are generally quite small and indicate a poorly developed pipe complex. In the Middleport substage ceramic assemblages contain well developed collared vessels, and incised and linear stamped motifs consisting of horizontals, horizontals over or under obliques, and obliques alone. The pipe complex on Middleport substage sites is well developed and consists of conical, cylindrical and barrel shaped pipe bowls.

Wright's (1966) formulation of the Middle Iroquoian period was largely based upon the typological analysis of ceramic rimsherd assemblages. Uren substage sites were characterized by the dominance (50% or more) of three pottery types: Iroquois Linear, Ontario Horizontal, and Ontario Oblique

(Wright 1966:54). Middleport substage sites were also characterized by the dominance of three rimsherd types: Middleport Oblique, Lawson Incised and Ontario Horizontal. In a recent re-analysis of the Middle Ontario Iroquois period, Dodd et al. (1990:337) have redefined Middleport sites as those assemblages which are dominated (50% or more) by two types, Middleport Oblique and Ontario Horizontal.

The general definition of Middle Iroquoian ceramic assemblages formulated by Wright (1966) and modified by Dodd et al. (1990) was utilized in this study in order to provide a preliminary confirmation of the cultural affiliation of the sites in question. Almost all of the artifact assemblages from Simcoe County village sites identified by other researchers as belonging to the Middle Iroquoian period were re-examined in order to tentatively confirm the sites' cultural affiliation. The only site assemblages which were not re-examined were those which had already been analyzed adequately and published in suitable detail (Warrick 1988a: Dykstra, Lougheed, Little #1, and Little #2; Lennox et al. 1986: Wiacek). As a result of this preliminary analysis, a total of 26 potential Middle Iroquoian village sites were identified in Simcoe County (Table 1).

MIDDLE IROQUOIAN CHRONOLOGY

In order to address a number of issues relating to Iroquoian migration processes, it is necessary to establish the chronological position of the Middle Iroquoian villages sites situated in Simcoe County. Wright (1966) argued that the Middle Iroquoian period began at about A.D. 1300 and ended around A.D.1400. Wright (1966:54-56) dated the Uren substage to ca. A.D. 1300-1350, and the Middleport substage to ca. A.D. 1350-1400. This was based upon

TABLE 1. Preliminary List of Simcoe County Middle Iroquoian Village Sites.

SITE	RESEARCHER	METHODOLOGY	CURATED BY
Angus Rawn BdGw-6	Ridley (1970)	A/B	MCTR
Barrie BcGw-18	Hunter (1907 #41) Ridley (1958) Hunter (1977) Sutton (1996)	A A/B B C	Unknown Huronia Museum Huronia Museum Huronia Museum
Beswetherick BcGw-1	Hunter (1907#40) Channen and Clarke (1963) Ridley (1973) Hunter (1976)	A C A/B A/B	Unknown National Museum Simcoe County Huronia Museum
Cowan BcGw-13	Ridley (1973)	A/B	MCTR
Cranston BdGw-9	Hunter (1902#31A) Ridley (1971)	A B	Unknown MCTR
Cundles BcGw-11	Hunter (1907#54) Ridley (1970) Hunter (1977)	A/B B B	Unknown MCTR Simcoe County
Davey BcHa-11	Hunter (n.d.)	A	St. Marie
Dunsmore BcGw-10	Hunter (1907#47) Ridley (1968) Hunter (1977) Williamson (1990b)	A/B A/B 	Unknown *MCTR Huronia Museum ASI
Dykstra BbGw-5	Warrick (1988a)	A/B	MCTR
Gervais BcGw-5	Hunter (1907#43) Ridley (1966) Landowner	A A/B A	Unknown MCTR Private Collection
Gratrix BeGw-6	Hunter (1900 #40) Ridley (1971)	A A/B	Unknown Unknown
Holly BcGw-58	OACS (1992) DRP (1995)	A/B A/B	Unknown DRP
Hubbert BbGw-9	Hunter (n.d.#195) Ridley (1975) Hunter (1976) MacDonald et al. (1991)	A/B A/B A D	Unknown MCTR *Huronia Museum ASI
Hunter Flos #9 BdGx-7	Hunter (1907) Ridley (1966)	A/B	Unknown MCTR
John Thompson BdGw-11	Hunter (1902#5) Ridley (1972)	A/B	Unknown MCTR

TABLE 1 continued. Preliminary List of Potential Simcoe County Middle Iroquoian Village Sites.

SITE	RESEARCHER	METHODOLOGY	CURATED BY
Kenny BcGx-15	Ridley (1968)	A/B	MCTR
Laura Potter BeGw-8	Ridley (1969)	B	MCTR
Little #1 BcGw-15	Hunter (n.d.#103) Hunter (1976, 1977) Warrick (1988a)	A A A	Unknown Unknown MCTR
Little #2 BcGw-28	Hunter (n.d.#102) Warrick (1988a)	A A	Unknown MCTR
Lougheed BbGw-13	Hunter (n.d.#243) Warrick (1988a)	A A	Unknown MCTR
McRae BdGx-12	Hunter (1899 #36) Ridley (1969)	A B	Unknown Huronia Museum
Partridge BcGw-12	Hunter (1907#23) Ridley (1966) Hunter (1977)	A B A/B	Unknown MCTR Huronia Museum
Sparrow BcGw-8	Hunter (1907#37) Ridley (1968) Hunter (1977)	A A/B A/B	Unknown MCTR Huronia Museum
Webb BdGx-13	Ridley (1952, 1973) Harper (1952)	B C	MCTR Unknown
Wellington BcGw-55	MPA (1991) ASI (1992)	A A/B	DRP ASI
Wiacek BcGw-26	Hunter (n.d.#104) Lennox et al. (1986) ASI (n.d.)	A C C	Unknown MTO ASI

Table 1. Legend

Methodology: A- surface examination/test pitting
B- test excavation
C- extensive excavation

Curated By: ASI- Archaeological Services Incorporated, Toronto
DRP- D.R. Poulton & Associates Inc., London.
Huronia Museum- Huronia Museum, Midland
MCTR- Provincial Ministry of Culture, Tourism and Recreation, Toronto.
MPA- Mayer, Poulton & Associates Incorporated, London.
MTO- Ontario Ministry of Transportation, London.
Nationai Museum- National Museum of Civilization, Ottawa.
OACS- Ontario Archaeological Consulting Services, Otttawa.
Simcoe County- Simcoe County Museum, Midhurst.
Unknown- collection could not be located.
*- collection was not analyzed.

ceramic seriation, a small sample of radiocarbon dates and several questionable assumptions concerning the pace of Iroquoian cultural development. Several subsequent researchers have suggested that the Uren substage began as early as A.D. 1250 (Kapches 1981; Pearce 1984; Wright 1986), and that the Middleport substage continued up to the mid-fifteenth century (Finlayson and Byrne 1975; Kapches 1981; Smith 1987). However, these suggested dates are suspect because they were based in part upon a limited number of uncalibrated radiocarbon dates. More recently, Warrick (1990:182) has suggested that the Middleport substage in south-central Ontario dates to c.a. 1330-1420. However, Warrick's dates are also suspect because they are based solely on ceramic seriation in the absence of any supporting radiocarbon dates.

One of the most comprehensive examinations of Middle Iroquoian chronology has been the work of Timmins (1985) in calibrating all of the available radiocarbon dates for Iroquoian sites in southern Ontario and upstate New York. Timmins' (1985) calibration of radiocarbon dates from Middle Iroquoian sites in southern Ontario indicated that the Uren substage dated to ca. A.D. 1250-1290 and the Middleport substage to ca. A.D. 1290-1340. Timmins' (1985) calibrated dates also indicated that the earliest Middleport substage sites were in southwestern Ontario, while the latest dates appeared to be in south-central Ontario. Unfortunately, Timmins' (1985) results are questionable because they were based upon the calibration of the averages of multiple dates from each site, as opposed to the calibration of individual dates (Poulton 1985a; Dodd et al. 1990; Wright 1992). More recently, Poulton (1985a) and Dodd et al. (1990) calibrated individual radiocarbon dates for Middle Iroquoian sites with more than one date, resulting in dates which are similar to Wright's (1966)

original formulation. This latest attempt at establishing a chronological framework for the Middle Ontario Iroquoian period suggests that the Uren substage dates to ca A.D. 1280-1330, and the Middleport substage to ca A.D. 1330-1400.

At present, there are very few radiocarbon dates available from Middle Iroquoian sites located in Simcoe County. The earliest date is from a wood charcoal sample from the Beswetherick site (Channen and Clark 1963) which calibrates to 1340 ±45 (Timmins 1985:96). Another radiocarbon date, based upon a sample of wood charcoal obtained from the Dunsmore site (Hunter 1976, 1977), calibrates to A.D. 1350 ±35 (Timmins 1985:109). Three radiocarbon dates on wood charcoal from the Wiacek site (Lennox et al. 1986) calibrate to 1210 ±75, 1280 ±60, and 1320 ±50. Analysis of rimsherd type frequencies from all three of these sites suggests that they were occupied during the Middleport substage (Ramsden 1977:68; Lennox et al. 1986; Warrick 1990:359). More recently, a single radiocarbon date for the Barrie site, obtained from a sample of carbonized *Zea mays* kernels (Sutton 1996), calibrated to A.D. 1409 ±40. However, the artifact assemblage from the Barrie site clearly places it within the Uren substage (c.a. A.D.1280-1330).

There are several difficulties associated with the interpretation of the small number of existing radiocarbon dates from Middle Iroquoian sites in Simcoe County. Five of the six radiocarbon dates are from samples of wood charcoal. Unfortunately, dates derived from wood probably do not coincide with the actual date of site occupation. A radiocarbon date from wood reflects the average age of a series of annual growth rings (Timmins 1985:46). What we do not know is the length of the interval between the tree's death and its utilization by a site's inhabitants. It is therefore quite possible that a wood

charcoal sample is much older than the site occupation with which it is associated. The error factor can be reduced by taking wood charcoal samples from young saplings and from running multiple dates from single large charcoal samples (Timmins 1985:48). However, this cannot change the problems associated with existing single radiocarbon dates which were taken at a time when the potential errors associated with radiocarbon dating wood charcoal were poorly understood.

In order to avoid the problems associated with radiocarbon dating "old wood" many Iroquoian researchers are now obtaining radiocarbon dates from carbonized cultigens such as corn. Unlike wood charcoal, it can be assumed that the age of a carbonized cultigen is closely related to the date of site occupation. It was for this reason that a radiocarbon date was obtained from a carbonized *Zea mays* kernel from the Barrie site (Sutton 1994). Unfortunately, the date which was obtained did not appear to support the relative chronological position of the site. The artifact assemblage from the Barrie site clearly places it within the Uren substage (c.a. A.D. 1280-1330) of the Middle Iroquoian period. The apparently erroneous date for the Barrie site points to another serious problem relating to radiocarbon dating sites occupied during the Middle Iroquoian period (c.a. A.D. 1280-1400). This period was characterized by large fluctuations in cosmic ray intensity (Dr. R. Beukens-personal communication 1994). This has resulted in a "fattening" of the calibration curve for this period, and an increase in the probability that the associated radiocarbon dates will be incorrect. Until the calibration curve can be refined for this period, many of the radiocarbon dates obtained from archaeological sites occupied in the fourteenth century will be suspect.

Given the small number of radiocarbon dates which have been obtained from Simcoe County Middle Iroquoian sites it not possible at this time to create a concise chronological framework for the region. The potential problems associated with the few dates which have been processed accentuates this conclusion. Until more data are available, the general chronological framework which has been established for the Middle Iroquoian period (ca. A.D. 1280-1400) in southern Ontario (Dodd et al. 1990; Wright 1966) should also be applied to similar sites in Simcoe County. What can be established for Simcoe County is the relative chronological position of the Middle Iroquoian village sites which are situated there. This is essential for any examination of the migration process and how it developed.

ESTABLISHING A RELATIVE CHRONOLOGY FOR SIMCOE COUNTY MIDDLE IROQUOIAN VILLAGE SITES

The master list of potential Middle Iroquoian village sites (Table 1) contains a group of sites which vary considerably in terms of the quality and quantity of information which are available from them. At one extreme are sites such as Little #2 (BcGw-28) which was only subjected to a surface examination, resulting in a small collection of diagnostic material such as ceramic rimsherds. At the other extreme are sites like the Dunsmore site (BcGw-10) which was almost completely salvage excavated and contains a large and diverse artifact assemblage.

With the exception of several sites which were subjected to extensive excavation, the artifact samples from the vast majority of these sites consist largely of ceramic rimsherd samples. Iroquoian researchers have consistently focused upon the collection and analysis of ceramic rimsherds because of their potential for revealing the temporal and spatial relationships

of the communities which produced them (Smith 1983). The most common use of this artifact class has been for the purpose of establishing relative site chronologies (Emerson 1954; MacNeish 1952; Ramsden 1977; Smith 1983; Wright 1966). Although Iroquoian researchers have examined rimsherd assemblages with similar objectives, the methodology of Iroquoian ceramic seriation varies considerably. Early researchers relied upon the creation of rimsherd types and inter-site comparisons of rimsherd type frequencies (MacNeish 1952; Emerson 1954, 1961; Wright 1966). Ceramic rimsherd types consisted of the intuitive recognition of attribute combinations which were believed to be spatially and temporally significant (MacNeish 1952:4-7). It was observed that rimsherd type frequencies generally followed a normal distribution where they increased in popularity, peaked, and then declined in popularity through time (Emerson 1961:181). Rimsherd type frequencies from different sites were compared to one another and seriated using simple statistical techniques such as the Robinson-Brainerd coefficient of similarity (Brainerd 1951).

Later researchers became increasingly dissatisfied with the subjective nature of rimsherd types and relied to a greater degree on the analysis of individual rimsherd attributes or statistically significant attribute combinations (Ramsden 1977; Smith 1983, 1987; Wright 1967). Despite this trend, most researchers still rely upon traditional rimsherd type frequencies in their seriation of Iroquoian sites on a broad scale (Dodd et al. 1990; Lennox et al. 1986; Kapches 1981). The simple reason for this is that site seriation on the basis of the comparison of traditional rimsherd types still provides a very useful and efficient method of temporally ordering Iroquoian sites. Smith (1987:495) found that the results of site seriation based on traditional rimsherd types were very close to those produced by more sophisticated methods based

on the identification of attribute complexes using complex statistical techniques.

Traditional rimsherd type frequencies were used as the basis for the temporal placement of 23 of the 26 potential Middle Iroquoian village sites identified in this study (Table 2). The rimsherd typological classifications and descriptions first outlined by MacNeish (1952), and refined by Ridley (1952), Emerson (1968) and Lennox and Kenyon (1984) were strictly adhered to. In order to avoid problems associated with inter-observer error (Lennox and Kenyon 1984), almost all of the rimsherd assemblages were analyzed by this researcher. The only exceptions were the Dykstra, Lougheed, Little #1, and Little #2 rimsherd assemblages described by Warrick (1988a), and one of two rimsherd samples from the Wiacek site (Lennox et al. 1986). Where possible, the rimsherd type frequencies for each site are based on a minimum number of individual vessels. Rimsherds were only considered to be from the same vessel if they physically mended with one another. In the case of several of the larger assemblages (Beswetherick, Dunsmore, Hubbert and Wiacek), the rimsherd collections were scattered among several different institutions. This made it impossible to match and mend rimsherds for the entire assemblage from each of these four sites. Thus, the rimsherd type frequencies for each of these sites do not represent the minimum number of vessels.

Three potential Middle Iroquoian village sites could not be included in the comparative rimsherd analysis. The Gratrix site (BeGw-6), located in Tay Township, was surface collected and briefly test excavated by Ridley (1971). On the basis of the small artifact sample which he collected, Ridley (1971:112-114) identified the Gratrix site as a Middleport substage village, and estimated it to be 0.6 hectares in size. Warrick (1990:499) considers the Gratrix site to be late

Middleport, and the rimsherd illustrations produced by Ridley (1971:115-116) appear to support this interpretation. Unfortunately, the artifact assemblage from the Gratrix site could not be located. The Wellington site (BcGw-55) was located during the archaeological assessment of a woodlot in the City of Barrie in 1991 (MPA 1991). A more detailed examination of the site, including the excavation of a series of one metre units across the site area was undertaken by Archaeological Services Inc. in 1992 (ASI 1992). Detailed information regarding the results of this investigation is not yet available. Preliminary results suggest that the Wellington site is a 1.0 hectare early Middleport substage village site (MPA 1991; ASI 1992). The rim sherd assemblage from this site was not available for analysis. The final site which could not be included in the comparative rim sherd analysis is the Holly site (BcGw-58). This site was first located during an archaeological assessment in the City of Barrie in 1992 (Ontario Archaeological Consulting Services 1992). A detailed pedestrian and shovel test pit survey was undertaken on the Holly site in late 1994 by D.R. Poulton & Associates Inc. (1995). This fieldwork suggests that the Holly site is a 1.3 hectare Uren substage village site. The analysis of the small rim sherd assemblage from this site has only recently been completed and the results were not available when the comparative analysis for this dissertation was undertaken. In summary, the Gratrix, Wellington and Holly sites were excluded from the comparative analysis of rimsherd types. However, the tentative chronological dates assigned to these sites by their excavators have been adopted in this dissertation in order to allow these sites to be included in the examination of the Middle Iroquoian colonization process.

TABLE 2. Rimsherd Types on Preliminary List of Simcoe County Middle Iroquoian Village Sites.

TYPE		A.R.	BAR	BES	CO	CRA	CUN	DAV	DUN	DYK	GER	HUB	HF9
Middleport Oblique	#	10	0	55	1	5	2	43	36	9	27	25	3
	%	35.7	0	26.7	8.3	26.3	22.2	48.9	16.0	45.0	23.9	20.5	25.0
Middleport Criss Cross	#	0	2	6	0	0	1	4	2	1	1	0	0
	%	0	.6	2.9	0	0	11.1	4.5	.9	5.0	.9	0	0
Huron Incised	#	1	0	17	0	0	1	2	50	0	7	16	4
	%	3.6	0	8.3	0	0	11.1	2.3	22.2	0	6.2	13.1	33.3
Sidey Crossed	#	5	0	0	0	1	0	3	16	0	18	12	0
	%	17.9	0	0	0	5.3	0	3.4	7.1	0	15.9	9.8	0
Sidey Notched	#	2	0	0	0	3	0	0	0	0	4	1	0
	%	7.1	0	0	0	15.8	0	0	0	0	3.5	.8	0
Black Necked	#	0	0	3	0	0	0	5	33	0	6	22	1
	%	0	0	1.5	0	0	0	5.7	14.7	0	5.3	18.0	8.33
Pound Necked	#	4	0	44	0	2	2	15	31	2	15	17	2
	%	14.3	0	21.4	0	10.5	22.2	17.0	13.8	10.0	13.3	13.9	16.7
Lalonde High Collared	#	1	0	4	0	2	0	0	9	0	4	3	0
	%	3.6	0	1.9	0	10.5	0	0	4.0	0	3.5	2.5	0
High Collared	#	1	0	0	0	1	0	1	9	0	4	0	1
	%	3.6	0	0	0	5.3	0	1.1	4.0	0	3.5	0	8.3
Lawson Incised	#	4	0	0	0	2	0	0	7	0	5	10	0
	%	14.3	0	0	0	10.5	0	0	3.1	0	4.4	8.2	0
Lawson Opposed	#	0	0	0	0	0	0	2	2	0	4	3	0
	%	0	0	0	0	0	0	2.3	.9	0	3.5	2.5	0
Warminster Horizontal	#	0	0	1	0	2	0	0	3	0	3	2	0
	%	0	0	.5	0	10.5	0	0	1.3	0	2.7	1.6	0
Warminster Crossed	#	0	0	0	0	0	0	0	0	0	0	0	0
	%	0	0	0	0	0	0	0	0	0	0	0	0
Iroquois Linear	#	0	142	12	1	0	0	0	0	1	0	0	0
	%	0	42.6	5.8	8.3	0	0	0	0	5.0	0	0	0
Ontario Horizontal	#	0	101	37	9	0	2	8	9	4	8	2	1
	%	0	30.3	18.0	75.0	0	22.2	9.1	4.0	20.0	7.1	1.6	8.3
Ontario Oblique	#	0	43	8	1	0	0	2	0	1	0	0	0
	%	0	12.9	3.9	8.3	0	0	2.3	0	5.0	0	0	0
Pound Blank	#	0	0	0	0	1	0	0	0	0	0	2	0
	%	0	0	0	0	5.3	0	0	0	0	0	1.6	0
Niagara Collared	#	0	7	0	0	0	0	1	2	0	0	3	0
	%	0	2.1	0	0	0	0	1.1	.9	0	0	2.5	0
Copeland Incised	#	0	0	0	0	0	0	0	0	1	0	0	0
	%	0	0	0	0	0	0	0	0	5.0	0	0	0
Ripley Plain	#	0	6	3	0	0	0	0	0	1	0	0	0
	%	0	1.8	1.5	0	0	0	0	0	5.0	0	0	0
Goessens Punctate	#	0	9	0	0	0	0	0	0	0	0	0	0
	%	0	2.7	0	0	0	0	0	0	0	0	0	0
Boys Oblique Dentate	#	0	5	0	0	0	0	0	0	0	0	0	0
	%	0	1.5	0	0	0	0	0	0	0	0	0	0
Goessens Oblique	#	0	2	0	0	0	0	0	0	0	0	0	0
	%	0	.6	0	0	0	0	0	0	0	0	0	0
Misc.	#	0	16	16	0	0	1	2	16	0	7	4	0
	%	0	4.8	7.8	0	0	11.1	2.3	7.1	0	6.2	3.3	0
TOTALS	#	28	333	206	12	19	9	88	225	20	113	122	12
	%	100.1	99.9	100.2	99.9	100	99.9	100	100	100	99.9	99.9	99.9

TABLE 2 continued. Rimsherd Types on Preliminary List of Simcoe County Middle Iroquoian Village Sites.

TYPE		J.T.	KEN	L.P.	L#1	L#2	LOU	MR	PAR	SPA	WEB	WIA
Middleport Oblique	#	5	4	1	9	10	2	9	2	8	17	32
	%	26.3	18.2	7.7	33.3	35.7	20.0	27.3	22.2	34.8	23.9	20.3
Middleport Criss Cross	#	0	0	0	1	0	0	0	0	2	2	4
	%	0	0	0	3.7	0	0	0	0	8.7	2.8	2.5
Huron Incised	#	2	1	2	0	0	4	2	0	0	2	4
	%	10.5	4.5	15.4	0	0	40.0	6.1	0	0	2.8	2.5
Sidey Crossed	#	0	0	0	0	0	0	7	0	0	8	3
	%	0	0	0	0	0	0	21.1	0	0	11.3	1.9
Sidey Notched	#	0	0	0	0	0	0	2	0	0	1	0
	%	0	0	0	0	0	0	6.1	0	0	1.4	0
Black Necked	#	2	1	1	0	0	1	0	0	0	13	22
	%	10.5	4.5	7.7	0	0	10.0	0	0	0	18.3	13.9
Pound Necked	#	4	5	6	7	3	2	2	1	3	11	32
	%	21.1	22.7	46.2	25.9	10.7	20.0	6.1	11.1	13.0	15.5	20.3
Lalonde High Collared	#	1	0	0	0	0	0	1	0	0	3	0
	%	5.3	0	0	0	0	0	3.0	0	0	4.2	0
High Collared	#	1	1	0	0	0	0	0	0	0	0	4
	%	5.3	4.5	0	0	0	0	0	0	0	0	2.5
Lawson Incised	#	0	3	2	0	0	0	2	1	0	0	8
	%	0	13.6	15.4	0	0	0	6.1	11.1	0	0	5.1
Lawson Opposed	#	0	0	0	0	0	0	0	0	0	0	9
	%	0	0	0	0	0	0	0	0	0	0	5.7
Warminster Horizontal	#	1	1	1	0	0	0	1	0	0	3	3
	%	5.3	4.5	7.7	0	0	0	3.0	0	0	4.2	1.9
Warminster Crossed	#	0	0	0	0	0	0	1	0	0	2	2
	%	0	0	0	0	0	0	3.0	0	0	2.8	1.3
Iroquois Linear	#	0	0	0	1	1	0	0	1	0	0	2
	%	0	0	0	3.7	3.5	0	0	11.1	0	0	1.3
Ontario Horizontal	#	3	5	0	3	12	0	4	3	3	6	11
	%	15.8	22.7	0	11.1	42.9	0	12.1	33.3	13.0	8.5	7.0
Ontario Oblique	#	0	0	0	1	1	0	0	0	2	0	1
	%	0	0	0	3.7	3.5	0	0	0	8.7	0	.6
Pound Blank	#	0	0	0	0	0	0	0	0	0	0	6
	%	0	0	0	0	0	0	0	0	0	0	3.8
Niagara Collared	#	0	0	0	0	0	0	1	0	0	0	2
	%	0	0	0	0	0	0	3.0	0	0	0	1.3
Copeland Incised	#	0	0	0	2	0	0	0	0	0	0	3
	%	0	0	0	7.4	0	0	0	0	0	0	1.9
Ripley Plain	#	0	1	0	3	1	1	1	0	3	0	1
	%	0	4.5	0	11.1	3.5	10.0	3.0	0	13.0	0	.6
Goessens Punctate	#	0	0	0	0	0	0	0	0	0	0	0
	%	0	0	0	0	0	0	0	0	0	0	0
Boys Oblique Dentate	#	0	0	0	0	0	0	0	0	0	0	0
	%	0	0	0	0	0	0	0	0	0	0	0
Goessens Oblique	#	0	0	0	0	0	0	0	0	0	0	0
	%	0	0	0	0	0	0	0	0	0	0	0
Misc.	#	0	0	0	0	0	0	0	1	2	3	9
	%	0	0	0	0	0	0	0	11.1	8.7	4.2	5.7
TOTALS	#	19	22	13	27	28	10	33	9	23	71	158
	%	100.1	99.7	100	99.9	99.8	100	99.9	99.9	99.9	99.9	100.1

TABLE 2. Site Abbreviations

A.R.- Angus Rawn
BAR- Barrie
BES- Beswetherick
CO- Cowan
CRA- Cranston
CUN- Cundles
DAV- Davey
DUN- Dunsmore
DYK- Dykstra
GER- Gervais
HUB- Hubbert
HF9- Hunter Flos #9
J.T.- John Thompson
KEN- Kenny
L.P.- Laura Potter
L#1- Little #1
L#2- Little #2
LOU- Lougheed
MR- McRae
PAR- Partridge
SPA- Sparrow
WIA- Wiacek
WEB- Webb

One non-Middle Iroquoian village site, the Baumann site (BdGv-14), was included in the comparative ceramic analysis. Previous ceramic seriations (Bursey 1993; Stopp 1985) indicate that the Baumann site was occupied in the early part of the Lalonde period (c.a. A.D. 1400-1500), which immediately follows the Middle Iroquoian period in Simcoe County. The Baumann site's temporal position is also supported by a calibrated radiocarbon date of A.D.1415 ±35 (Timmins 1985:109). The rimsherd type frequencies generated by Bursey (1993:11) for Baumann were included in this analysis in order to identify sites which may post-date the Middle Iroquoian period. Potential Simcoe County Middle Iroquoian sites which correlate more closely with the Baumann site than with the other sites in the analysis probably also date to the early Lalonde period.

In the past, many researchers have compared the different rimsherd type frequencies among sites using the Robinson-Brainerd coefficient of similarity (Brainerd 1951). The Robinson-Brainerd coefficient of similarity is a measure of the degree of similarity between two rimsherd assemblages. With

this method, the number of rimsherds belonging to each rimsherd type in an assemblage are counted and then converted into percentage frequencies. Two different rimsherd assemblages are compared to one another by adding the differences between the percentages of each rimsherd type in the two collections, and subtracting this sum from 200. The resulting number represents the coefficient of similarity between the two assemblages. The major problem with this method is that it does not take into account the difference between the sizes of the two rimsherd assemblages which are being compared to one another (Lehmer 1951:151; Varley 1992:3). As Lehmer (1951:151) has pointed out, each rimsherd assemblage represents a sample from a much larger universe which is made up of all of the rimsherds from a particular site. The larger the rimsherd sample, the more likely it is that it adequately represents the true proportions of each rimsherd type within a site's entire assemblage. The smaller the sample, the more likely it is to deviate from this pattern. Large and small rimsherd assemblages cannot be considered to be equally representative of the universes from which they were drawn. This issue is particularly relevant to this study where the rimsherd samples range in size from 9 to 333 specimens.

To adjust for the sampling error created by comparing assemblages of different sizes, Lehmer (1951) has suggested that the mean standard error should be calculated for the frequency of each rimsherd type in the two assemblages which are being compared to one another. The mean standard error represents an estimation of the standard deviation of the notional distribution of sample means (Shennan 1988:302). The standard error decreases as the sample size gets larger, reflecting the increasingly representative nature of larger samples. By including the actual number of

rimsherds in the calculation of the difference between two assemblages, the probable sampling error related to small sample sizes can be compensated for. The mean standard error for each rimsherd type in two site assemblages can be calculated by the following formula (Lehmer 1951:151):

$$s.e. = (po \times qo)\frac{1}{2}\ \left(\frac{N}{n1 \times n2}\right)\frac{1}{2}$$

po= the percentage of the type in the two samples combined
qo= the percentage of all other types in the two samples combined
N= the total number of sherds in both samples
n1= the number of sherds in the first sample
n2= the number of sherds in the second sample

After the standard error is calcuated for each rimsherd type in both assemblages using this formula, the difference between the percentage of a rimsherd type in one assemblage and the percentage of that same type in another assemblage is then divided by the standard error to give the difference in terms of standard errors. The differences in standard errors for each of the rimsherd types are than added, and this sum is divided by the total number of rimsherd types within both assemblages in order to calculate the mean standard error. This final figure represents the difference between the two rimsherd assemblages. The Lehmer (1951) method for calculating the mean standard error between different rimsherd type assemblages was used in this study. Following the reduction of differences in rimsherd type frequencies between two sites to a single number representing the mean standard error, this measure of association was placed into a dissimilarity matrix in order to facilitate several forms of cluster analysis (Table 3).

TABLE 3. Mean Standard Error Dissimilarity Matrix.

	A.R.	BAR	BAU	BIS	COW	CRA	CUN	DAV	DUN	DYK	GER	HE9	HUB	J.T.	KEN	LOU	L.P.	L#1	L#2	McR	PAR	SPA	WEB	WIA
A.R.	-	3.780	1.212	2.362	1.595	0.892	1.112	1.447	1.372	1.232	0.776	1.186	1.213	1.156	1.084	1.269	1.269	1.445	1.385	0.883	1.017	1.286	1.241	1.306
BAR	-	-	4.642	4.136	1.412	3.692	2.814	3.988	4.762	2.800	4.229	4.206	4.206	4.366	3.066	3.941	3.499	3.328	2.609	3.329	2.245	3.069	3.770	4.060
BAU	-	-	-	2.678	2.052	1.299	1.089	2.123	1.482	1.982	1.518	0.988	0.941	1.127	1.294	0.862	0.901	1.892	2.027	1.496	1.269	2.030	1.319	1.572
BIS	-	-	-	-	1.124	2.255	0.453	1.810	2.870	0.950	1.450	1.141	2.462	1.117	1.423	1.090	1.640	1.111	1.004	1.889	0.870	1.176	2.077	2.186
COW	-	-	-	-	-	1.428	1.304	1.515	1.922	1.198	1.526	1.550	1.718	1.382	1.238	1.590	1.505	1.480	1.136	1.239	1.311	1.518	1.511	1.248
CRA	-	-	-	-	-	-	1.054	1.650	1.484	1.178	1.144	1.080	1.377	1.019	1.047	1.13	1.169	1.338	1.384	1.010	0.902	1.291	1.372	1.218
CUN	-	-	-	-	-	-	-	0.795	0.943	0.780	0.838	0.781	1.633	0.597	0.638	0.907	1.052	0.822	1.003	0.829	0.752	0.844	0.837	0.632
DAV	-	-	-	-	-	-	-	-	2.087	1.022	1.504	0.998	1.861	1.202	1.445	1.186	1.506	1.129	1.271	1.584	1.177	1.106	1.427	1.275
DUN	-	-	-	-	-	-	-	-	-	1.860	1.454	0.603	1.228	0.883	1.357	0.865	1.052	1.957	1.883	1.693	1.253	1.884	1.458	1.802
DYK	-	-	-	-	-	-	-	-	-	-	1.420	1.092	1.635	1.041	1.029	1.166	1.405	0.638	0.695	1.062	0.752	0.712	1.319	1.160
GER	-	-	-	-	-	-	-	-	-	-	-	0.788	1.290	0.807	1.021	1.070	1.094	1.540	1.496	0.913	0.960	1.474	1.072	1.368
HE9	-	-	-	-	-	-	-	-	-	-	-	-	0.938	0.598	0.901	0.567	0.897	1.090	1.303	1.003	0.997	1.326	0.965	0.769
HUB	-	-	-	-	-	-	-	-	-	-	-	-	-	1.099	1.305	0.876	0.827	1.713	1.997	1.270	1.097	1.676	1.282	1.391
J.T.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.674	0.816	0.996	1.083	1.197	0.997	0.909	1.018	0.849	0.846
KEN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.917	0.881	1.086	1.148	1.003	0.667	1.185	1.208	0.877
LOU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.000	1.019	1.450	1.083	1.130	1.211	1.106	0.852
L.P.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.337	1.674	1.220	1.183	1.577	1.286	0.841
L#1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.027	1.220	0.981	0.687	1.362	1.178
L#2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.215	0.727	1.028	1.336	1.338
McR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.814	1.144	1.074	1.337
PAR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.052	1.085	0.718
SPA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.347	1.232
WEB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.190
WIA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

ABBREVIATIONS

A.R. - ANGUS RAWN
BAR - BARRIE
BAU - BAUMANN
BIS - BISWETHERICK
COW - COWAN
CRA - CRANSTON
CUN - CUNDLES
DAV - DAVEY
DUN - DUNSMORE
DYK - DYKSTRA
GER - GERVAIS
HE9 - HUNTER EIOS #9
HUB - HUBBERT
J.T. - JOHN THOMPSON
KEN - KENNY
LOU - LOUGHEED
L.P. - LAURA POTTER
L#1 - LITTLE #1
L#2 - LITTLE #2
McR - McRAE
PAR - PARTRIDGE
SPA - SPARROW
WEB - WEBB
WIA - WIACEK

Cluster analysis is a general term for several different multivariate, agglomerative statistical techniques which classify and structure large groups of data in order to identify groups of similar entities (Aldenderfer and Blashfield 1984:33). Clustering techniques summarize information on the relationships between large numbers of different units (Everitt 1980:74). The objective in this study is to group together those sites which have a similar chronological position, as opposed to seriating each individual site. By grouping together chronologically similar sites, various stages of the Middle Iroquoian colonization of Simcoe County can be isolated and examined in a processual framework. Cluster analysis is ideal for establishing this type of chronological analysis and has been used for similar purposes by several other researchers (Lennox and Kenyon 1984; Engelbrecht 1974; Lennox et al. 1986).

A number of different clustering techniques exist, and different methods tend to generate different results (Aldenderfer and Blashfield 1984:59). In order to correct for this, it is prudent to apply several different clustering techniques to the same data and compare the results. The most common clustering techniques are Single Linkage, Complete Linkage, Average Linkage and Ward's method (Everitt 1980). Unfortunately, the effect of these different clustering techniques on different types of data is poorly understood (Aldenderfer and Blashfield 1984:61). What is clear is that the simplest form of cluster analysis, referred to as the Single Linkage method, displays very little group structure and tends to create interconnected chains forming one large cluster of limited utility (Aldenderfer and Blashfield 1984:38; Everitt 1980:78). It is for this reason that the Single Linkage method was excluded from this analysis. The other most common clustering techniques, such as Complete

Linkage, Ward's method and Average Linkage, produce more compact clusters. For detailed descriptions of each of these clustering techniques refer to Aldenderfer and Blashfield (1984).

The dissimilarity matrix was entered into the computer statistical program, SYSTAT 5.1, which produces a dendrogram representing the relationship between each site. Dendrograms were produced using three clustering methods: Average Linkage, Ward's method and Complete Linkage (Figures 13, 14 and 15). The dendrogram produced by SYSTAT 5.1 also represents a seriation or one dimensional ordering of the sites based on a seriation algorithm (Gruvaerus and Wainer 1972). Each branch or cluster is lined up so that the most similar objects are closest to one another. In the case of the three dendrograms created for this study, the order of presentation begins with Uren and early Middleport substage sites and ends with sites that appear to post-date the Middle Iroquoian period.

The interpretation of the cluster analysis dendrograms is based on the visual identification of significant breaks or cut-points which reflect the largest gaps between the adjacent values of clustered groups. In this analysis these cut-points occur between dissimilarity values of 1.25-1.5 for the Average and Complete Linkage methods, and 1.75-2.0 for Ward's method. The interpretation of the cluster analysis dendrograms is partially based on the assumption that the length of the Middle Iroquoian period was approximately 120 years (Dodd et al. 1990), and that village sites dating to this period were occupied for approximately 20-30 years (Finlayson et. al. 1987; Warrick 1988b). If sites from this period were placed arbitrarily into successive chronological units, an ideal clustering would produce 4 to 5 groups of roughly

contemporaneous sites (length of Middle Iroquoian period divided by length of village duration).

The dendrograms produced by the three different clustering techniques are quite similar in that they all identified four or five distinct chronological groups (Figure 13, 14 and 15). Although there are some differences, certain trends emerge from a comparison of the results of the three different methods. The first cluster in two of the three dendrograms consists only of the Barrie site, suggesting that it is chronologically distinct from the other sites. The rimsherd type frequencies for the Barrie site clearly place it within the Uren substage (c.a. A.D. 1280-1330). This site appears to represent one of the earliest known Iroquoian village sites in the region and is the only site included in the comparative ceramic analysis which clearly dates to the Uren substage of the Middle Iroquoian period. The Hubbert and Laura Potter sites cluster with the Baumann site at the end of all three dendrograms, suggesting that they may post-date the Middle Iroquoian period and were occupied in the early fifteenth century. The remaining sites cluster into three groups, which have been labeled Middleport I, Middleport II and Middleport III, and appear to represent sequential components of the Middleport substage (c.a. A.D 1330-1400). There were some slight differences in the clustering of these sites in the three different dendrograms. They were placed within a specific group in Table 4 and in Figure 16 on the basis of their similar cluster association in at least two of the three dendrograms. What is clear in all three dendrograms is that there is a significant increase in the number of sites occupied between the Uren and Middleport I components. The significance of this observation will be discussed in the paleodemographic section of Chapter 8.

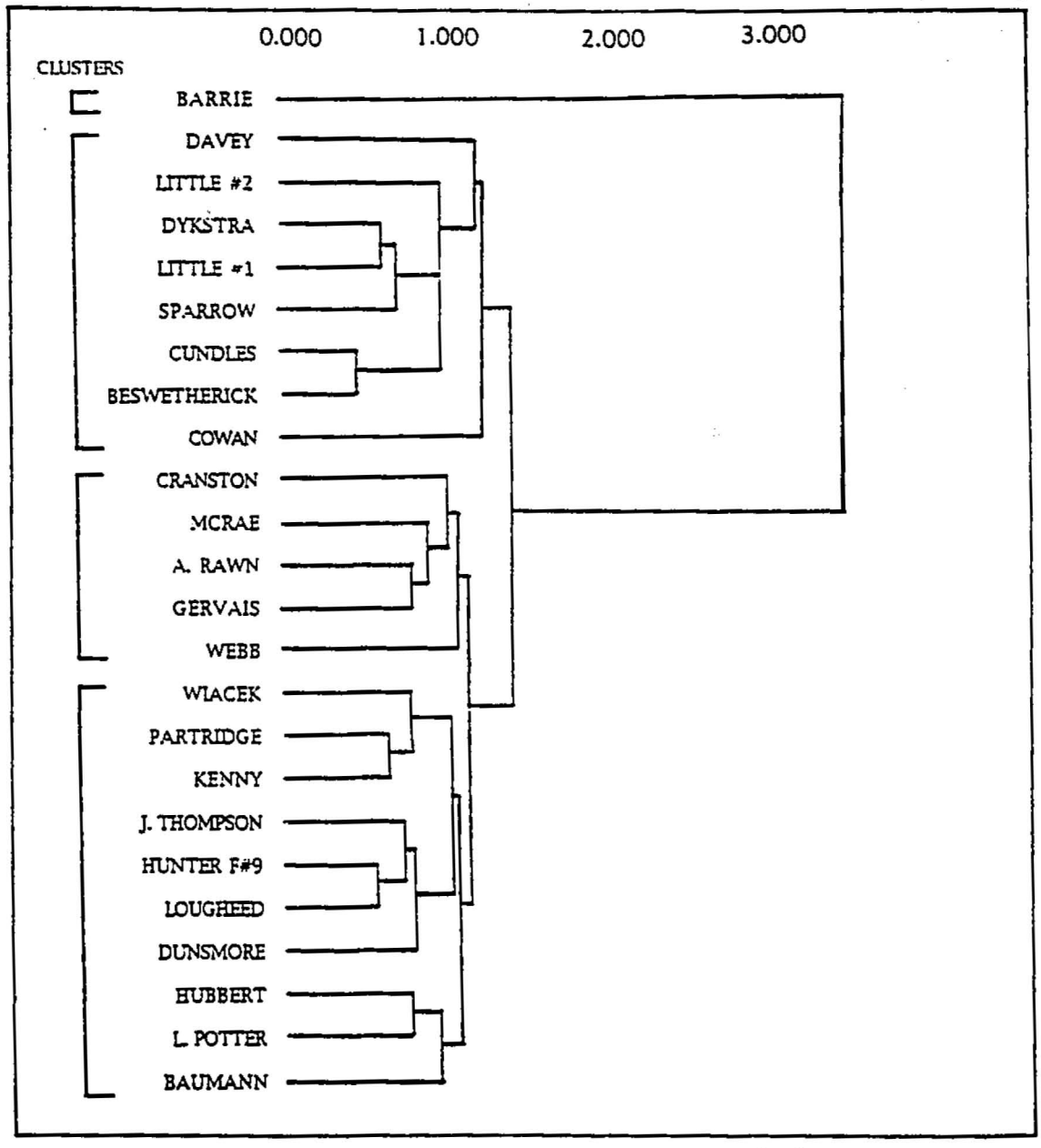


Figure 13. Dendrogram of Average Linkage Cluster Analysis.

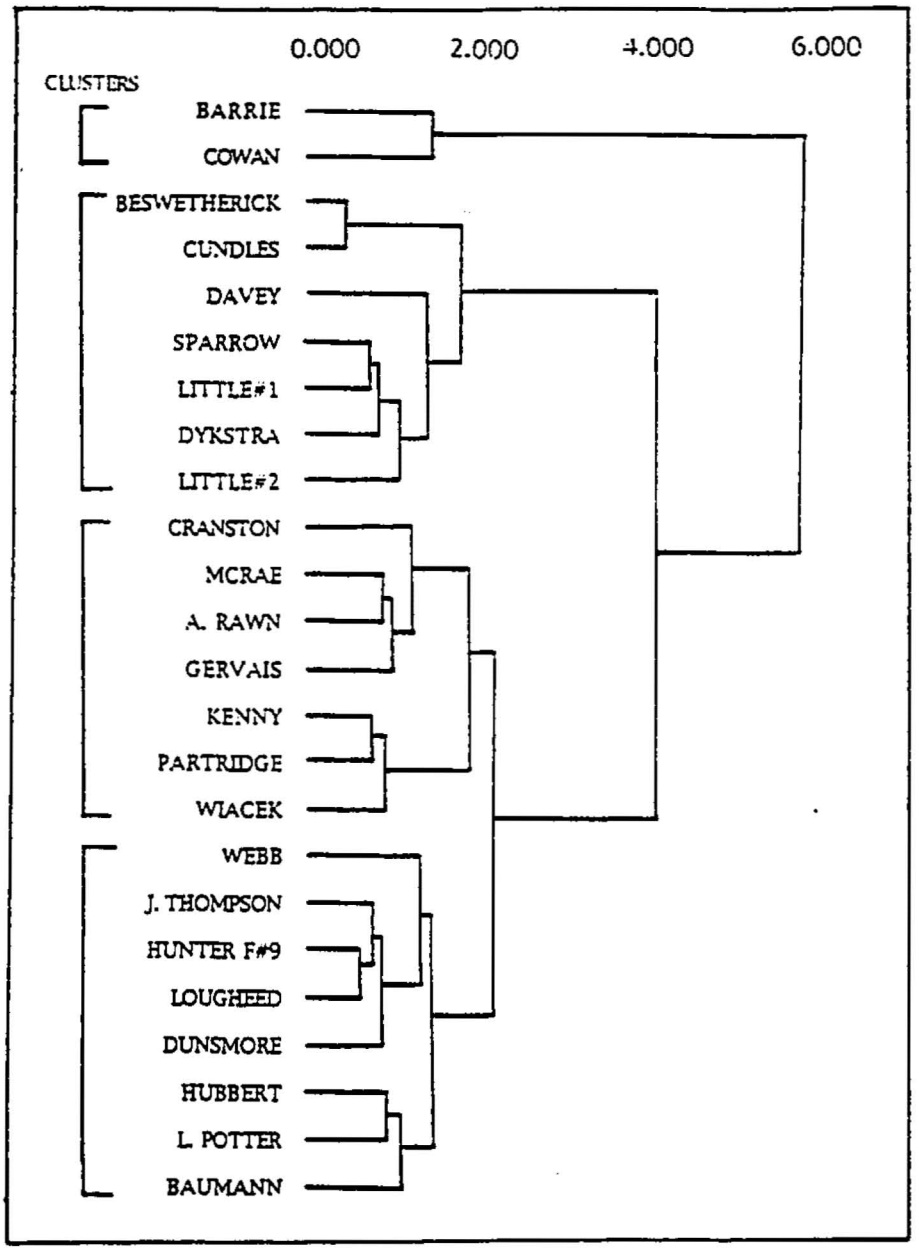


Figure 14. Dendrogram of Ward's Method Cluster Analysis.

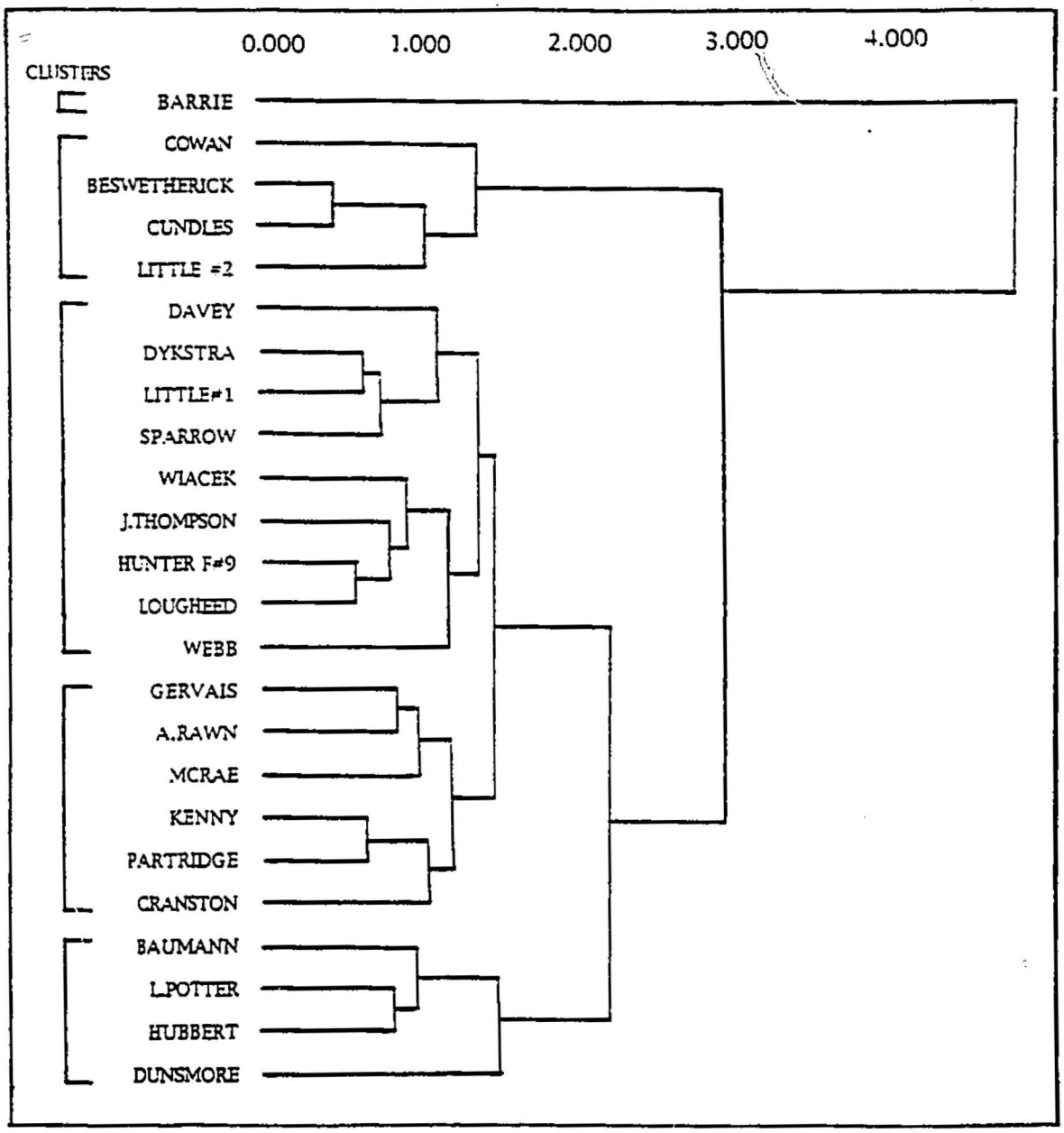


Figure 15. Dendrogram of Complete Linkage Cluster Analysis.

In Table 4 and Figure 16 the Gratrix site is tentatively identified as a Middleport III site on the basis of the rimsherd profiles and motif illustrations provided in Ridley (1971:114-115). The Holly site is tentatively identified as a Uren substage site (DRP 1995) and the Wellington site as a Middleport 1 site (ASI 1992; MPA 1991) following the preliminary interpretations offered by the original investigators of these two sites.

TABLE 4. Site Chronological Groupings Based on the Combined Results of Three Different Clustering Techniques. Also see Figure 16.

No.	Site	Relative Chronological Position
1	Barrie (BcGw-18)	Uren
2	Holly (BcGw-58)	Uren?
3	Beswetherick (BcGw-1)	Middleport I
4	Cowan (BcGw-13)	Middleport I
5	Cundles (BcGw-11)	Middleport I
6	Davey (BeHa-11)	Middleport I
7	Dykstra (BbGw-5)	Middleport I
8	Little I (BcGw-15)	Middleport I
9	Little II (BcGw-28)	Middleport I
10	Sparrow (BcGw-8)	Middleport I
11	Wellington (BcGw-55)	Middleport I?
12	Angus Rawn (BdGw-6)	Middleport II
13	Cranston (BdGw-9)	Middleport II
14	Gervais (BcGw-5)	Middleport II
15	McRae (BdGx-12)	Middleport II
16	Webb (BdGx-13)	Middleport II
17	Wiacek (BcGw-26)	Middleport II
18	Dunsmore (BcGw-10)	Middleport III
19	Gratrix (BeGw-6)	Middleport III?
20	Hunter's Flos #9 (BdGx-7)	Middleport III
21	J. Thompson (BdGw-11)	Middleport III
22	Kenny (BcGx-15)	Middleport III
23	Lougheed (BbGw-13)	Middleport III
24	Partridge (BcGw-12)	Middleport III
-	Baumann (BdGv-14)	Early Lalonde
-	Hubbert (BbGw-9)	Early Lalonde
-	Laura Potter (BeGw-8)	Early Lalonde

*sites within each group are listed in alphabetical order

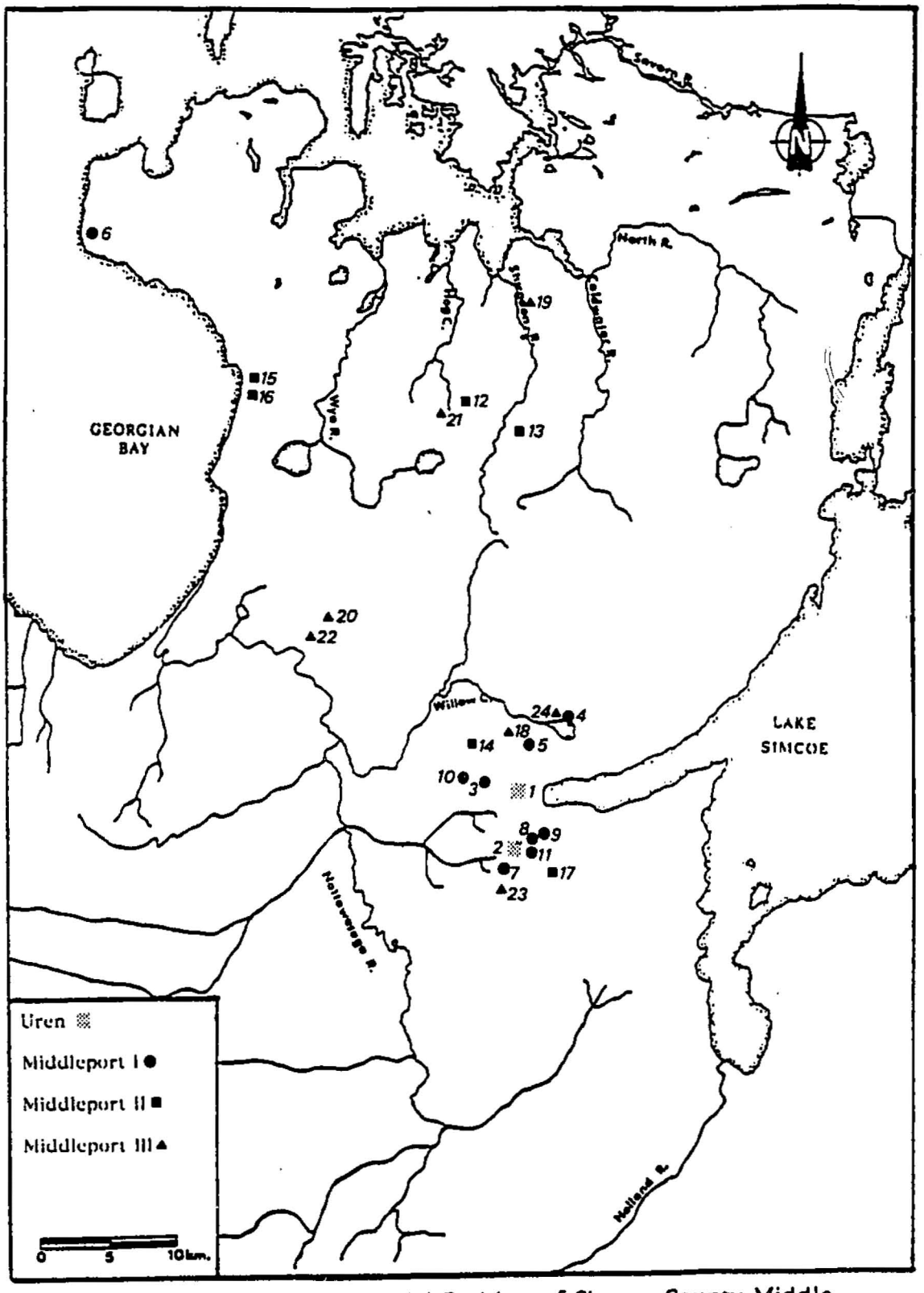


Figure 16. Chronological and Spatial Position of Simcoe County Middle Iroquoian Village Sites.

In summary, the results of the cluster analysis of the mean standard errors for the rimsherd types from 26 potential Simcoe County Middle Iroquoian village sites indicate that 21 of the sites are actually associated with the Middle Iroquoian period. The Gratrix, Holly and Wellington sites can be tentatively be added to this list, resulting in a total of 24 known Middle Iroquoian village sites in Simcoe County. The information concerning the spatial and temporal distribution of Middle Iroquoian village sites in Simcoe County reconstructed in this chapter is crucial to the examination of the migration process in the following two chapters.

CHAPTER 7

THE IDENTIFICATION OF STRUCTURAL CONDITIONS WHICH FAVOURED THE COLONIZATION OF SIMCOE COUNTY

In order to identify the possible causes of the Middle Iroquoian colonization of Simcoe County, a push-pull model will be utilized (Lee 1966). Potential negative push factors in the migrants' place of origin and positive pull factors in the destination area will be identified and evaluated in order to reconstruct the various interrelated factors which may have caused the migration. Due to the difficulty in identifying the proximate causes of archaeological migrations (Anthony 1990), the examination of causality in this case will be limited to reconstructing the general structural conditions which favoured the migration. Several other issues must also be taken into consideration. Potential intervening obstacles between the source and destination areas, as well as the distance involved, must be factored into the decision making process (Anthony 1990:900). Also, pull factors only apply to those destination areas of which the potential migrants are aware. The mobility of the migrants is restricted to potential destination areas which are within their information sphere (Greenwood 1970).

IDENTIFYING THE SOURCE AREA FOR THE MIGRANTS

The identification of the possible structural conditions which favour a migration involves an examination of both the source and destination areas of the migrants. In order to accomplish this, the source area for the Middle Iroquoian groups which colonized Simcoe County must be identified. The

initial colonization of Simcoe County took place in the Uren substage (ca. A.D. 1280-1330) of the Middle Iroquoian period. The potential source areas for the migrants are limited to those geographical areas where similar contemporaneous sites have been located. Iroquoian village sites dating to the late thirteenth and early fourteenth century are generally restricted to the southern portions of south-central and southwestern Ontario (Figure 17). The location of these sites in relatively close proximity to the north shores of Lake Ontario and Lake Erie suggests that they developed in situ from antecedent Early Iroquoian populations (Dodd et al. 1990:322). The one obvious exception to this pattern is the presence of Uren village sites in Simcoe County.

In order to identify the potential source areas for the migrants within this relatively large area, it is necessary to compare the artifact assemblages from the initial migrants to those from contemporaneous sites located elsewhere. Recent research has shown that it cannot be assumed that similarities in material culture between different sites directly reflect interaction intensity (Hodder 1982; Plog 1983). However, it is reasonable to assume that the artifact assemblages from the initial pioneering communities in a new region will be very similar to those from their parent communities in the source region.

In Simcoe County, the earliest known Iroquoian village site is the Barrie site, which dates to the Uren substage (Sutton 1996). This pioneering community recently has been the subject of extensive excavation and analysis by the author. Unfortunately, although over 20 Uren substage village sites have been identified elsewhere in southern Ontario (Dodd et al. Table 10.1; Warrick 1990: Figure 49), very few of them have been excavated extensively and/or analyzed in any detail. In fact, only three village sites and one cabin

site which date to the late thirteenth and early fourteenth century have been subjected to extensive excavation and analysis: the Bennett (Wright 1966; Wright and Anderson 1969) and Gunby (Rozel 1979) sites located at the extreme western end of Lake Ontario, and the Uren (Wintemberg 1928; Wright 1966; Wright 1986) and Willcock (Poulton 1985a) sites located in southwestern Ontario. Although there is some debate as to the placement of the Bennett site in the Uren substage (Bursey 1994; Dodd et al. 1990; Rozel 1979; Wright 1966, 1992), there is a general consensus that it dates to the end of the thirteenth century. Smaller scale excavations have also produced fairly substantial artifact assemblages from the Uren substage Elliot (Donaldson 1965; Kapches 1981; Wright 1966) and Thomson (Emerson 1956; Kapches 1981; Poulton 1987) village sites, located just east of the City of Toronto. Although limited in number, the broad distribution of these Uren substage sites across both south-central and southwestern Ontario does allow for a comparative analysis on a regional level (Figure 17).

Out of necessity, the comparative analysis of artifact assemblages from sites dating to the Uren substage will be limited to the examination of certain components of their ceramic assemblages. While the quantity and quality of data available for the artifact assemblages from the Uren substage varies greatly, the one common denominator among them is the amount of detail provided concerning their ceramic samples. The comparative analysis of rimsherd assemblages from Iroquoian sites is often hindered by the variety of different methodologies employed by different researchers. However, the analysis of rimsherd assemblages from sites dating to the late thirteenth and early fourteenth century is a notable exception to this rule. The results of the analysis of rimsherd assemblages from these sites have been consistently

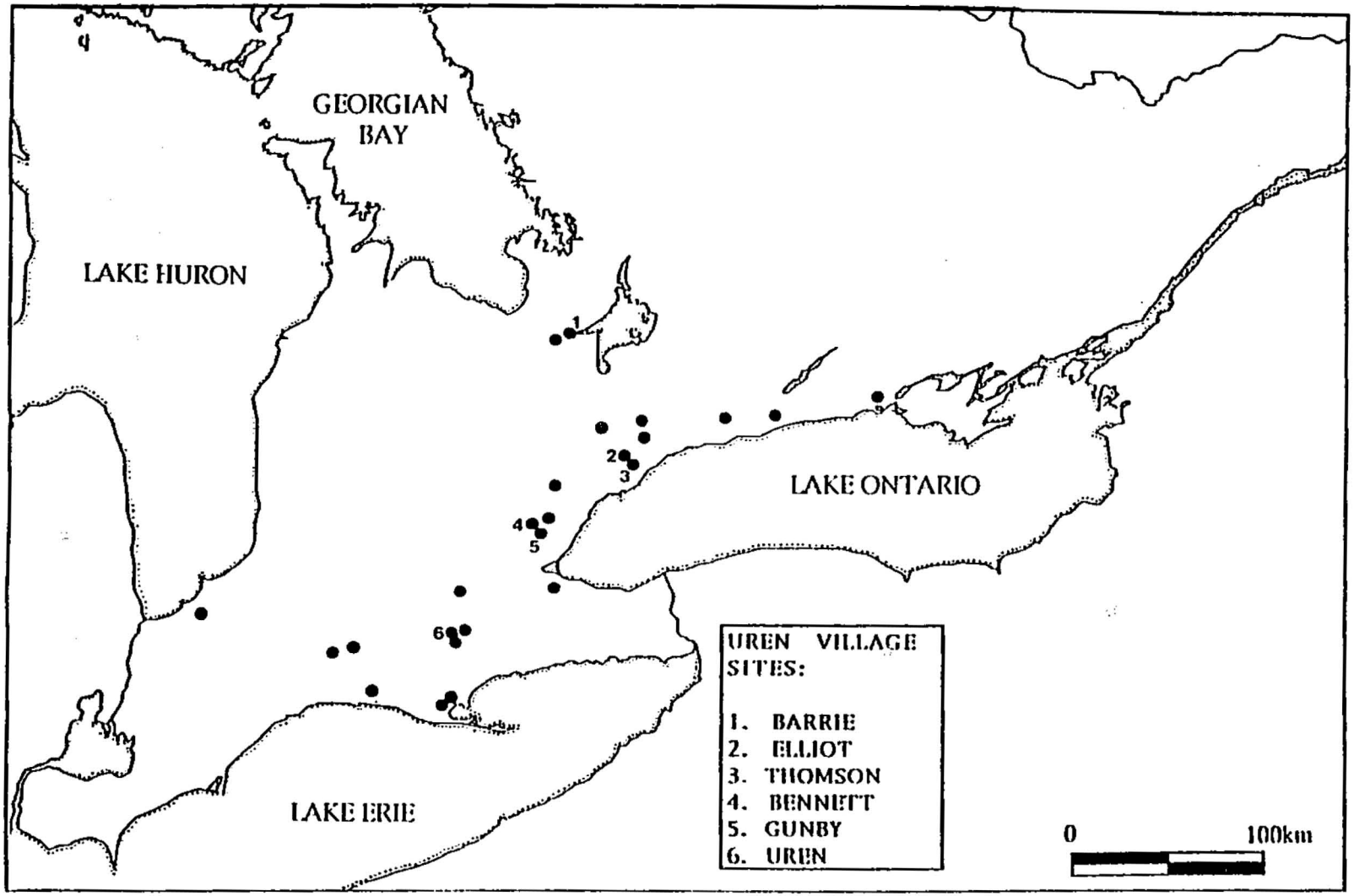


Figure 17. Uren Village Site Locations in Southern Ontario.

presented in an attribute format (Rozel 1979; Sutton 1996; Wright and Anderson 1969; Wright 1986). Furthermore, a similar emphasis has been placed in these analyses on the relative frequencies of a limited number of individual attributes. This is also true for several other ceramic categories, including neck sherds and body sherds. This common approach to the analysis of ceramic assemblages from sites dating to this period allows for a valid comparison.

The relative frequencies of a total of 46 individual attributes were utilized in this analysis. This number represents those individual ceramic attributes which have consistently been reported by other researchers (Rozel 1979; Wright 1966; Wright and Anderson 1969; Wright 1986). This total includes 33 rimsherd attributes, 7 neck sherd attributes and 6 body sherd attributes. The attribute frequencies for the sites included in this comparative analysis are presented in Tables 5 to 11. The ceramic attribute frequencies for the Barrie site represent the combined results of Ridley's (1958a) and Sutton's (1996) work at the site. The ceramic attribute frequencies for the Uren site represent the combined results of Wintemberg's (1928) and Wright's (1986) excavations at the Uren site. The ceramic attribute frequencies for the Bennett site were extracted from Wright and Anderson (1969), while those for the Gunby site were extracted from Rozel (1979). The ceramic attributes listed for the Elliot and Thomson sites represent the results of a re-examination of the rimsherd assemblages from both sites undertaken by the author, as well as neck sherd and body sherd data extracted from Kapches (1981).

TABLE 5. Rimsherd Decorative Techniques on Uren Sites.

	Barrie		Thomson		Elliot		Gunby		Uren		Bennett	
Decorative Technique	#	%	#	%	#	%	#	%	#	%	#	%
Push-Pull	86	31.3	10	9.3	8	16.0	4	1.4	247	33.3	205	55.1
Linear Stamp	34	12.4	43	40.2	14	28.0	46	16.4	270	36.4	66	17.7
Incised	69	25.1	16	15.0	12	24.0	78	27.9	102	13.8	35	9.4
Plain	14	5.1	4	3.7	1	2.0	31	11.1	32	4.3	3	0.8
Punctated	10	3.6	7	6.5	-	-	6	2.1	20	2.7	19	5.1
Dentate Stamp	4	1.5	1	0.9	2	4.0	6	2.1	9	1.2	11	3.0
Corded	3	1.1	2	1.9	1	2.0	85	30.1	24	3.2	1	0.3
Other	113	33.9	24	22.4	12	24.0	24	8.6	37	5.0	32	8.6
Total	333		107		50		280		741		372	

TABLE 6. Rimsherd Exterior Motifs on Uren Sites.

	Barrie		Thomson		Elliot		Gunby		Uren		Bennett	
Motif	#	%	#	%	#	%	#	%	#	%	#	%
Horizontals	175	52.6	30	28.0	18	36.0	96	34.3	226	30.5	167	44.9
Simple	41	12.3	39	36.4	13	26.0	40	14.3	246	33.2	13	3.5
Simple over Horizontal	29	8.7	13	12.1	8	16.0	9	3.2	137	18.5	79	21.2
Horizontal over Simple	28	8.4	3	2.8	2	4.0	9	3.2	-	-	-	-
Plain	16	4.8	4	3.7	1	2.0	31	11.1	32	4.3	4	1.1
Criss-Cross	2	0.6	3	2.8	-	-	3	1.1	16	2.2	-	-
Opposed	6	1.8	2	1.9	-	-	53	18.9	-	-	-	-
Other	36	10.8	13	12.1	8	16.0	39	14.0	84	11.3	109	29.3
Total	333		107		50		280		741		372	

TABLE 7. Rimsherd Bosses and Punctates on Uren Sites.

	Barrie		Thomson		Elliot		Gunby		Uren		Bennett	
Bosses and Punctates	#	%	#	%	#	%	#	%	#	%	#	%
Exterior Boss	18	5.4	7	6.5	-	-	127	45.4	96	12.8	92	24.7
Punctate Segregated Boss	25	7.5	10	9.3	-	-	10	3.6	7	0.9	38	10.2
Exterior Punctate/ no boss	1	0.3	-	-	-	-	-	-	-	-	-	-
Interior Punctate/ no boss	10	3.0	4	3.7	1	2.0	16	5.7	57	7.6	69	18.6
Interior Boss	-	-	-	-	-	-	-	-	-	-	-	-
Total	333		107		50		280		749		372	

TABLE 8. Rimsherd Lip Decoration on Uren Sites.

	Barrie		Thomson		Elliot		Gunby		Uren		Bennett	
Decoration	#	%	#	%	#	%	#	%	#	%	#	%
Plain	128	38.4	25	23.4	12	24.0	134	47.9	341	46.0	129	34.7
Incised	25	7.5	5	4.7	3	6.0	31	11.1	48	6.5	10	2.7
Corded	6	1.8	3	2.8	-	-	27	9.6	13	1.8	2	0.5
Linear Stamp	73	22.0	54	50.1	23	46.0	11	3.9	119	16.1	87	23.4
Dentate Stamp	16	4.8	4	3.7	2	4.0	2	1.1	2	0.3	11	3.0
Push-Pull	53	16.0	4	3.7	8	16.0	7	2.5	102	13.4	55	14.8
Punctated	14	4.2	7	6.5	2	4.0	48	17.1	22	3.0	21	5.6
Other	18	5.4	5	4.7	-	-	20	7.1	94	12.7	55	14.8
Total	**333**		**107**		**50**		**280**		**741**		**372**	

TABLE 9. Rimsherd Interior Decoration on Uren Sites.

	Barrie		Thomson		Elliot		Gunby		Uren		Bennett	
Decoration	#	%	#	%	#	%	#	%	#	%	#	%
Plain	247	74.2	48	44.9	34	68.0	233	83.2	348	47.0	247	66.4
Incised	1	0.3	-	-	-	-	16	5.7	9	1.2	1	0.3
Corded	1	0.3	2	1.9	2	4.0	11	3.9	19	2.6	-	-
Linear Stamp	56	16.8	45	42.1	12	24.0	13	4.6	304	41.0	102	27.4
Dentate Stamp	10	3.0	2	1.9	-	-	1	0.4	2	0.3	6	1.6
Push-Pull	1	0.3	1	0.9	-	-	-	-	15	2.0	2	0.5
Punctated	11	3.3	4	3.7	2	4.0	-	-	10	1.3	-	-
Other	6	1.8	5	4.7	-	-	6	2.1	34	4.6	14	3.8
Total	**333**		**107**		**50**		**280**		**741**		**372**	

TABLE 10. Neck Sherd Surface Treatment on Uren Sites.

	Barrie		Thomson		Elliot		Gunby		Uren		Bennett	
Surface Treatment	#	%	#	%	#	%	#	%	#	%	#	%
Plain	101	28.6	37	40.7	7	14.9	868	78.1	853	60.6	1251	86.9
Ribbed Paddle	2	0.6	-	-	-	-	169	15.2	396	28.1	97	6.7
Corded	1	0.3	-	-	-	-	-	-	49	3.5	38	2.6
Decorated	229	64.9	54	59.3	40	85.1	58	5.2	76	5.4	33	2.3
Scarified	-	-	-	-	-	-	-	-	14	1.0	13	0.9
Check Stamp	-	-	-	-	-	-	10	0.9	16	1.1	5	0.4
Dentate Stamp	20	5.7	-	-	-	-	6	0.5	-	-	-	-
Other	-	-	-	-	-	-	-	-	3	0.2	3	0.2
Total	**353**		**91**		**47**		**1111**		**1407**		**1440**	

TABLE 11. Body Sherd Surface Treatment on Uren Sites.

	Barrie		Thomson		Elliot		Gunby		Uren		Bennett	
Surface Treatment	#	%	#	%	#	%	#	%	#	%	#	%
Plain	534	28.2	29	6.3	563	39.2	1828	49.0	1337	28.1	2547	51.9
Ribbed Paddle	960	50.7	387	85.3	817	56.9	1491	40.0	2488	52.4	1842	37.6
Check Stamp	178	9.4	30	6.6	34	2.4	208	5.6	404	8.5	221	4.5
Corded	71	3.8	-	-	11	0.8	203	5.4	421	8.9	237	4.8
Fabric Impressed	14	0.7	-	-	11	0.8	-	-	10	0.2	6	0.1
Scarified	45	2.4	8	1.8	-	-	-	-	47	1.0	52	1.1
Other	78	4.1	-	-	-	-	-	-	45	0.9	-	-
Total	1892		454		1436		3730		4752		4905	

The method employed in the comparative analysis of the attribute frequencies from the six sites is the same one used in comparing rimsherd type frequencies in Chapter 6. To adjust for the sampling error created by comparing assemblages of different sizes, the mean standard error (Lehmer 1951) was calculated for the frequency of each attribute in the two assemblages which are being compared to one another. Following the reduction of differences in individual attribute frequencies between two sites to a single number representing the mean standard error, this measure of association was placed into a dissimilarity matrix (Table 12).

TABLE 12. Dissimilarity Matrix For Uren Substage Sites.

	BARRIE	BENNETT	ELLIOT	GUNBY	THOMSON	UREN
BARRIE	-	5.271	1.827	5.448	2.349	4.709
BENNETT	-	-	3.196	4.910	4.267	5.014
ELLIOT	-	-	-	3.341	1.785	2.643
GUNBY	-	-	-	-	4.550	5.317
THOMSON	-	-	-	-	-	3.032
UREN	-	-	-	-	-	-

The dissimilarity matrix was then used to formulate the cluster analysis of the mean standard errors. Three different forms of cluster analysis were used: Complete linkage, Average linkage and Ward's method (Everitt 1980). As Figure 18 illustrates, the results of the three different clustering methods were essentially the same. The Barrie site consistently clustered with the Elliot and Thomson sites. This suggests that the Barrie site is more closely related to contemporaneous sites located on the Highland Creek drainage system just east of the City of Toronto, than it is to sites located at the extreme western end of Lake Ontario or in southwestern Ontario. This result is not surprising, given the closer geographical location of the Elliot and Thomson sites to the Barrie site (75 kilometres), in comparison with the other sites used in the comparative analysis.

However, the cluster analysis results do not necessarily indicate that the occupants of the Barrie site originated from the vicinity of the Highland Creek. The known distribution of Uren sites in this region of south-central Ontario is severely biased as a result of urban expansion (Poulton 1987), and in some areas, inadequate archaeological survey coverage (Austin 1994:82). The recent discovery of the Uren substage Wilcox Lake village site on the Oak Ridges Moraine (Austin 1994), indicates that Middle Iroquoian groups did take advantage of the small kettle lakes which are thinly scattered across the moraine. Unfortunately, the small size and multi-component nature of the Wilcox Lake artifact assemblage prevented its inclusion in the comparative analysis of Uren ceramic assemblages.

Due to urban expansion, we know very little about the distribution of Early and Middle Iroquoian sites along the north shore of Lake Ontario in the area located between the Credit River and the Highland Creek drainage

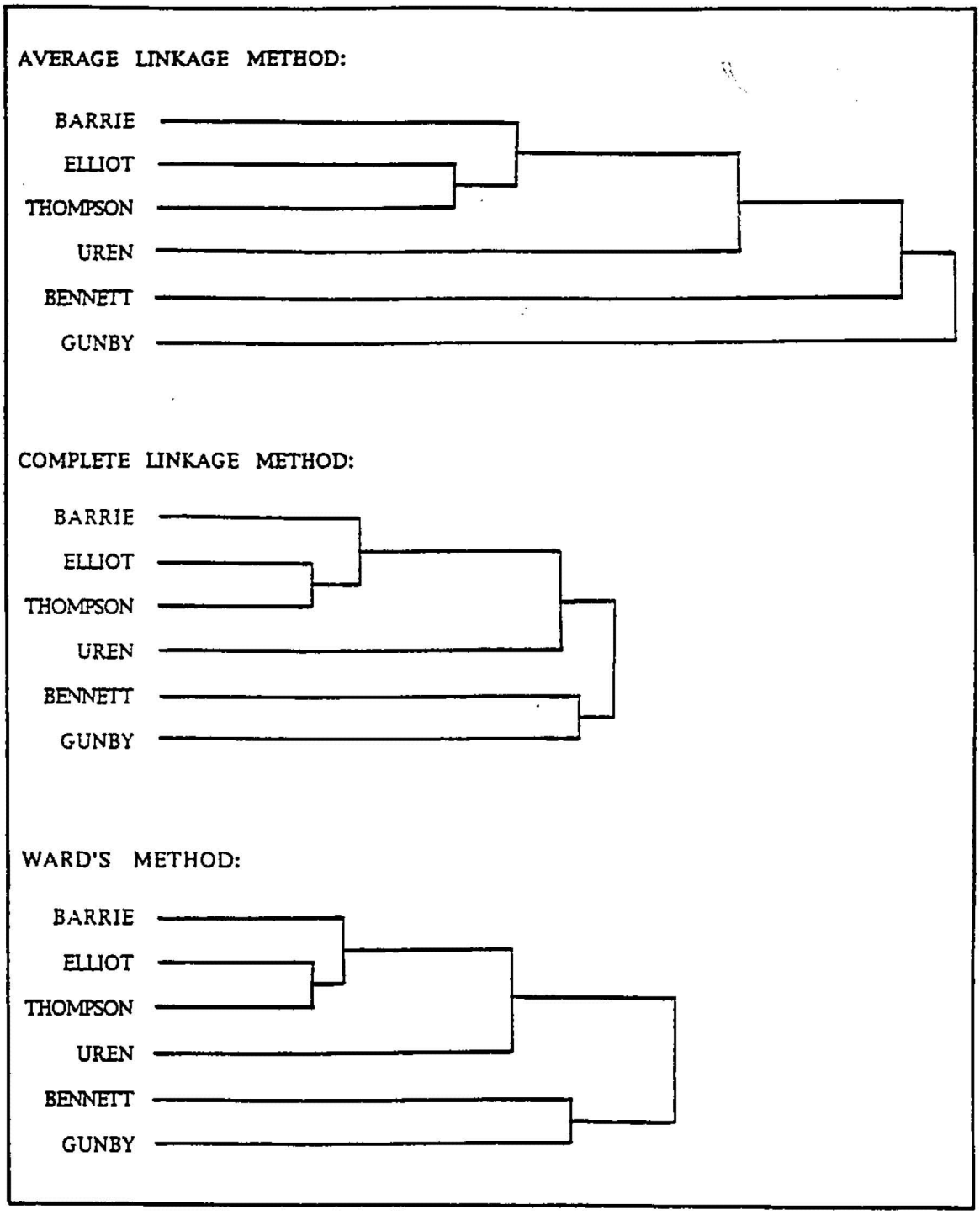


Figure 18. Cluster Analysis Dendrograms for Uren Village Sites.

systems. Archival material suggests that there were a series of Early and Middle Iroquoian sites located along the Credit River, the Humber River and Black Creek drainage systems (Poulton 1987). Unfortunately, most of these sites were destroyed before they could be subjected to an archaeological assessment. It is therefore quite possible that we may never know the precise source area for the Middle Iroquoian groups who colonized Simcoe County. Nevertheless, the comparative analysis of late thirteenth and early fourteenth century sites undertaken in this study suggests that the source area for the Simcoe County colonists was in the general region now occupied by the Greater Metropolitan Toronto Area.

THE CAUSES OF MIGRATION

A review of the archaeological literature concerning migration reveals that the most frequently cited cause of prehistoric migrations is economic stress caused by population pressure (DeAtley 1984; Milisuauskas and Kruk 1989; Rouse 1986; Schwartz 1970; Wood and McAllister 1980). A less frequently cited cause is climatic change (Dean et al. 1985; Rouse 1986), which may result in increased economic stress in the home region, or may open up new habitats for exploitation. Non-economic causes of migration are also rarely considered. However, ideological motives related to prestige and wealth or religious persecution, are also suspected to have resulted in long distance migration (Orme 1981; Anthony and Wailes 1988; Anthony 1990, 1993).

Suggested causes of Iroquoian migrations which have been documented archaeologically or in the ethnohistorical literature include population pressure resulting in economic stress (Gramly 1977, 1979; Warrick 1990), trade (Hayden 1978; Jamieson 1991; Ramsden 1977; Trigger 1985; Wright

1974), intertribal warfare (Heidenreich 1971; Lennox and Fitzgerald 1990; Wright 1966, 1992), climate change (Warrick 1984) and technological change (Snow 1991). Each of these factors must be evaluated in order to determine whether they played a role in the Middle Iroquoian colonization of Simcoe County. Most of these issues represent potential push-pull factors which may have operated in the migrant's source or destination areas.

POTENTIAL PUSH FACTORS

POPULATION PRESSURE

The significant increase observed in the size and number of Iroquoian villages which were occupied following the adoption of horticulture, has long been interpreted as evidence of population growth among Early and Middle Iroquoian groups (Gramly 1977; Latta 1976; Noble 1968; Sykes 1981). Warrick (1990) has recently utilized a demographic approach in order to estimate absolute population numbers in south-central Ontario during this period. The results of Warrick's (1990:353) research indicate that there was a Iroquoian "population explosion" in the fourteenth century. Beginning in the Early Iroquoian period, Warrick (1990:343-362) estimated that the annual population growth rate increased rapidly from a rate of 0.35% in the Early Iroquoian period to an extremely high average annual growth rate of 1.1% during the fourteenth century (Figure 19). Warrick's explanation for this rapid population growth rate is the beneficial effects of an increasing reliance on corn horticulture. The increase of corn in the diet appears to have resulted in a decrease in infant and juvenile mortality and an increase in fertility (Warrick 1990:343-346).

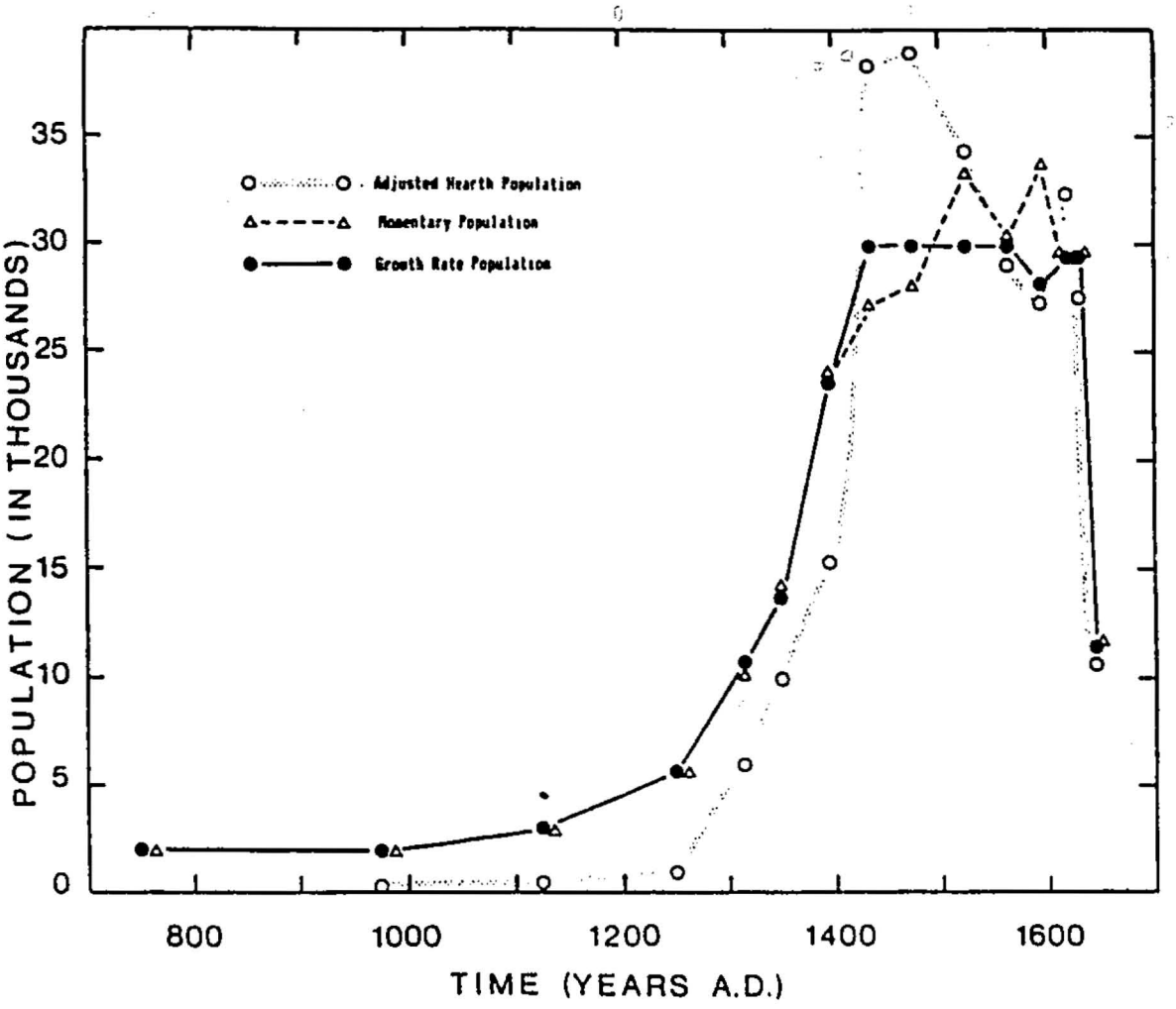


Figure 19. Iroquoian Population Growth Curve (after Warrick 1990: Figure 43).

The rapid increase in population during the fourteenth century in south-central Ontario may have had several serious consequences for the Middle Iroquoian groups inhabiting this region. The increase in population may have resulted in a real or perceived strain on local resource availability in the geographically and sociopolitically restricted source area for the Simcoe County migrants (Figure 20). Expansion within the area between Lake Simcoe and Lake Ontario was restricted by the poor agricultural soils of the Oak

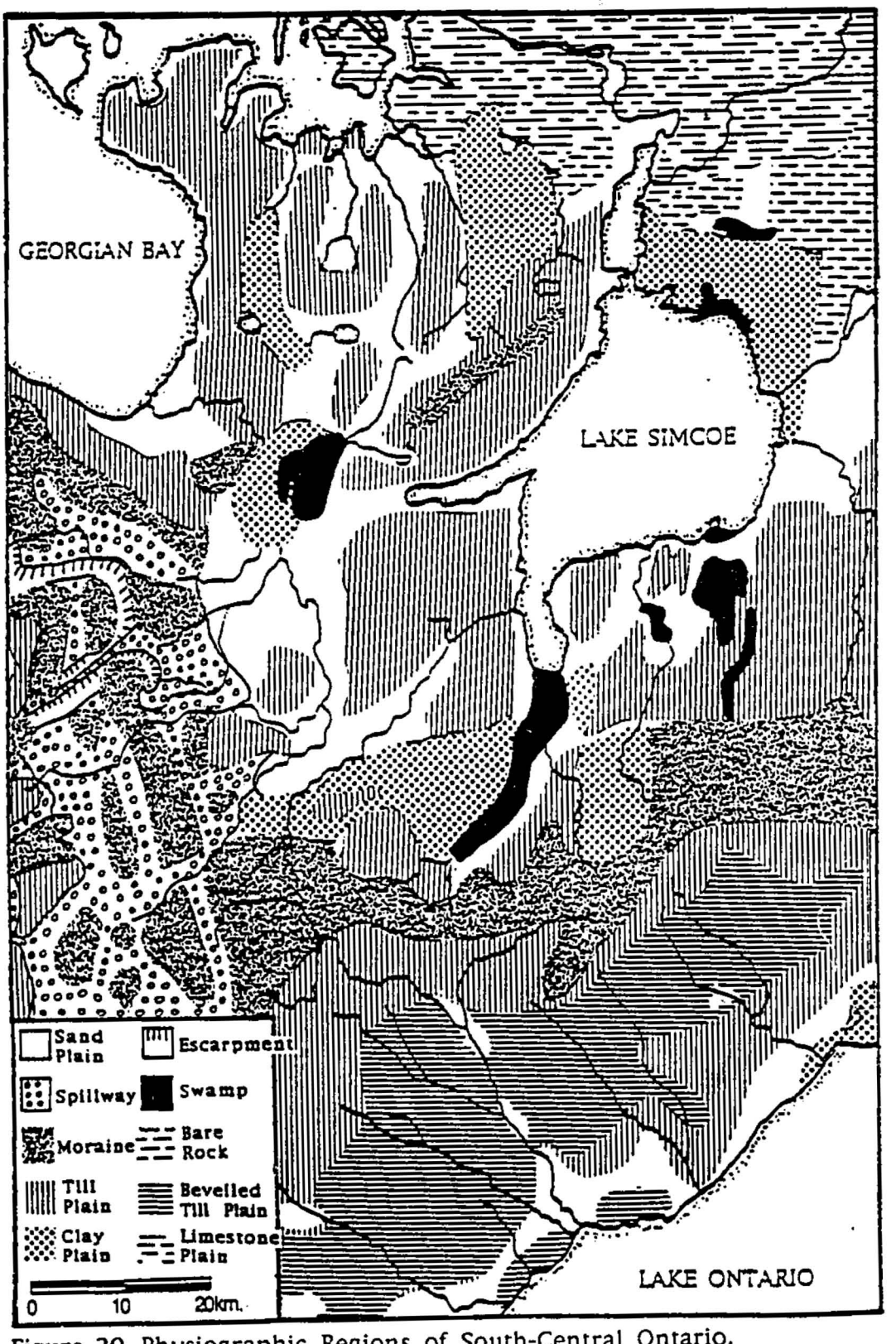


Figure 20. Physiographic Regions of South-Central Ontario.

Ridges Moraine, the presence of the Holland Marsh, and the poorly drained sand and clay plains situated along the south side of Lake Simcoe. Expansion to the east and west along the north shore of Lake Ontario was restricted by the presence of neighboring Middle Iroquoian groups in both those areas.

Warrick (1990:349-350) has argued that the critical resource in this region at this time was the availability of white-tailed deer hides for clothing. Based on several assumptions concerning white-tailed deer densities and Iroquoian requirements for hides developed by Gramly (1977), Warrick suggests that the scarcity of deer in the region may have been the critical resource which forced Middle Iroquoian groups to colonize Simcoe County. Gramly (1979) has used a similar argument to explain the migration of Late Iroquoian groups into Huronia in the late fifteenth century. However, there are several problems with this argument. Several researchers have criticized the statistics which Gramly (1977) used to support his theory (Starna and Relethford 1985; Turner and Santley 1977; Webster 1979). Gramly (1977) used modern estimates of white-tailed deer population densities to support his theory, and he also assumed that only deer hides were used for clothing by Iroquoian groups. Modern white-tailed deer population estimates cannot be projected back into the prehistoric period (Starna and Relethford 1985; Turner and Santley 1977; Webster 1979). We simply have no way of accurately estimating what white-tailed deer population densities would have been in the Middle Iroquoian period. Also, it is quite possible that the hides of other mammals such as bear, beaver and rabbit were also used for clothing (Webster 1979:817).

Faunal evidence provided by the recent salvage excavation of several Middle Iroquoian sites in Simcoe County strongly suggests that the scarcity of

deer was not a major cause of the migration. The analysis of the faunal assemblages from the Barrie, Dunsmore (Needs-Howarth 1994) and Wiacek sites (Lennox et al. 1986), shows that white-tailed deer represent only 1-4% of the NISP (number of individual specimens) totals identified to the species level at each of these sites. White-tailed deer were clearly not an important component of the faunal assemblages from these sites. It would appear that the population densities of white-tailed deer in Simcoe County in the fourteenth century were very low. If there were increased competition for white-tailed deer, the colonization of Simcoe County would not have solved the problem for the migrants.

Instead of focusing on any specific resources, it appears to be more reasonable to argue that the rapid increase in population levels within a restricted area of south-central Ontario in the fourteenth century may have placed stress on the local resource base. Several studies have shown that population pressure caused by a very successful subsistence adaptation often leads to a real or perceived stress on the local resource base (Milisauskas and Kruk 1989:406; Wood and McAllister 1980:182). Group fission is viewed as the least costly adaptation to ecological constraints (Hammel and Howell 1987:142). In the face of economic stress, human populations have several basic options including geographical expansion, the placement of limitations on fertility and population growth, or the intensification of food production (Hammel and Howell 1987). When unoccupied land is available and the relative costs of settlement movement are low, group fission and migration are considered to be a least effort strategy (Green 1980). Migration acts as a "safety valve" whereby daughter communities bud-off from the parent communities and colonize a new area which has not yet been intensively exploited (Hammel and Howell

1987:142; Hess 1979:128; Milisauskas 1977:297). The increase in Iroquoian village population size in the early fourteenth century may have begun to place a strain on the clan and lineage based sociopolitical organization of Middle Iroquoian communities (Snow 1991:16; Timmins 1992:487; Warrick 1990:348). As Middle Iroquoian village sizes expanded beyond the critical threshold of 300-400 persons for egalitarian communities (Chagnon 1983:72; Forge 1972:367), the villages would have fissioned and daughter communities would have moved to new locations. This pattern is prevalent among expanding egalitarian communities (Chagnon 1983; Forge 1972; Hamond 1981; Milisauskas 1977).

WARFARE

Prior to the Iroquois wars of the mid-seventeenth century, traditional Iroquoian warfare consisted of brief small scale raiding of territories occupied by traditional enemies (Trigger 1976:68). The main motives behind Iroquoian warfare were to gain individual prestige, and to avenge the death of relatives killed in previous raids (Trigger 1985:98). It has been argued that the likely cause of the late sixteenth century migration of Late Iroquoian groups into Huronia was intertribal warfare with the New York State Iroquois (Heidenreich 1971). Heidenreich (1971:88) believes that the constant pressure of traditional raiding by their enemies in upstate New York resulted in the gradual movement of Late Iroquoian groups towards northern Simcoe County. Lennox and Fitzgerald (1990) have used a similar argument to explain the mid-sixteenth century migration of Neutral groups from southwestern Ontario to the western end of Lake Ontario. Lennox and Fitzgerald (1990:438) suggest that this migration took place in order to create a buffer zone between the Neutral

and their traditional enemies who occupied the extreme southwestern portion of southern Ontario. Both Heidenreich's (1971) and Lennox and Fitzgerald's (1990) theories are supported in part by evidence for extensive fortifications on mid-sixteenth century Huron sites in the Toronto area and mid-sixteenth century Neutral sites in southwestern Ontario.

Until recently, many archaeologists believed that the intensity of Ontario Iroquoian warfare increased in the thirteenth and fourteenth centuries. Wright (1966, 1992) has argued that a major military conquest took place in the thirteenth century involving the western expansion of Early Iroquoian groups who occupied the north shore of Lake Ontario. Wright (1966, 1992) believes that it was as a result of this conquest that we see a widespread and relatively uniform cultural horizon across most of southern Ontario in the fourteenth century. Most Iroquoian archaeologists have rejected Wright's conquest hypothesis because of the lack of archaeological evidence for large scale warfare, the lack of a regional political organization at the time to carry out such a conquest, and clear evidence of in situ Early to Middle Iroquoian development in southwestern Ontario (Fox 1976; Pearce 1984; Trigger 1985; Wright 1986; Williamson 1990).

Nevertheless, many archaeologists still argue that warfare intensified in the fourteenth century. It was believed that there was a significant increase in the number of heavily palisaded villages, as well as an increase in cannibalized human remains found scattered over Middle Iroquoian villages (Pearce 1984:171; Trigger 1985:92; Warrick 1984:66; Wright and Anderson 1969:62). Trigger (1985: 98-99) has suggested that with an increasing reliance on horticulture during the Middle Iroquoian period, men increasingly turned

to warfare as one of the only activities through which they could increase their prestige.

Many of these arguments have now been rejected by Iroquoian archaeologists. A re-evaluation of Middle Iroquoian warfare by Warrick et al. (1987) indicates that there is no clear evidence of cannibalism or extensive village fortifications in the fourteenth century. Fragmented and brutalized human skeletal remains interpreted in the past as evidence of cannibalism may simply reflect variations in Iroquoian burial practices or burial rituals (Fitzgerald 1992:6). Recent reviews of Middle Iroquoian settlement patterns on an interregional scale have shown that the majority of Middle Iroquoian village sites which have been extensively excavated were not palisaded (Dodd et al. 1990; Lennox et al. 1986). Archaeological data concerning the degree of Iroquoian warfare in the source area for the Middle Iroquoian colonists of Simcoe County is extremely limited. None of the late thirteenth or early fourteenth century Iroquoian villages sites located in the Toronto area have been extensively excavated. The limited excavations which have taken place at sites such as Thomson and Elliot, did not reveal the presence of any palisades (Donaldson 1965; Emerson 1956; Kapches 1981). While the Thomson site may have been situated in a naturally defensible location, the Elliot site certainly was not (Dodd et al. 1990:343).

Overall, it would appear that warfare did not play a large role in Middle Iroquoian society. It is therefore very unlikely that warfare was a factor in the migration of some Middle Iroquoian groups from the north shore of Lake Ontario to Simcoe County. Settlement pattern data from Middle Iroquoian village sites located in Simcoe County also support this view. To date, three Middle Iroquoian village sites in the Barrie area have been subjected to

extensive salvage excavations. The three sites consist of the Uren substage Barrie site (Sutton 1996), and the late Middleport substage Wiacek (Lennox et al. 1986) and Dunsmore (Williamson 1990b) sites. None of these sites were palisaded, and all three were placed in locations which would be very difficult to defend. In fact, the location of almost all of the known Middle Iroquoian village sites in Simcoe County suggests that defence was not an important consideration. If the colonization of Simcoe County had been caused in part by increased hostilities in the source area, a greater concern for defence would have also been evident in the destination area.

CLIMATIC CHANGE

Snow (1991) has suggested that one of the factors which may have led to the hypothesized intrusion of Early Iroquoian groups into the Northeast was the milder climate of the tenth and eleventh centuries. It has also been suggested that the abandonment of the sand plains in portions of southwestern Ontario by Middle Iroquoian groups in favour of heavier loam soils (Pearce 1984), was due to climatic change (Warrick 1984). Warrick (1984:65) has argued that the drier climatic conditions which may have existed between ca. A.D. 1300-1450 forced Iroquoian groups to abandon sand plains that were prone to drought, and occupy heavier loam soils which retained a greater amount of moisture. Warrick (1990:352) has recently retracted this theory in the face of mounting evidence which indicates that the majority of Middle Iroquoian village sites were in fact located on sandy soils (Dodd et al. 1990).

It is very difficult to determine with any accuracy what the climate of southern Ontario was like at the time of the Middle Iroquoian colonization of Simcoe County. Detailed information concerning the paleoclimate of this

region simply does not exist at present. Instead, it is necessary to rely on data gathered from elsewhere in the Great Lakes region. Palynological data from Hell's Kitchen Lake in north-central Wisconsin suggest that the climate in the Great Lakes area between ca. A.D. 400-1200 was warmer and drier than it is today (Baerreis et al. 1976). Bore hole temperature logs taken from several locations in northern Ontario also suggest that the period between ca. A.D. 900-1250 was warmer than it is today (Campbell and Campbell 1989:14). There is clear evidence from several sources that a cooling trend began after A.D.1200 (Baerreis et al. 1976; Bryson and Padoch 1980; Campbell and Campbell 1989; Gajewski 1988). Data gathered from Hell's Kitchen Lake suggest that there may have been a brief return to drier and warmer conditions between ca. A.D. 1300-1450 (Baerreis et al. 1976). Analysis of ice cores by Lamb (1982:201), suggests that average temperatures in the northern hemisphere at this time were only slightly lower than they are today. However, the general trend towards cooler conditions after A.D. 1200 culminated in the Little Ice Age which lasted from ca. A.D. 1450-1850 (Baerreis et al. 1976; Bryson and Padoch 1980). Despite this cooling trend, Iroquoian horticulturalists continued to thrive in southern Ontario and northern New York State. To account for this, Griffin (1960:21) has suggested that the effects of the Little Ice Age were ameliorated in southern Ontario and upstate New York by the presence of the Great Lakes. Baerreis et al. (1976:43) believe that it is more likely that the effects of the Little Ice Age were ameliorated in southern Ontario by the meeting of two air masses over the region.

If there was a trend towards cooler temperatures after A.D. 1200 in southern Ontario, it does not appear to have hindered the northern movement of horticultural groups. By moving a distance of 75 kilometres north into

Simcoe County, the Middle Iroquoian colonists moved from the South Slopes climatic region to the Simcoe and Kawartha Lakes climatic region (Brown et al. 1980). The colonization of this region placed the Middle Iroquoian horticulturalists very close to the northern limits of sustainable corn growth (Fecteau 1985:104). The frost free period in this region is 130-140 days, as compared to 150 days in the South Slopes region (Brown et al. 1980). Native corn varieties require between 100-120 frost free days to mature (Fecteau 1985:27; Heidenreich 1971:171-173). The Simcoe and Kawartha Lakes climatic region provides 2700 mean annual heat units for corn (a calculation of daily temperature values over the growing season), while the South Slopes region provides 2900 corn heat units. Corn requires a value of at least 2000-2500 corn heat units (Brown et al. 1980:38). Even if the average temperature at the time of the colonization was the same as it is today, the movement into Simcoe County would have increased the risk of crop failure.

If there were a brief return to drier and warmer conditions between ca. A.D. 1300-1450 (Baerreis et al. 1976), Middle Iroquoian groups may have taken advantage of the milder weather to expand northward into Simcoe County. Even if there were a brief return to milder conditions, climatic change alone cannot explain why Middle Iroquoian groups migrated north at this time, and not during the warm period that prevailed up to A.D.1200. Instead, it is possible that a period of warmer weather coupled with several other general factors induced some Middle Iroquoian groups to expand to the north. Obviously the issue of climatic change cannot be adequately evaluated until there are additional research projects which specifically reconstruct the late prehistoric climate of southern Ontario.

POTENTIAL PULL FACTORS

TRADE

The intensive nature of trading activities between Iroquoian and Algonkian groups in the early seventeenth century is well documented in the ethnohistorical literature. Increased access to European goods has often been offered as the motive for several long-distance Iroquoian migrations which took place in the late fifteenth and sixteenth centuries (Hayden 1978; Ramsden 1977; Trigger 1985). It is, however, very difficult to determine the role that trade played in prehistoric Iroquoian migration. Wright (1974) has suggested that the Middle Iroquoian Nodwell village site was established as an outpost in Bruce County in order to facilitate trade with Algonkian groups. Jamieson (1991) has argued that Early Iroquoian groups expanded into portions of New York State as well as the Upper Allegheny Valley in order to gain better access to southern trade routes.

In terms of Iroquoian-Algonkian trade, we know that various Algonkian groups regularly spent the winter with the Huron and Petun in Simcoe County in the early sixteenth century (Tooker 1967:19). The Huron traded corn, fishing nets, wampum, pigments and other items to the Algonkians in exchange for furs, fish, dried berries, and reed mats (Heidenreich 1971:227; Tooker 1967:19). Algonkian groups also played an important role as middlemen in the exchange of European items to the Huron (Trigger 1985:158). The historic fur trade was probably added on to a preexisting prehistoric trade network (Trigger 1979:210; Wright 1974:304). It is generally assumed that prehistoric trade was much smaller in scale and intensity (Heidenreich 1971:227; Trigger 1976:168).

In reconstructing the extent of prehistoric trade we are limited to identifying the exchange of non-perishable items. There is very little in the way of imported material on Iroquoian sites at the time of the colonization of Simcoe County. As in the historic period, it is likely that the bulk of trade between Iroquoian and Algonkian groups was in perishable items (Trigger 1976:169). However, Collingwood chert orginating from the southern Georgian Bay area has been identified on the Early Iroquoian Bolitho village site located in the Pickering area (Fox 1995:148). When combined with the discovery of a complete Early Iroquoian ceramic vessel in a rock shelter situated in a Collingwood chert source area near Georgian Bay (Garrad 1985), it becomes clear that Early Iroquoian and Odawa groups were trading directly with one another (Fox 1995:148).

More extensive evidence for trade between Early Iroquoian and Algonkian groups is available from sites located on the Canadian Shield. A large number of sites located on the Canadian Shield have yielded Early Iroquoian ceramics, including the Frank Bay site on Lake Nipissing (Ridley 1954; Brizinski 1980), the Pic River (Wright 1967), Michipicoten (Wright 1968) and McCluskey (Dawson 1974) sites on the north shore of Lake Superior, and the Severn Bridge site (Timmins 1993) at the mouth of the Severn River. The significance of the presence of Early Iroquoian ceramics on sites in northern Ontario will be discussed in more detail later in this chapter. The presence of this material is clear evidence of either direct or indirect contact between Early Iroquoian and Algonkian groups (Brizinski 1980: 256; Dawson 1979:17; Trigger 1976:170). It has been suggested that some of the Early Iroquoian vessels on these sites were perhaps manufactured in the south and then traded to Algonkian groups (Brizinski 1980: 256; Trigger 1976:170). The presence of

some carbonized corn kernels in the Early Iroquoian component of the Frank Bay site (Brizinski 1980:254) may be evidence of the exchange of perishables between Early Iroquoian and Algonkian groups. Overall, the presence of Early Iroquoian material on Algonkian sites on the Canadian Shield suggests that the mutualistic relationship between the two groups dates back to this period.

Following the colonization of Simcoe County by Middle Iroquoian groups in the early fourteenth century, this mutualistic relationship was probably intensified. Fox (1990b:463) has noted that there is a significant increase in the number of Iroquoian ceramics on Odawa sites in the Bruce Peninsula and in the Lake Superior basin immediately following the Middle Iroquoian colonization. There is also some evidence from some of the pioneering Middle Iroquoian village sites in Simcoe County of trade with Algonkian groups. The Uren substage Barrie site contained a native copper needle, as well as small amounts of Hudson Bay Lowland and Detour chert. It is very likely that these items were obtained from Odawa groups who had an extensive trade network extending from Georgian Bay to Lake Superior (Fox 1991:3).

While there is clear evidence of a mutualistic relationship between Iroquoian groups and Algonkian groups dating back to the eleventh century, it is very unlikely that this would have been a major factor in the decision to colonize Simcoe County. It has been suggested that increased access to Algonkian trade networks that controlled the supply of European items was a major cause of the late sixteenth century migration of Late Iroquoian groups into Huronia (Trigger 1985:157). However, the bulk of prehistoric trade appears to have been in perishable goods. It is unlikely that trading in non-exotic items would have induced Middle Iroquoian groups to colonize Simcoe

County (Warrick 1990: 352). Many of the perishable items which were obtained from Algonkian groups in the seventeenth century such as furs and fish would have been readily available within Simcoe County at the time of the colonization. The local extermination of fur bearing animals, documented by the Jesuits (Tooker 1967:25), probably occurred at a much later date. While the intensity of trade between Iroquoian and Algonkian groups probably intensified as a result of the colonization, increased trade was more likely a by-product rather than a major cause of the Middle Iroquoian colonization.

SUBSISTENCE

Significant economic differences between the carrying capacity and resource potential of the source and destination areas often precede long distance migration (Anthony 1990; Lewis 1982; Schwartz 1970). Anthony (1990:900) has pointed out that long distance migration most often occurs between areas which exhibit significant differences in productivity (Anthony 1990:900). A detailed comparative analysis of the carrying capacities of Simcoe County and the migrants' source area is beyond the scope of this study. Nonetheless, a preliminary analysis of the two regions suggests that there were both economic benefits and risks associated with the colonization of Simcoe County.

Archaeological evidence indicates that at the time of the colonization of Simcoe County, Iroquoian groups still practiced a mixed subsistence economy. It would appear that while the Iroquoian subsistence economy at this time was becoming increasingly reliant on horticulture (Fecteau 1985), hunting, gathering and fishing activities were perhaps of equal importance (Kapches 1982; Williamson 1990). Simcoe County has long been recognized as

an attractive region for Iroquoian settlement because of its natural resources (Trigger 1962). The region's well drained sandy uplands were excellent locations for horticultural settlements. The sandy soils would have been much easier to work than the heavier clay based soils which were prevalent in the migrants' source area.

More importantly, the extensive wetlands of Simcoe County would have been very attractive to Iroquoian groups. Among the most significant physiographic regions in Simcoe County are the Simcoe Lowlands, which were once covered by glacial Lake Algonquin. The majority of the Simcoe Lowlands were covered by wetlands prior to the draining of these areas after European settlement. The partially drained Minesing Swamp, located just west of Kempenfelt Bay, is still the largest remaining wetland area in all of southern Ontario. Extensive wetland areas were also present in the area between Nottawasaga Bay and Orr Lake, as well as between Matchedash Bay and Lake Couchiching (Heidenreich 1971:69-71). Wetlands are extremely productive environments, and produce a total annual biomass close to that of tropical rainforests (Nicholas 1991:31). Wetlands also provide permanent homes and breeding habitats to an extremely wide variety of waterfowl, mammals, fish and edible plants. In comparison to the mature forests of upland areas, wetlands provide a much greater quantity and variety of resources. As a result, wetlands have often been an important focus of prehistoric settlement and subsistence patterns (Nicholas 1992:29).

The extensive wetlands of Simcoe County can be contrasted with the lack of substantial wetland areas in the source area for the migrants. The area between the Oak Ridges Moraine and Lake Ontario, containing the South Slope, Peel Plain and Iroquois Lake Plain physiographic regions, consists of a wide

corridor which uniformly slopes southward towards the lake. There is a general drop in elevation along the 30 kilometre wide corridor of 150 metres. As a result of this gradual slope, the region contains no large undrained depressions or wetlands (Chapman and Putnam 1984:175). Wetland areas are limited to some sections of the valley floors of the major rivers and creeks which pass through the region. The extensive wetlands in Simcoe County indicate that this area may have been more biologically diverse, and may have had a greater carrying capacity than did the region south of the Oak Ridges Moraine. This could have been a significant pull factor at the time of the colonization, given the importance of naturally occurring food items in the early Middle Iroquoian diet.

Related to this issue is the richness of the local fishing resources of Simcoe County. The region is surrounded on three sides by water, providing easy access to the rich fisheries of Lake Simcoe and Georgian Bay (Heidenreich 1971; MacCrimmon and Skobe 1970). The richness of local fish resources and their importance to Iroquoian groups are illustrated by the fact that at the time of contact, the Huron subsistence economy has been characterized as an "agricultural- fishing complex" (Heidenreich 1971:212). Fish have several very important advantages over mammals as a food source. In contrast to the hunting of land mammals, fishing is an extremely efficient subsistence pursuit. Fish are plentiful, reliable in terms of their location and seasonal habits, and can be dried and stored for long periods of time (Heidenreich 1971:212). Fish obviously played a very important role in the subsistence economy of the Middle Iroquoian colonists in Simcoe County. The vast majority of the initial (Uren and Middleport I) Middle Iroquoian village sites established in Simcoe County are located within 5 kilometres of Lake

Simcoe or Georgian Bay. Furthermore, the faunal assemblages from all three of the Simcoe County Middle Iroquoian village sites which have been excavated and analyzed to date (Barrie, Dunsmore and Wiacek) are dominated by fish (Lennox et al. 1986; Needs-Howarth 1994). However, it is difficult to determine whether the quantity of fish resources in Simcoe County was any higher than those available to Middle Iroquoian groups living close to the north shore of Lake Ontario. Most of the known Early and Middle Iroquoian village sites located in the migrants' source area are situated within 5-10 kilometres of Lake Ontario, near major rivers and creeks which would have also provided ample fish resources. Faunal analysis of Uren village sites in the migrants' source area, such as Elliot and Thomson (Kapches 1981), does in fact indicate that fish were a very important component of the diet for some communities in this region.

A clear difference between the Middle Iroquoian faunal assemblages in Simcoe County and in the Toronto area is the paucity of mammalian remains, in particular white-tailed deer, on the Simcoe County sites. As mentioned previously, white-tailed deer only account for between 1-3% of the identified NISP totals from the analyzed faunal assemblages from Middle Iroquoian village sites in Simcoe County. This can be contrasted with percentages of between 10-78% on Middle Iroquoian sites in the Toronto area (Kapches 1981). White-tailed deer are considered to have been the main source of animal protein and hides for clothing for Iroquoian groups (Dodd et al. 1990; Gramly 1977; Williamson 1990). The low frequencies of white-tailed deer on Middle Iroquoian sites in Simcoe County have been interpreted as reflecting the low faunal carrying capacity of the mature upland forests of the region at the time of the colonization (Lennox et al. 1986:109). While this

may be true, the high carrying capacity of the extensive wetlands in Simcoe County may have countered the lower productivity of the upland areas. The apparent scarcity of white-tailed deer may have been a potential problem for the colonists, and would have required some significant adjustments in their subsistence strategies.

As mentioned previously, the colonization of the region would have placed the colonists at the northern limits of sustainable corn horticulture. The shorter growing season in this region would undoubtedly have increased the likelihood of crop failure. Overall, there were both positive and negative economic aspects to the colonization of the region.

LACK OF AN INDIGENOUS HORTICULTURAL POPULATION

The presence of a resident horticultural population in a potential destination region likely would have acted as an impediment to Iroquoian colonization. Indigenous and colonizing groups with similar settlement-subsistence systems would be competing for the same resources and settlement areas. The intrusion of the colonists likely would have been met with some resistance by indigenous horticultural groups, diminishing the chances of a successful long term colonization. It is clear that there was not a resident indigenous horticultural population in the region prior to the Middle Iroquoian colonization. There was, however, a resident population of hunters and gatherers in the region. Commonly referred to as the Odawa (Fox 1990b), the precise spatial distribution of these groups at the time of the colonization is not known. We do know that at the time of European contact in the seventeenth century, the Odawa inhabited the Bruce Peninsula, Manitoulin Island, and the south shore of Georgian Bay. Other Algonkian groups were

spread across the Canadian Shield just north of Simcoe County (Brizinski 1980). The distribution and nature of Odawa sites indicate that they were occupied by small lacustrine oriented bands of hunters, gatherers and fishers (Fox 1990b: 473). There is no archaeological evidence to suggest that the Odawa occupied or intensively exploited the inland areas of Simcoe County located east of the shores of Georgian Bay. This is not surprising given the lacustrine focus of their settlement-subsistence system. It would appear that the upland areas of Simcoe County in the vicinity of Lake Simcoe were largely uninhabited prior to the Middle Iroquoian colonization.

Even if hunting and gathering groups were present in this region prior to the colonization, it is unlikely that this would have hindered a colonization by horticulturalists. Several studies have shown that horticulturalists have consistently been successful in their attempts to colonize regions already inhabited by hunting and gathering groups (Bogucki 1987; Divale 1984; Kruk 1980; Milisauskas 1986). This has been interpreted in the past as reflecting the superiority of agricultural societies in terms of their greater population numbers, technological capabilities, and socio-political organization. More recent research suggests that agricultural and hunting and gathering societies may have co-existed together in the same region, and entered into mutualistic relationships based upon the exchange of naturally occurring foods for agricultural produce (Gregg 1988). Although the nature of the relationship between indigenous hunter-gatherers and agricultural colonists may have varied in different regions, the presence of hunters and gatherers did not deter colonization.

IDEOLOGICAL FACTORS

One of the problems with attempting to identify the structural factors which favour migration is the tendency to focus upon the economic causes of migration. In part this may be because of the difficulty in recognizing ideological factors in the context of prehistoric migrations. Anthony (1990, 1993) has argued that in stratified societies ideological factors may have been a very important factor in the decision to migrate. In some societies where the potential for prestige and sociopolitical power varied depending upon kinship ties and a person's predetermined hierarchical position, migration provided an opportunity to form new lineages and gain power (Anthony 1993). For example, the desire for prestige and increased sociopolitical power is believed to have led some estranged elite Mayan groups to colonize new areas in order to form new polities (Anthony 1993). However, this motive does not appear to apply to Iroquoian society which, in the late 13th and early 14th centuries was clan based and largely egalitarian (Timmins 1992).

The search for conflict and the prestige gained through warfare may also have been factors in the decision to migrate among some societies (Anthony 1990). It does appear that one of the main causes of prehistoric Iroquoian warfare was the desire by males to gain prestige (Trigger 1985:98). Wright (1992:13) has argued that some Early Iroquoian groups expanded their territory in part because of the prestige which would be gained through warfare and conquest. For reasons already discussed, this theory has been rejected by most Iroquoian archaeologists. There is no archaeological evidence to indicate that Middle Iroquoian warfare had reached a level of intensity or a scale whereby large groups of people would migrate to new

regions to incite conflict. In the case of the Middle Iroquoian colonization of Simcoe County, there was not a significant indigenous population which could be repeatedly raided by the colonists. There is also no archaeological evidence to indicate that in the prehistoric period there were any hostilities between the Algonkians of the region and Iroquoian groups. As already discussed, settlement pattern data from Middle Iroquoian village sites in Simcoe County indicate that defence and warfare were not factors before or after the region was colonized.

Another issue which may have played a role is the prestige which may have been gained by successfully colonizing new regions. Iban horticulturalists in Borneo desired to colonize virgin forest environments because of the rich unexploited resources they held, and the prestige gained in clearing new land (Orme 1981: 67). It is possible that the successful colonization of new territories provided an opportunity to gain prestige in a similar manner to that which was provided by traditional Iroquoian warfare. The desire to explore and settle new regions, although difficult to identify or measure archaeologically, should not be underrated.

FAMILIARITY WITH THE DESTINATION AREA

Migration theory suggests that people do not generally migrate to an area which they know nothing about. People are much more likely to move to areas about which they have some information (Greenwood 1970; Brown et al. 1977). The search for potential locations for colonization is limited to those places which people are familiar with, either through first hand experience or through communication with others who have visited the location. Archaeological evidence for long distance migration should therefore be

supported by archaeological evidence of an earlier penetration of the region by the cultural group which eventually colonized the area (Anthony 1990:902).

Early Iroquoian ceramics have been identified from a number of sites located both within Simcoe County and on the Canadian Shield to the north. The presence of Iroquoian material in the region in the period just prior to the Middle Iroquoian colonization suggests that the Middle Iroquoian colonists were already familiar with the area. To date, there are four sites in the Simcoe County area (Figure 21) which have produced Early Iroquoian components: the Dougall site (Wright 1972a), the Methodist Point site (Smith 1979), the Severn Bridge site (Timmins 1993), and Sainte-Marie (Tummon and Gray 1992).

The Methodist Point site (Smith 1979:15) is located beside a beach overlooking Georgian Bay. Shovel test pitting of the area suggests that the site was over 2 hectares in size. The excavation of less than 1% of the total site area revealed very little in the way of settlement patterns. The ceramic assemblage from the site suggests that it had both an Early Iroquoian and a Middle Iroquoian component. Based on the site's location, lack of significant settlement patterns and spatially diffuse artifact assemblage, Smith (1979:55) suggested that it was a seasonally occupied Iroquoian fishing camp.

The Dougall site (Wright 1972a) is located on the west side of the narrows between Lake Simcoe and Lake Couchiching. A 37 square metre area of the site was excavated. With the exception of one hearth, the excavated area contained no identifiable settlement patterns. The artifact assemblage from the site included Middle Woodland, Early Iroquoian, Middle Iroquoian and Late Iroquoian components. Wright (1972a:12) interpreted the Dougall site as a

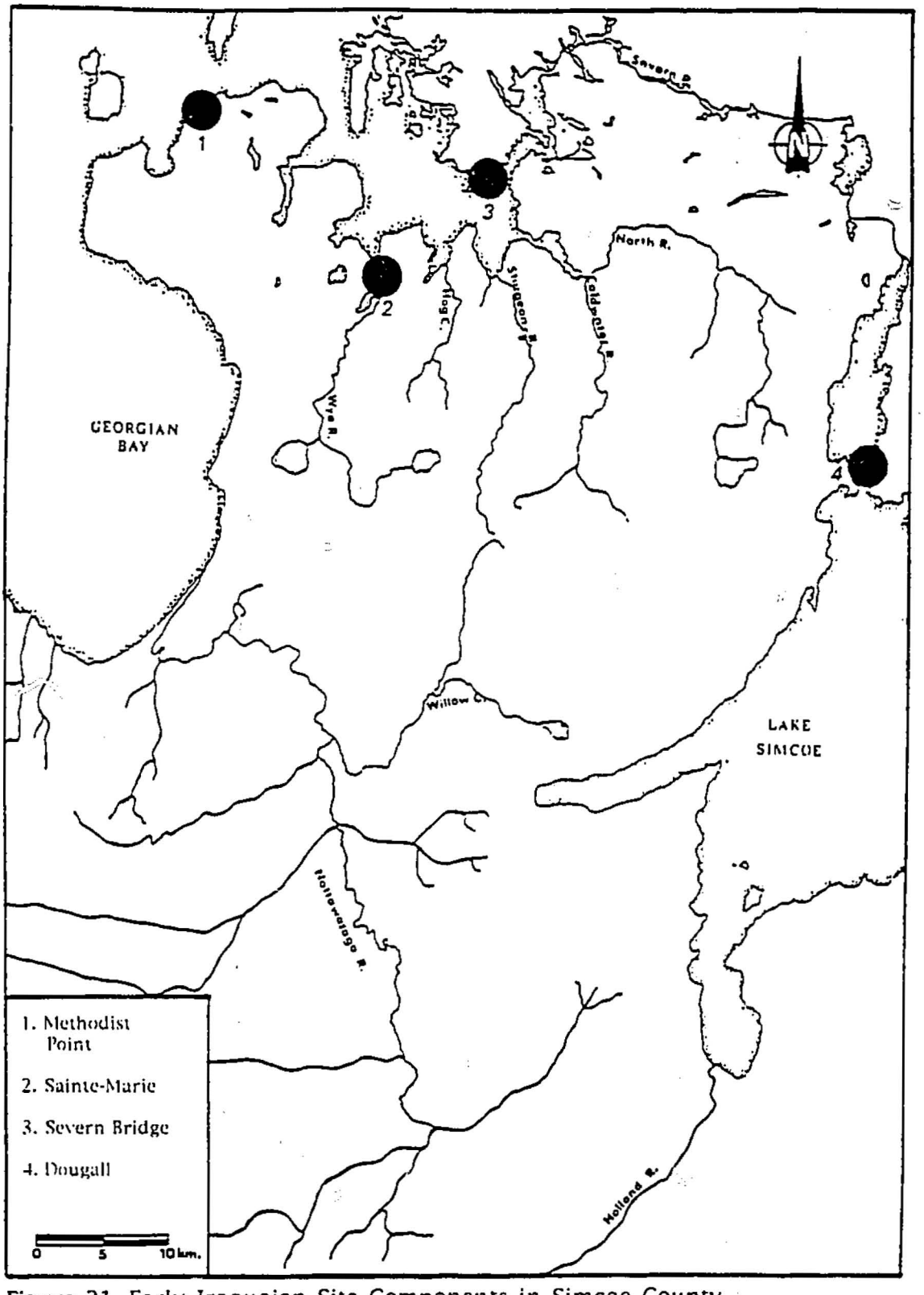


Figure 21. Early Iroquoian Site Components in Simcoe County.

fishing camp that was utilized over a 2,000 year period to take advantage of the rich fish resources which the narrows provided.

The Severn Bridge site is located on the north side of the mouth of the Severn River (Timmins 1993). A total area of 115 square metres was excavated at the site, revealing the presence of a very small number of randomly placed features and postmoulds. The artifact assemblage from the Severn Bridge site contained three components representing the Early, Middle and Late Ontario Iroquoian periods. However, the lithic assemblage strongly suggests that Algonkian groups were present at the site. The faunal assemblage suggests that fishing and the hunting of fur bearing animals were important activities carried out at the site. Timmins (1993:71) has interpreted the site as representing an Iroquoian and Algonkian fishing and hunting camp, as well as a natural rendezvous point for Iroquoian and Algonkian traders.

The site of Sainte-Marie is famous as the seventeenth century French mission site Sainte-Marie Among the Hurons. Recent excavations at this location indicate that the site is multicomponent and was initially occupied during the Early Iroquoian period (Tummon and Gray 1992). Details concerning the nature of the Early Iroquoian occupation at this site are not currently available. However, given the location of the site on the bank of the Wye River it is very likely that the Early Iroquoian component represents a seasonally occupied fishing camp.

In addition to these four sites, a complete Early Iroquoian ceramic vessel has been recovered from a rock shelter located just west of Collingwood in a source area for Collingwood chert (Garrad 1985). A large number of sites located north of Simcoe County on the Canadian Shield have also yielded Early

Iroquoian ceramics. They include the Frank Bay site on Lake Nipissing (Ridley 1954; Brizinsky 1980), the Pic River (Wright 1967), Michipicoten (Wright 1968) and McCluskey (Dawson 1974) sites on the north shore of Lake Superior, and a number of other sites located in the region of Algonquin Provincial Park (Dawson 1979; Hurley and Kenyon 1970). The significance of the Early Iroquoian ceramics found on these sites is a topic which archaeologists continue to debate. Some archaeologists believe that the Iroquoian ceramics reflect the actual presence of Iroquoian trading, hunting and fishing parties in northern Ontario (Dodd et al. 1990; Hurley and Kenyon 1970; Ridley 1954; Wright 1966). Other archaeologists argue that the Iroquoian components on these sites represent Algonkian copies of Iroquoian ceramics, resulting from the diffusion of Iroquoian ceramic traditions northward (Brizinski 1980: 256; Dawson 1979:17). It has also been suggested that some of the Iroquoian ceramics may have been manufactured by Iroquoian groups and traded to the Algonkians (Brizinski 1980: 256; Trigger 1976:170). Boreal forest archaeologists have pointed out that, with the exception of the Iroquoian-like ceramics, the remainder of the artifact assemblages from these sites are typical of Algonquian groups (Brizinski 1980; Dawson 1979).

It could be argued that the four multi-component sites located in the Simcoe County region which have produced Early Iroquoian components may also have been occupied by Algonkian rather than Iroquoian groups. Research by Ramsden (1992a, 1992b) in the Balsam Lake area of south-central Ontario has shown that it may be impossible to distinguish between Algonkian and Iroquoian archaeological components. In the ecological transition zone between the Canadian Shield and the more fertile and temperate areas to the south, Ramsden (1992a) has identified a broad cultural transition zone which

was occupied by both Algonkian and Iroquoian groups. The artifact assemblages from sites in this region produce an admixture of typical Iroquoian and Algonkian artifact types. Ramsden (1992a) has concluded that the problem of ethno-linguistic identity in regards to distinguishing Algonkian from Iroquoian sites may be impossible to solve.

The implications of the presence of Early Iroquoian ceramics on sites both within Simcoe County and in areas to the north and west continue to be debated. However, there is a general consensus that it can be interpreted as evidence of indirect and direct contact between Early Iroquoian groups who occupied the south shore of Lake Ontario, and Algonkian groups along Georgian Bay and on the Canadian Shield (Brizinski 1980:241; Dawson 1979:17; Timmins 1993:71; Trigger 1985:105). The direct contact was probably the result of sporadic trade expeditions to these areas. Given the known site distributions of Algonkian groups along the southern and eastern shores of Georgian Bay (Fox 1990b), and in the Lake Nipissing area (Brizinski 1980), Early Iroquoian trade expeditions would have had to pass through Simcoe County. The presence of Early Iroquoian ceramics on some seasonally occupied fishing camp sites in Simcoe County suggests the possibility that these groups may also have seasonally exploited the rich fishing resources of the region. Although several alternative interpretations of the data are possible, it is clear that Early Iroquoian groups were familiar with Simcoe County prior to the colonization of the region in the early fourteenth century.

INTERVENING OBSTACLES

The presence of intervening obstacles between the source and the destination areas, and the distances and relative costs involved in moving from

one to the other, are important factors in the decision to migrate (Anthony 1990; Green 1980). The probable migration corridor traveled by the Middle Iroquoian colonists is described and discussed in Chapter 8 of this dissertation. At this point it is important to point out that there were no significant physical or cultural obstacles between the two regions. The distance between the source and destination areas was only 75-85 kilometres and would have required only 2-3 days travel.

CONCLUSIONS

The precise causes of migration are extremely difficult, if not impossible, to determine because of the complex nature of the migration decision-making process and the multitude of interrelated factors which must be considered (Dejong and Fawcett 1981). It is because of this complexity that it is very difficult to identify the underlying causes of migration, even in the case of modern migrations with living migrants (Dejong and Fawcett 1981:43). In determining the potential causes of archaeological migrations, Anthony (1990) suggests that we limit our analysis to the identification of favorable structural conditions through the utilization of a push-pull model. While a push-pull model simplifies the migration decision making process, it is appropriate for the study of prehistoric migrations.

Given these limitations, several basic factors have been identified which may have played a role in the decision by some Middle Iroquoian groups to colonize Simcoe County. The colonization occurred at a time when the Iroquoian populations of south-central Ontario were experiencing a rapid increase in numbers. This may have resulted in a certain degree of population pressure, leading to a strain on the local resources of the migrant's source

area near the north shore of Lake Ontario. Thus, population pressure was likely the most significant push factor in the decision to migrate.

There were probably both some economic benefits and costs related to the colonization of Simcoe County. The most significant pull factors appear to have been prior knowledge of the region, easy access from the source area, and the lack of an indigenous population of horticulturalists. While not an ideal location for horticulture, Simcoe County did possess adequate natural resources for marginal horticulturalists with a broad based subsistence economy. In the face of increased competition over resources in the source area, the colonization of Simcoe County appears to have represented an acceptable solution to some Iroquoian groups. Push factors rather than pull factors appear to have been the primary cause of the colonization.

While the use of a push-pull model may simplify the migration decision making process, it does represent an improvement over other approaches used in the past. Previous theories concerning the causes of Iroquoian migration have been based almost exclusively on single factors such as warfare or trade. The push-pull model utilized here considers many different interrelated factors, and examines potentially relevant issues in both the source and destination areas.

CHAPTER 8

THE IDENTIFICATION OF MIDDLE IROQUOIAN MIGRATION PATTERNS

Anthony's (1990) analysis of modern migration studies indicated that there were a number of general characteristics that were shared by most migration processes, and suggested that many of these characteristics were potentially identifiable using archaeological data. These characteristics consisted of a leapfrog pattern to settlement, the development of migration streams or corridors, return migration to the source area, a prior history of migration among the colonists, and a migrant population dominated by young males and small incomplete households. In this chapter, the nature of the Middle Iroquoian colonization of Simcoe County will be examined in order to determine whether these migration patterns can be identified in this prehistoric example of long distance migration.

Leapfrog Settlement Pattern

The analysis of both modern and prehistoric migration patterns has shown that the colonization of a new area by farming communities creates a leapfrog pattern of settlement (Bogucki 1987:5; Kruk 1980:13; Lee 1966:55; Lefferts 1977:43; Simkins and Wernstedt 1971:7; Milisauskas 1986:2). The archaeological settlement pattern produced by the leapfrog pattern will consist of clusters or islands of settlement in attractive locations, surrounded by large unoccupied areas (Anthony 1990:903).

As Figure 22 illustrates, the settlement pattern of the Middle Iroquoian colonists of Simcoe County closely resembles the leapfrog pattern. The colonization of the region was not the result of a gradual movement. Instead, the migration was highly directed towards a specific location. The extreme southern portions of Simcoe County, and the region immediately south of Lake Simcoe, appear to have been bypassed in favour of the area around the head of Kempenfelt Bay on Lake Simcoe.

With the exception of the northern half of Innisfil Township, the extreme southern portions of Simcoe County appear to have been generally avoided as permanent settlement locations by Iroquoian groups. In the vast area covered by West Gwillumbury, Tecumseth and Adjala Townships, there are only four confirmed Iroquoian village sites (Blu Meanie, Bosomworth, Beeton and Dermott). All four of these sites date to the sixteenth or seventeenth centuries. While this region has not been as intensively surveyed as some other areas in Simcoe County, this pattern does not appear to be the result of survey bias.

During the course of the Southern Simcoe County Archaeological Project, Warrick (1988a) pedestrian surveyed over 300 hectares in West Gwillimbury Township. This project was specifically designed to locate Iroquoian villages sites. Only areas considered to have a high potential for Iroquoian settlement were surveyed. Despite this approach, only one Iroquoian village site was located, the mid-sixteenth century Blu Meanie site. Several archaeological surveys for Paleo-Indian sites have also been conducted in the region. Sections of the strandline associated with the Alliston and Schomberg embayments of glacial Lake Algonquin in southern Simcoe County have been intensively surveyed by Prideaux (1978), Storck (1979) and

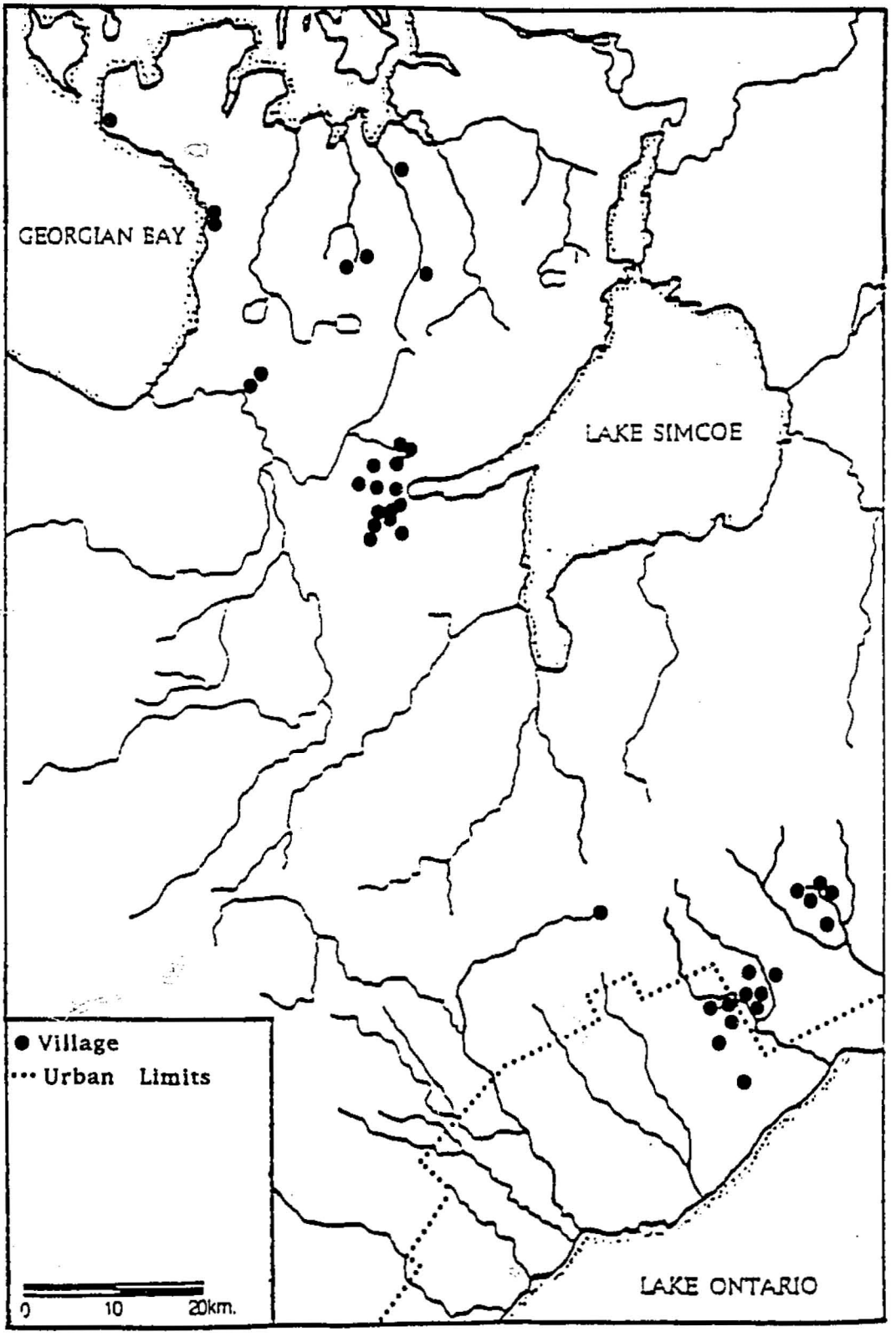


Figure 22. Middle Iroquoian Village Site Locations in the Source and Destination Areas of the Simcoe County Colonists.

Stewart (1984). While the goal of these surveys was to locate Paleo-Indian sites, sections of the strandlines which were investigated also had a very high potential for Iroquoian village sites. Many of the Middle Iroquoian village sites located in Simcoe County are also located close to or on relic strandlines bordering the Simcoe Lowlands. During the course of the search for Paleo-Indian sites, only one Iroquoian village site was located, the sixteenth century Dermott site (Storck 1979). Archaeological survey of the Albion Pass region in southern Tecumseth Township also indicates that there are very few Iroquoian village sites in the region (Latta 1980). Iroquoian village sites are also absent in the area immediately south of Lake Simcoe. Over 1200 hectares were surveyed during the course of an Archaeological Master Plan for East Gwillimbury Township by Archaeological Services Inc. (1990) between 1988 and 1990. No Iroquoian village sites were located as a result of the survey and there are no known village sites in the region.

There are several possible reasons for the lack of Middle Iroquoian village sites in the extreme southern portions of Simcoe County and immediately south of Lake Simcoe. This area contains several significant physiographic regions which were not conducive to Iroquoian settlement (Figure 20). The Oak Ridges Moraine lies just north of the South Slopes and Peel Plain regions which were occupied by the Middle Iroquoian parent communities of the Simcoe County colonists. The Oak Ridges Moraine extends across most of south-central Ontario from the Niagara Escarpment to the Trent River. This moraine has an average width of 6-12 kilometres just south of Lake Simcoe, and acts as a divide between the Lake Ontario and Lake Simcoe watersheds. The Oak Ridges Moraine is a large ridge of glacial drift covered by a coarse layer of sand and gravel. There are very few water sources or streams

on the moraine, and any precipitation drains vertically through the sand and gravel soils (Chapman and Putnam 1984:167). As a result, the moraine is very drought prone and the ground surface is covered by many blow outs and sand dunes. Iroquoian groups appear to have generally avoided the Oak Ridges Moraine for settlement purposes because of its droughty nature. The few Iroquoian village sites which have been found on the moraine are associated with the small kettle lakes which are thinly scattered across some portions of its interior (Austin 1994).

Just north of the Oak Ridges moraine in this region is the Holland Marsh. Prior to the draining of the marsh for agricultural purposes, the marsh bordered both sides of the west branch of the Holland River. The marsh originally extended from Cook's Bay on Lake Simcoe 25 kilometres southwest towards the town of Pottageville. The marsh had a width of 2-3 kilometres. The area covered by the marsh would obviously have been unattractive as a permanent settlement location by the Middle Iroquoian colonists. The region located just north of the Holland Marsh in southern Simcoe County is occupied by the Schomberg Clay Plains physiographic region. This is a drumlinized plain covered in clay soils (Chapman and Putnam 1984:176). Although the area is well drained, it appears to have been avoided by Middle Iroquoian groups who preferred to locate their villages on sandy soils (Dodd et al. 1990:343, 350). Although clay soils are more fertile than sandy soils, they were also much harder to work in the absence of plough technology. Finally, the extensive areas covered by the Simcoe Lowland sand plains in the area just south of Lake Simcoe and in southeastern Simcoe County were also probably avoided for environmental reasons. The Simcoe Lowlands contain extensive poorly drained swampy areas. Although some of the lowland sandy soils are well

drained, they have a tendency to drain more slowly of excessive precipitation built up over the winter, and are slower to warm up in the spring, than are the adjacent upland till plains (Hoffman et al. 1962). The leapfrog pattern of the Middle Iroquoian colonization of Simcoe County reflects in part the avoidance of less attractive settlement locations such as the Oak Ridges Moraine, Holland Marsh and the Schomberg Clay Plain.

The location of the initial Middle Iroquoian village sites in Simcoe County clearly shows that the migration was directed towards one specific destination. Ten of the eleven known initial Middle Iroquoian village sites (Uren and Middleport I phases) are tightly clustered in a 100 square kilometre area at the head of Kempenfelt Bay (Figure 23). In terms of its physical environment, this area would have been very attractive to Middle Iroquoian colonists. The head of Kempenfelt Bay forms a natural passageway to the interior of Simcoe County. The Lake Simcoe Basin and the Nottawasaga Basin of the Simcoe Lowland physiographic region are connected in this area by a flat-floored valley which separates two large upland areas. In the historic period, a portage route, called the Nine Mile portage, connected the head of Kempenfelt Bay to Willow Creek and the Nottawasaga River (Hunter 1907). It is quite possible that this route was also used in the prehistoric period to travel to the interior of Simcoe County and to Georgian Bay.

By establishing their initial settlements on the edges of the Simcoe Uplands in this region, the Middle Iroquoian colonists had easy access to a number of different macro and microenvironments. The well drained and easily worked sandy soils of the Simcoe Uplands were excellent sites for villages and agricultural fields. Floral and faunal resources would have been readily available in nearby Kempenfelt Bay, in the vast area covered by the

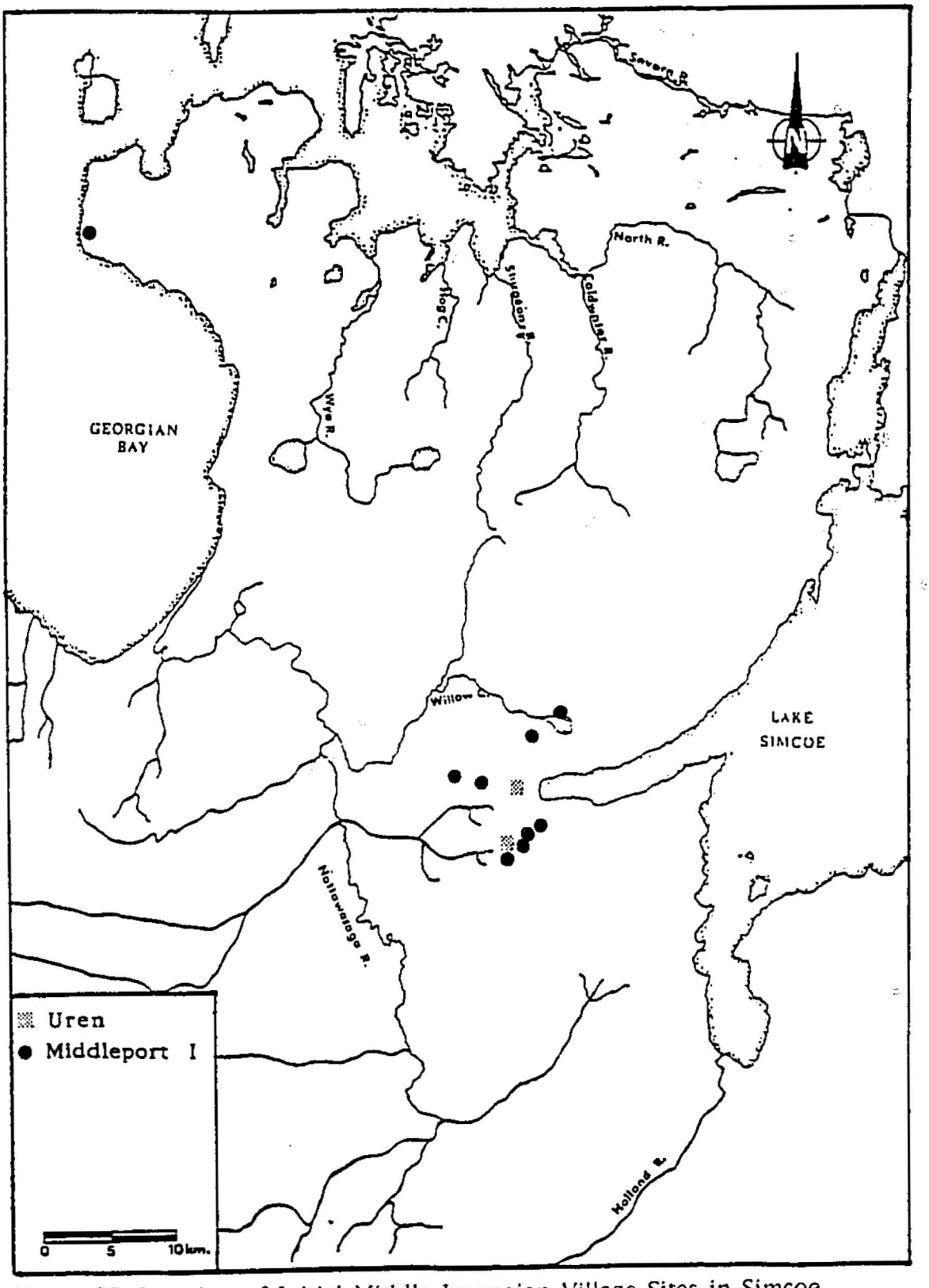


Figure 23. Location of Initial Middle Iroquoian Village Sites in Simcoe County.

Minesing Swamp, and in small wetland areas scattered along the lowland corridor opposite Kempenfelt Bay. Kempenfelt Bay and Lake Simcoe also provided an easily accessible canoe transportation route linking the colonists to their original source area. There are other suitable locations for Iroquoian colonization in Simcoe County, and the decision to choose this particular location cannot be reconstructed in any great detail. What is important is that the initial Middle Iroquoian pioneering communities, such as the Uren phase Barrie site, were established in this location. The placement of these communities in this area then acted as a magnet for subsequent migrants to the region during the Middleport I phase.

Migration Streams

It has been suggested that migrants tend to proceed along very well defined routes or streams towards the destination area (Lee 1966:54; Lewis 1982:51). Anthony (1990:903) has suggested that because the migration route is very well defined, archaeologists should be able to identify it. The migration route may contain linear distributions of small temporary transient sites associated with the migrants. However, there are several serious problems associated with the identification of migrant transient sites. Transient sites which may have been occupied by migrants are probably impossible to distinguish from transient sites created through the pursuit of other activities, such as trade expeditions or hunting and fishing parties (Chapman and Dolukhanov 1992). Also, transient sites or camp sites in general, are quite small and difficult to identify archaeologically. Even when transient sites are located, the small artifact assemblages associated with these sites often do not allow for the identification of the site's cultural affiliation.

A review of the provincial archaeological site data base for the area between Kempenfelt Bay on Lake Simcoe and the Oak Ridges Moraine failed to reveal any linear pattern of transient Middle Iroquoian sites. In fact, very few campsites belonging to any Iroquoian cultural groups have been found in this region. The scarcity of Iroquoian campsites in the region mirrors the pattern found elsewhere in southern Ontario where extensive rather than intensive archaeological surveys have resulted in a bias towards the location of village sites. But the lack of a linear pattern of Iroquoian sites can also be explained by looking at the potential migration corridors which were probably available to the Middle Iroquoian colonists.

Kapches (1994) has suggested that the Middle Iroquoian colonists of Simcoe County utilized the east and west arms of the historically documented Toronto Carrying Place trail system. This trail system was heavily used in the fur trade era and has been documented in a number of seventeenth, eighteenth and nineteenth century maps (Robinson 1933). The western arm of the Toronto Carrying Place began at the mouth of the Humber River and ran along its east bank (Figure 24). After crossing the east branch of the Humber River, it headed north to the west branch of the Holland River which flows into Lake Simcoe (Robinson 1933:202-207). When the Holland Marsh was drained for agricultural use in the early twentieth century the presence of a causeway constructed of small logs or poles was revealed (Robinson 1933:207). The causeway was placed at the north end of the Humber Trail and appears to have been used to cross the marsh to the west branch of the Humber River. The total length of the Humber trail from Lake Ontario to the Holland River was 45 kilometres. The eastern arm of the Toronto Carrying Place ran along a footpath which followed the Rouge River northward, eventually leading to the

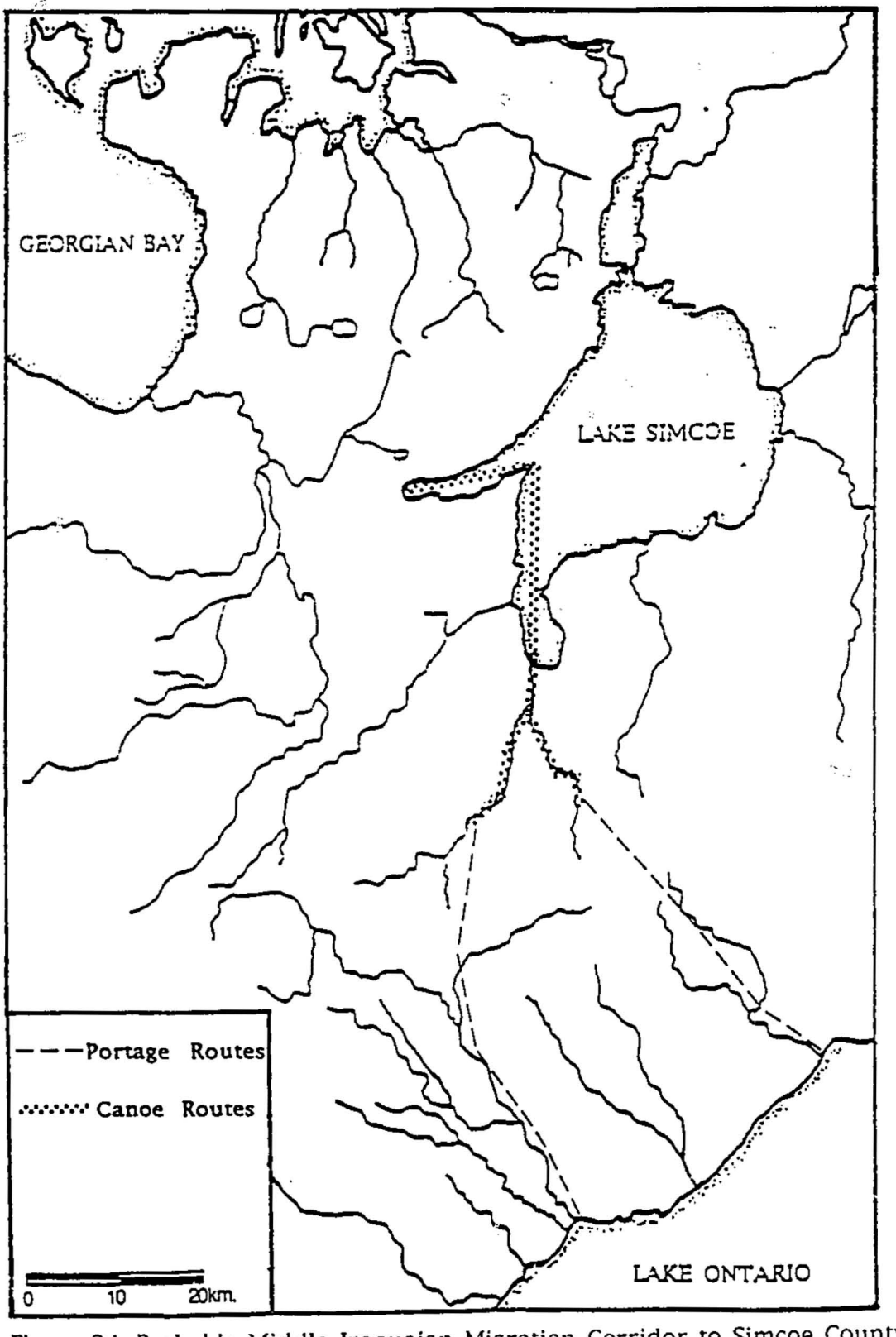


Figure 24. Probable Middle Iroquoian Migration Corridor to Simcoe County.

east branch of the Holland River which also flows into Lake Simcoe (Robinson 1933:53). The length of the Rouge River trail appears to have been similar to that of the Humber trail. Once the Humber and Rouge trails met the east and west branches of the Holland River, the river was traveled by canoe downstream to Lake Simcoe.

During the seventeenth and eighteenth centuries the two arms of the Toronto Carrying Place were frequently used to travel from Lake Ontario northward to Georgian Bay. The Humber and Rouge Rivers were only navigable by canoe for a short distance upriver from Lake Ontario, after which point they were too shallow for canoe travel. This necessitated the use of a foot path or portage between Lake Ontario and the two branches of the Holland River. The historically documented use of the Humber trail dates back as far as A.D. 1615, when the Frenchman Etienne Brûlé probably traveled down this route from Huronia on an expedition to the Susquehannock (Trigger 1976:305-306). In 1669 the French explorers Pere and Joliet followed the Rouge trail on their way to Georgian Bay. The French explorer Sieur de La Sale traversed the Humber trail in 1680 (Robinson 1933: 36). In 1764, Alexander Henry traveled over the Humber trail as a prisoner held by a group of Mississauga Indians on their way from Michilmacinac to Fort Niagara (Robinson 1933:149). Governor Simcoe also used the Humber trail in 1793 on his way to Georgian Bay.

It is reasonable to assume that the major travel routes which were utilized by the Europeans and native groups during the seventeenth and eighteenth centuries predated the historic period. It is generally believed that the historic fur trade was added on to a preexisting prehistoric trade network (Heidenreich 1971:227; Trigger 1979:210; Wright 1974:304). It would follow

then that the trade routes (or travel routes) utilized in the historic period, were also an extension of prehistoric routes. The location of Middle and Late Iroquoian village sites along the Humber and Rouge River drainage systems suggests that the two arms of the Toronto Carrying Place were in use in the prehistoric period (Kapches 1994). The strategic location of large fifteenth and sixteenth century Iroquoian sites such as the Draper, Parsons and Seed-Barker sites along the Humber and Rouge River systems probably represent attempts to control the flow of goods and people along these trail systems (Hayden 1978:107-109; Kapches 1994:37; Ramsden 1978:105).

The route followed by travellers in the historic period from Lake Ontario to Simcoe County and Georgian Bay also appears to have been the most efficient transportation corridor between the two regions. The source area for the Simcoe County Middle Iroquoian colonists was the region lying somewhere between the Humber River and the Duffins Creek drainage systems. The distribution of Middle Iroquoian sites in this region was largely confined to the South Slope and Peel Plain physiographic regions. The overland distance between this area and the head of Kempenfelt Bay, where the initial communities were established, is approximately 70-75 kilometres. By travelling to the destination area via the Holland River and Lake Simcoe, the distance travelled increases to about 85 kilometres. However, by travelling over half of this distance by canoe, the route could be covered much more quickly. Canoe travel would also have allowed for the transportation of a considerable number of people and equipment at the same time (Little 1987).

When La Salle traveled the Humber Trail in 1680 only one day was required to cover the portage route and reach the Holland River (Robinson 1933: 37). When Alexander Henry crossed the Humber trail on a forced march

in 1764, it took less than one day to cover the distance. In 1793, it required two days for Governor Simcoe's party to reach the Holland River. These historical accounts suggest that travellers using overland portage routes could cover on average, approximately 30 kilometres per day. In contrast, historical accounts of the distances covered in birch bark canoes suggest an average rate of 70 kilometres a day going downstream, and at least 20-25 kilometres a day going upstream (Little 1987).

The probable migration corridor into Simcoe County covered an approximate distance of 30 kilometres over land by foot, and 55 kilometres downstream by canoe (Figure 24). It would require approximately two days to travel from the source area for the Middle Iroquoian colonists to the destination area at the head of Kempenfelt Bay. The short distance of the migration corridor, and the lack of any significant physical obstacles along that route, suggest that the corridor could be travelled with relative ease. As discussed in Chapter 7, the low costs associated with traveling from the source to the destination area would have been a potential pull factor in the decision to migrate. The speed with which the corridor could be travelled would also have reduced the potential consequences of what has been referred to as "locational marginality" (Green 1979:84). The low population density and community isolation associated with frontier areas can place a strain on the social, economic and demographic networks of the initial colonists. By colonizing a new region which was relatively close to the source area, continued interaction between the two regions would have been ensured. The use of this migration corridor also partially explains the leapfrog settlement pattern of the colonists. The migration corridor bypasses the inland regions of the extreme southern portions of Simcoe County. The lack of Middle

Iroquoian sites in West Gwillumbury Township and southern Innisfil Township may reflect in part the use of a water route into the region.

The settlement patterns of the initial Middle Iroquoian colonists in Simcoe County clearly show that there was a focused outgoing migration stream towards the head of Kempenfelt Bay on Lake Simcoe. What cannot be determined at this time is whether the source of the migration stream was also highly focused. Migration theory indicates that information regarding the destination area is sent back to the family and friends of the initial migrants (Greenwood 1970:375). Simkins and Wernstedt's (1971:52) study of the migration of farmers in the Philippines found that the first 10% of the migrants to a uninhabited valley could be used to predict the origins of all subsequent migrants. If this is also true of prehistoric migration, the artifact assemblages of the two areas will be more similar to one another than they are to other regionally defined assemblages (Anthony 1990:903).

At present, it is not possible to address this issue for the Middle Iroquoian colonization of Simcoe County. The comparative analysis of ceramic attributes presented in Chapter 7 suggests that the source area for the colonists was near the north shore of Lake Ontario, probably between the Humber and Rouge River drainage systems. Due to urban expansion, we know very little about the actual distribution of Middle Iroquoian sites in this region (Poulton 1987). It is very likely that most of the Middle Iroquoian village sites which were situated in this area have been destroyed by urban development. Our understanding of the Middle Iroquoian occupation of the region is limited to the analysis of sites which were, until recently, peripheral to the areas of urban expansion. These are Middle Iroquoian village sites located along the Highland Creek, Duffins Creek, and the Rouge River drainage systems. Even in

this area, our understanding of the Middle Iroquoian occupation is largely based on the analysis of site surface scatters and test excavations (Kapches 1981; Poulton 1979). As a result, a detailed comparative analysis of the artifact assemblages from the source and destination areas is not possible at this time. This would require a number of representative artifact assemblages from the initial Middle Iroquoian village sites in Simcoe county, as well as from Middle Iroquoian sites along the north shore of Lake Ontario. While additional data regarding the initial Middle Iroquoian sites in Simcoe County will probably become available in the future, most of the sites in the source area have likely been destroyed. Due to these problems, it cannot be determined whether the source area for the colonists was as spatially focused as was the destination area.

Return Migration

Most migrations produce a counter-stream or return migration to the place of origin (Lee 1966; Schwartz 1970). Anthony (1990:94) has suggested that return migration may be identifiable archaeologically. For example, evidence of the initiation of long distance trade between the two areas following the initial migration may reflect the effects of return migration.

This is another component of Anthony's migration model which would be extremely difficult to identify in this case. In part, this is related to the problems associated with the archaeological record for the Middle Iroquoian period in the source area for the Simcoe County colonists. More importantly, it may be impossible to distinguish between different types of contact between the source and destination areas. It is possible to identify archaeological evidence of contact between the Middle Iroquoian source and destination

areas, but it may be impossible to interpret this data as evidence of return migration, as opposed to other forms of contact such as trade or intermarriage.

The clearest evidence of contact between the two regions is the presence of small frequencies of Lalonde High Collared ceramic rim sherds on some late Middle Iroquoian sites along the Rouge River drainage system. Both the New site and the Milroy site contain a small percentage (2-3%) of Lalonde High Collared rim sherds (Kapches 1981). This rim sherd type is the key defining attribute of what is referred to as the Lalonde focus, culture or period (Ramsden 1990; Ridley 1952a; Varley 1993), or the northern division of the Huron-Petun branch of the Late Ontario Iroquois period (Wright 1966:66). The Lalonde focus represents a regional expression of fifteenth century Iroquoian culture which is restricted to Simcoe County, and dates to ca. A.D. 1400-1500 (Ramsden 1990:381). This focus developed in situ from the Middle Iroquoian groups who initially colonized the region (Ridley 1952a; Wright 1966), and is characterized by sites which contain Lalonde High Collared rim sherds in frequencies between 10-27% (Bursey 1993; Varley 1993).

The Lalonde High Collared rim sherd type is a high collared ceramic vessel which possesses a complex exterior collar motif of triangles of opposed obliques often interspersed with triangles of horizontal or vertical lines (Varley 1993:69). The analysis of Simcoe County Middle Iroquoian rim sherd types undertaken for this dissertation indicates that this rim sherd type developed during the Middle Iroquoian period (Table 2). There is only one Middleport Phase I site which contains this type, the Beswetherick site. The Lalonde High Collared type only accounts for 1.9% of the rim sherd assemblage at Beswetherick. But the appearance of this rim sherd type at this early date indicates that it was being developed at the time of the initial colonization. The

frequency of this rim sherd type increases to an average of 3% on the Middleport II phase sites in Simcoe County.

The presence of some Lalonde High Collared rim sherds on Middle Iroquoian sites in the source region for the colonists indicates that the two regions were in contact with one another during this period. This contact continued into the fifteenth century, as indicated by the presence of small frequencies of this rim sherd type on fifteenth century sites in the Toronto area such as Black Creek, Doncaster, and Reaman (D.R. Poulton & Associates Inc. 1994; Wright 1966). However, the evidence for contact cannot be interpreted as specifically reflecting return migration. While this is possible, it may only represent other forms of contact such as trade or intermarriage.

The emergence of a distinctive ceramic style in Simcoe County after the colonization of the region points to another aspect of migrations which has been addressed by migration theorists. Thompson (1973:5) has suggested that the colonization of a new area may be followed by rapid stylistic change because of the narrowly defined pool of stylistic variability among the colonists. If the source area for the migrants is narrowly defined, then the range of stylistic variation of the migrants may also be narrowly defined. This may lead to a "artifactual founder's effect" in the frontier area (Anthony 1990:903). The development of the Lalonde High Collared rim sherd type may be an example of stylistic change among migrant groups.

This rim sherd type could also be interpreted as reflecting the emergence of a new sense of group identify or ethnicity among the Middle Iroquoian colonists. Wobst (1977:328) has suggested that stylistic elements on items were used to convey messages to other groups, and to symbolize group ethnicity and territorial or social boundaries. Ethnoarchaeological research

has shown that the cultural identity of groups can be encoded on a number of different items, including items such as pottery which are not visible to outside groups (Hodder 1982:54; Plog 1983:138). The distinctive Lalonde High Collared rim sherd type demonstrates the rapid stylistic changes which can occur among colonizing groups, as well as their emerging sense of group identity.

Migration Frequency

There is a strong tendency for migrants to be people who have migrated previously (Lee 1966; Morrison 1971; Myers et al. 1967). Migrant communities have weak social and economic ties to their surrounding area and have a tendency to be repeat migrants. Anthony (1990:905) has pointed out that the high levels of migratory activity that are associated with certain periods of human history, such as the Iron Age Celtic expansions, may reflect this aspect of the migration process.

This issue is relevant to the colonization of Simcoe County because of the re-emergence of the intrusion hypothesis for Iroquoian origins in the Great Lakes area. Snow (1995:68-72) argues that there is significant discontinuity in the archaeological record between the Middle and Late Woodland periods in southern Ontario and upstate New York. It is Snow's (1995) opinion that Iroquoian horticulture, village settlements, matrilineal longhouses and ceramic technology stand in sharp contrast to the hunting and gathering archaeological pattern of the Middle Woodland cultures in the region. In southern Ontario, Snow (1995:71) points to the Princess Point Complex as representing the last vestiges of Middle Woodland culture in the region. Snow (1995:76) believes that the emergence of the Iroquoian cultural

pattern was quite rapid and suggests that it was the result of the migration of Iroquoian groups into the region between ca. A.D. 900-1000. The adaptive advantage provided by the development of maize horticulture and the mild temperatures prior to A.D. 1200 are seen as the key factors which made the region attractive to Iroquoian colonists. Snow (1991:200) argues that the migrants originated from central Pennsylvania and slowly expanded into upstate New York and southern Ontario.

Linguistic evidence supports Snow's theory. Fiedel (1991) believes that the only way to explain the location of Iroquoian speaking peoples between closely related Central and Eastern Algonkian speaking groups is by adopting an intrusion model. The linguistic similarity of the Central and Eastern Algonkian groups to one another suggests that they were split apart by an Iroquoian migration into the region. Glottochronology suggests that the Algonkian groups were split apart between ca. 150 B.C. and A.D. 700 (Fiedel 1991:19). Glottochronology also suggests that the northern Iroquoian languages of New York and Pennsylvania split apart between ca. A.D. 500-900. Unlike Snow (1991), Fiedel (1990:26) suggests that the Princess Point complex in southern Ontario may represent part of an Iroquoian migration into the region between ca. A.D. 500-900.

The major problem when addressing this issue is our poor understanding of the archaeological record during this crucial period. The period between ca. A.D. 700 to 900 is an archaeological blank for most of south-central Ontario. This gap is filled at the western end of Lake Ontario by the Princess Point Complex, a Late Woodland culture which grafted limited corn agriculture onto a Middle Woodland settlement-subsistence system (Stothers 1977). Stothers (1977: 154-156) has suggested that the Princess Point Complex

appears suddenly in the archaeological record of the area, and was the result of a migration from the southeast. Other researchers have suggested that there is evidence of cultural continuity with indigenous Middle Woodland cultures (Spence and Fox 1986). Until more information is gathered from Princess Point sites, neither hypothesis can be verified (Fox 1990a:186). There does appear however to be clear continuity between the Princess Point Complex and subsequent Early Iroquoian developments at the western end of Lake Ontario (Fox 1990a:174), and in the Grand River area (Smith and Crawford 1995:68).

Small samples of Princess-Point like ceramics have been found on a few sites scattered across parts of eastern Ontario (Fox 1990a:182). But most of south-central Ontario remains a blank during this period. It is possible that Early Iroquoian culture developed directly out of late Middle Woodland antecedents in the region (Kapches 1987). However, at present, there is no strong archaeological evidence to support this view. Until more sites dating to this period are identified and excavated in south-central Ontario, the origins of Iroquoian culture in the region will remain a large question mark. Until such time, the intrusion model remains a potentially valid theory for Iroquoian origins in this region. If the Iroquoian intrusion model is valid, then Simcoe County could be viewed as one of the final frontiers colonized by Iroquoian migrants.

Migration Demography

Modern studies of expanding farming communities have shown that the initial colonists consist largely of young adult males, and small, young, incomplete families (DeJong and Fawcett 1981; Hess 1979; Lefferts 1977;

Simkins and Wernstedt 1971). As the migration develops further, the population eventually moves towards sexual parity and the age structure of the colonists expands (Lefferts 1977: 40). Anthony (1990:905) has suggested that the heavily male bias of the initial colonists in archaeological migrations could be identified through an analysis of the age and sex structures of mortuary assemblages associated with pioneering communities.

Unfortunately, this type of burial data is not yet available in the case of the Middle Iroquoian colonization of Simcoe County. Although several Middle Iroquoian village sites have been extensively excavated in the last ten years, this has not resulted in the identification or excavation of any associated ossuaries or cemeteries. It is generally assumed that the multiple secondary burials and small ossuaries associated with Early Iroquoian groups in south-central Ontario developed into the use of large ossuaries by the Middle Iroquoian period (Johnston 1979). However, only one probable Middle Iroquoian ossuary, the Tabor Hill ossuary (Churcher and Kenyon 1960), has been identified in south-central Ontario. The low number of known Middle Iroquoian ossuaries in comparison to the large number of known Middle Iroquoian village sites in south-central Ontario suggests that ossuary burial may not have been the primary form of interment (Dodd et al. 1990:355).

This is also the case in Simcoe County, where the burial practices of Middle Iroquoian groups remain a mystery. Despite extensive archaeological survey and excavation, to date no ossuaries have been identified which are clearly associated with a Middle Iroquoian occupation. In part this may reflect the fact that many of the ossuaries in Simcoe County were looted or destroyed in the late 19th century (Hunter 1899, 1900, 1902, 1907). However, it also suggests that other forms of burial were being used. Hunter (1907:45) was the

first to note the general scarcity of ossuaries in southern Simcoe County, and the presence of numerous isolated burials and some primary cemeteries. More recently, Christie and Warrick (1986) have identified a probable cemetery associated with the Middle Iroquoian Lougheed village site. An intensive pedestrian survey of the site revealed the presence of a concentration of plough-disturbed human bone just outside of the village area. Christie and Warrick (1986:26) concluded that by focusing on the immediate village area, the salvage excavation of village sites has led to a under-representation of this type of burial practice. However, even if more Middle Iroquoian burial features were identified in Simcoe County, it is unlikely that they would provide any data which could support the migration model which is being evaluated in this study. The current trend in consulting archaeology, following the wishes of local native communities, is to preserve, rather than excavate significant burial features such as ossuaries or cemeteries.

Another possible approach to reconstructing the social organization of the initial colonists in Simcoe County is the analysis of settlement patterns. Warrick (1984) has suggested that the primary determinants of the organization, location and alignment of longhouses within Iroquoian communities were socio-political factors relating to the nature and composition of individual households, village demography and social organization. It is also generally assumed that longhouse length varied in response to the number of occupants (Casselberry 1974; Heidenreich 1971:115), and that the occupants of a longhouse were composed of the members of kin-related families (Heidenreich 1971:77; Trigger 1976:45-46). Based on these assumptions, the small size of Early Iroquoian longhouses and the lack of longhouse alignments on Early Iroquoian village sites has been interpreted as

reflecting the absence of clan organization, and the presence of weakly developed matrilineages (Timmins 1992:487; Wright 1986:63). The emergence of two or more different clusters of longhouses in Middle Iroquoian villages has been interpreted as representing the development of clans and a higher level of socio-political organization (Pearce 1984:160; Warrick 1984:49).

If the initial Middle Iroquoian colonists of Simcoe County consisted of small incomplete families, this may be reflected by the presence of numerous small nuclear family house structures on the earliest village sites in the region. If the colonization resulted in the break-up of clan socio-political entities, the settlements of the colonists may be more disorganized and may lack segmented longhouse clusters. Alternatively, if the colonists were composed of extended family groups, the pioneering communities would be expected to consist of fairly typical Iroquoian longhouses. If the colonizing groups consisted of entire clan segments, this may be reflected by the presence of longhouse clusters within the initial pioneering communities. Both Heidenreich (1971:131) and Trigger (1990:67) have suggested that when Iroquoian village sites fissioned due to population growth, it was likely that they split along clan lines.

To date, only two Middle Iroquoian village sites which date to the early stages of the colonization have been subjected to extensive excavation. The Beswetherick site (BcGw-1), which dates to the mid-fourteenth century and is identified here as a Middleport I site, was partially excavated by Channen and Clarke (1963). They excavated approximately a 0.1 hectare area of the site, revealing the apparent presence of three small house structures (Figure 25). House #1 is described as having dimensions of 6 x 7.2 metres, and House #2 and House #3 as both having dimensions of 6 x 8 metres. If these three structures

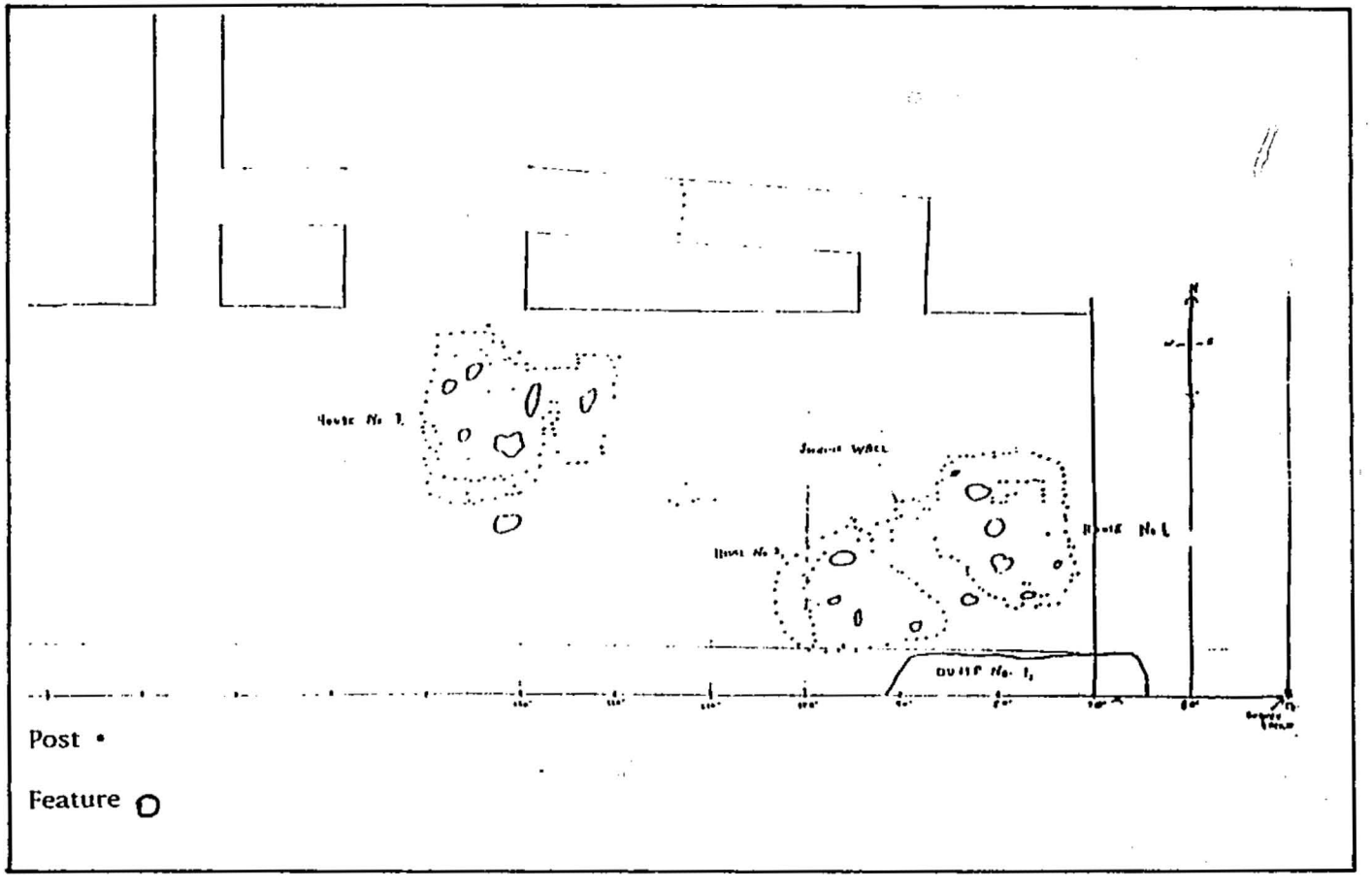
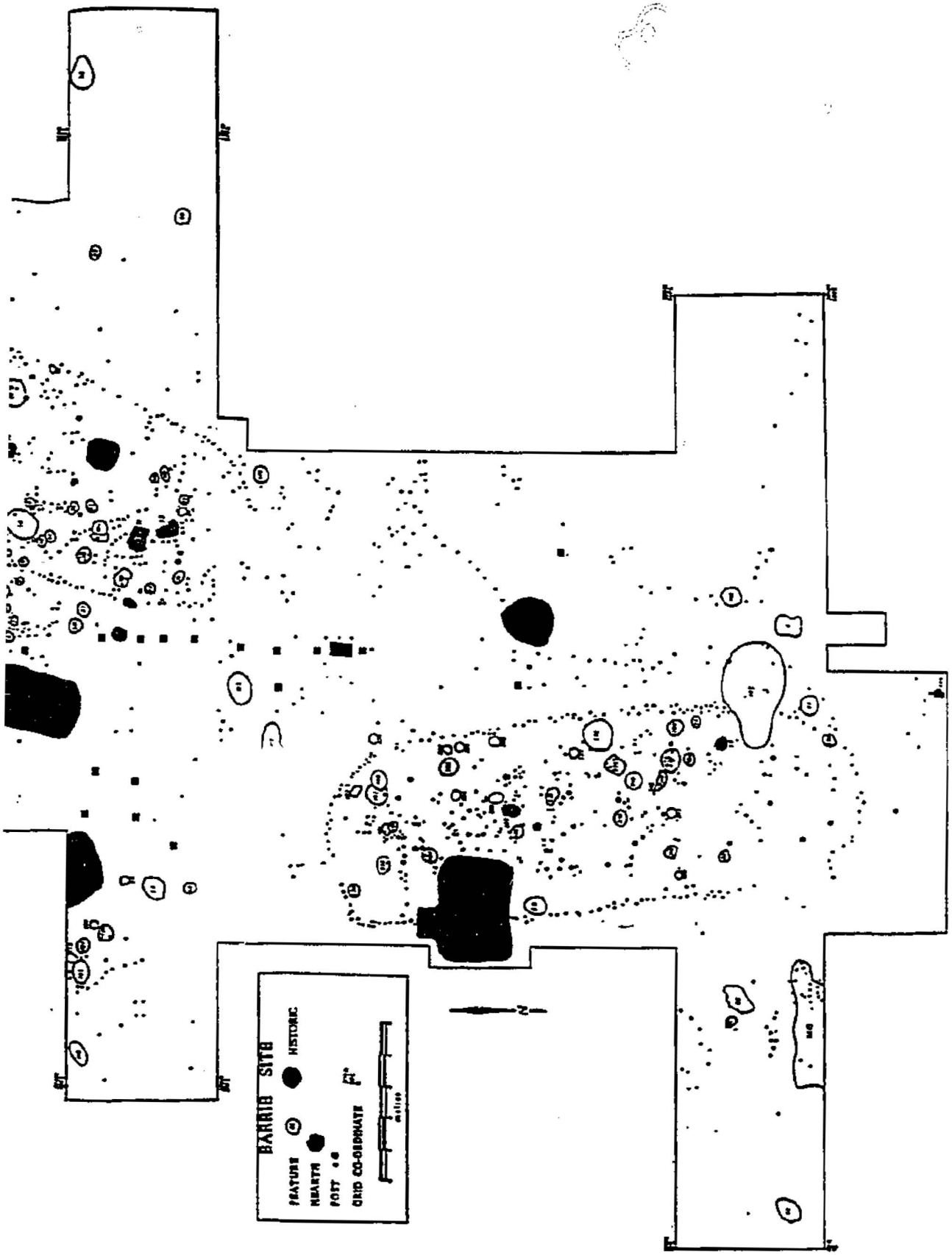


Figure 25. Settlement Patterns at the Beswetherick Site (modified from Channen and Clarke 1963:6).

do indeed represent small houses occupied by individual nuclear families, they would support the model of small incomplete colonist families. However, the interpretation of the settlement data from the Beswetherick site is somewhat problematic. The configuration of the three houses is quite irregular, and does not correspond to the more regular and proportioned shape of small longhouses elsewhere (Kapches 1984). Given the fact that the site was excavated by avocational archaeologists at a time when the identification of Iroquoian settlement patterns was still in its infancy, it is quite possible that the settlement features were misinterpreted. For example, the post mould and feature distributions of House #1 and #2 suggest that they may represent one structure, not two. Given these potential difficulties, the settlement pattern data from the Beswetherick site cannot be properly assessed at this time.

Between 1991 and 1993, Sutton (1996) conducted excavations at the Barrie site (BcGw-18), a Uren substage (ca. A.D. 1280-1330) village site located in the City of Barrie (Figure 26). The Barrie site is the earliest known Iroquoian village site in all of Simcoe County and appears to represent one of the initial pioneering Middle Iroquoian communities. The excavation of a 0.14 hectare area of the 0.9 hectare site revealed the presence of at least two longhouses. The length of House#1 was at least 32.2 metres. House #2 was entirely excavated and had a length of 17.6 metres. The size of House #1 indicates that it was occupied by a large, extended family group. Although House #2 is considerably smaller, its size suggests that it was also occupied by an extended family group. In terms of village organization, the size of the area excavated at the Barrie site was not large enough to determine the complete settlement pattern of the village. More extensive excavations would be necessary to determine the relationships of House #1 and #2 to other

Figure 26. Settlement Patterns at the Barrie Site.


BARRIE SITE
FEATURE
HEARTH
POST
GRID CO-ORDINATE
HISTORIC

potential longhouses within the village. The settlement pattern data from the Barrie site does suggest that the initial Middle Iroquoian colonists were comprised of extended family groups, not small incomplete households.

An extremely significant aspect of migration demography not included in Anthony's (1990) migration model is the rapid rise in population which occurs in recently colonized regions. Modern studies of migration (Lefferts 1977; Simkins and Wernstedt 1971), as well as archaeological studies of prehistoric migration (Bogucki 1988), have shown that the population in the frontier area rises rapidly due to high fertility and continued in-migration. At first, population growth in frontier areas grows exponentially (Renfrew 1984: 188). As the population level rises the rate of growth slows down and eventually levels off (Lefferts 1977:50; Easterlin 1976:45). The leveling off of the growth curve is believed to occur when the local carrying capacity is reached and there is a stress placed on local resources (Easterlin 1976:46; Renfrew 1984:189). The overall pattern of growth in the frontier area resembles an S shaped logistic growth curve, with rapid initial growth followed by population stability (Ammerman and Cavalli-Sforza 1984:72; see Figure 27).

In order to evaluate Middle Iroquoian population growth in Simcoe County, temporal changes in both the number of known village sites and the estimated maximum population of the known village sites were examined. It is obvious that the current sample of twenty-four confirmed Middle Iroquoian village sites in Simcoe County does not represent the total population of village sites which were occupied in the region. However, given the bias towards the identification of Iroquoian village sites in previous archaeological surveys in

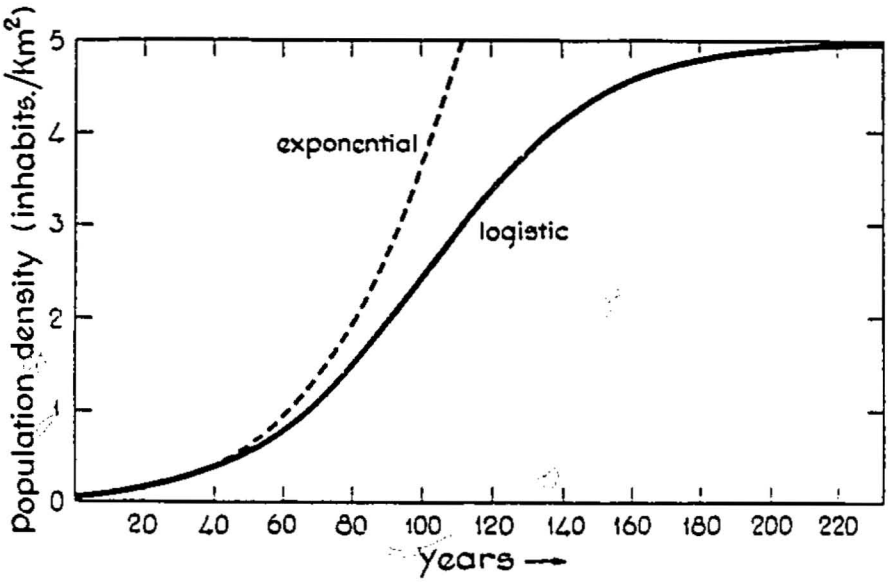


Figure 27. Two Models of Population Growth (after Ammerman and Cavalli-Sforza 1984: Figure 1).

the region, it is safe to assume that the known sites form a representative sample of the total number of sites occupied. Also, there is no reason to believe that the proportions of known village sites from different chronological phases of the Middle Iroquoian period are biased towards any particular phase. The average size of the Middle Iroquoian village sites in Simcoe County does not appear to have changed significantly over time. During the Uren substage the average village size was 1.1 hectares, in Middleport I it was 1.0 ha., in Middleport II it was 1.3 ha., and in Middleport III it was 1.2 ha. Sites in this size range would all have been easily recognizable during the course of a pedestrian archaeological survey. All of the Middle Iroquoian village sites are also located in similar environmental settings, on upland sandy soils close to a source of water. This suggests that no particular group of chronologically related villages would have been more susceptible to natural or cultural factors which would have resulted in site destruction or invisibility. As a

result, it can be safely assumed that the relative proportions of known village sites in each chronological phase reflect those in the total population of village sites.

The results of the cluster analysis of the Simcoe County Middle Iroquoian village sites discussed in Chapter 6 indicate that there were four basic sequential chronological units which were present: Uren, Middleport I, Middleport II and Middleport III. By simply counting the number of village sites occupied during each of these phases in Simcoe County, the rapid rise in population through time becomes quite clear. While in the Uren phase there are only two known Middle Iroquoian village sites in Simcoe County, by the end of the Middleport I phase there are nine known village sites.

In order to compare population growth rates during the Middle Iroquoian period in Simcoe County to other documented examples of population growth in frontier areas, it is necessary to estimate relative population numbers. It appears that hearth counts offer the best approach to estimating population numbers for Iroquoian sites (Warrick 1990). Ethnohistorical data indicate that two families shared each central hearth in seventeenth century Huron longhouses (Thwaites 1896-1901 15:153; Wrong 1939: 94). The maximum total population of a site can therefore be estimated by multiplying the total number of hearths by the average combined size of two families. The average size of small scale agricultural families appears to have been 5.5 persons (Warrick 1990:301).

Because very few Middle Iroquoian village sites in Simcoe County have been totally excavated, the precise number of hearths for each village site is not known. However, excavations at the Barrie site (Sutton 1994), the Wiacek site (MacDonald et. al. 1991; Lennox et al. 1986) and the Dunsmore site, suggest

that hearth density on fourteenth and early fifteenth century village sites in Simcoe County ranged between 16 and 46 hearths per hectare, with an average of 31 hearths per hectare. The number of hearths per hectare utilized here reflects a direct counting of preserved hearths located within the central corridor of excavated longhouses, and was not modified to account for hearths which may have been eradicated by deep ploughing. By multiplying the average of 31 hearths per hectare by the size of each Middle Iroquoian village site in Simcoe County, an estimate of the number of hearths per site can be produced. The number of hearths is then multiplied by the average of eleven people per hearth, to estimate the maximum population of each site.

The results of these calculations are presented in Table 13 and Figure 28. It should be pointed out that the population figures produced by this process do not represent the actual population of Middle Iroquoian groups in the region. Instead, the absolute population figures produced here reflect the relative changes in Middle Iroquoian population numbers which occurred through time. When displayed as a graph (Figure 28), the population growth curve closely resembles the logistic growth curve which is typical of frontier areas. The estimates of relative population numbers indicate that there was extremely rapid population growth in the Middle Iroquoian period in Simcoe County from 748 individuals in the Uren phase, to 3,003 individuals by the end of the Middleport I phase, and 2,871 individuals by the end of the Middle Iroquoian period. This suggests that the annual population growth rate between the Uren phase and the Middleport I phase was 5.7%. Overall, the annual growth rate for the Middle Iroquoian period in Simcoe County was 1.9%. The extremely high rate of growth in the initial phase of the colonization can be explained largely by the continued in-migration into the

TABLE 13. Relative Middle Iroquoian Population Levels In Simcoe County.

SITE	PERIOD	SIZE (ha)	HEARTH COUNT	ESTIMATED POPULATION
Barrie	Uren	0.9	28	308
Holly	Uren	1.3	40	440
TOTAL				748
Beswetherick	Middleport I	1.5	47	517
Cowan	Middleport I	0.4	12	132
Cundles	Middleport I	1.2	37	407
Davey	Middleport I	2.1	65	715
Dykstra	Middleport I	0.3	9	99
Little #1	Middleport I	1.5	47	517
Little #2	Middleport I	0.5	16	176
Sparrow	Middleport I	0.3	9	99
Wellington	Middleport I	1.0	31	341
TOTAL				3,003
Angus Rawn	Middleport II	0.7	22	242
Cranston	Middleport II	2.2	68	748
Gervais	Middleport II	1.1	34	374
McRae	Middleport II	1.3	40	440
Webb	Middleport II	1.6	50	550
Wiacek	Middleport II	0.9	28	308
TOTAL				2,662
Dunsmore	Middleport III	1.9	59	649
Gratrix	Middleport III	1.2	37	407
Hunter Flos#9	Middleport III	0.6	19	209
J. Thompson	Middleport III	2.1	65	715
Kenny	Middleport III	1.6	50	550
Lougheed	Middleport III	0.6	19	209
Partridge	Middleport III	0.4	12	132
TOTAL				2,871

frontier area, as well as high fertility among the colonists. A growth rate of this magnitude is not possible in regions where considerable in-migration is not taking place. For example, calculations of growth rates during the "population explosion" of Neolithic agricultural groups show that the rates of growth rarely exceeded 1.0% (Ammerman and Cavalli-Sforza 1984:75;

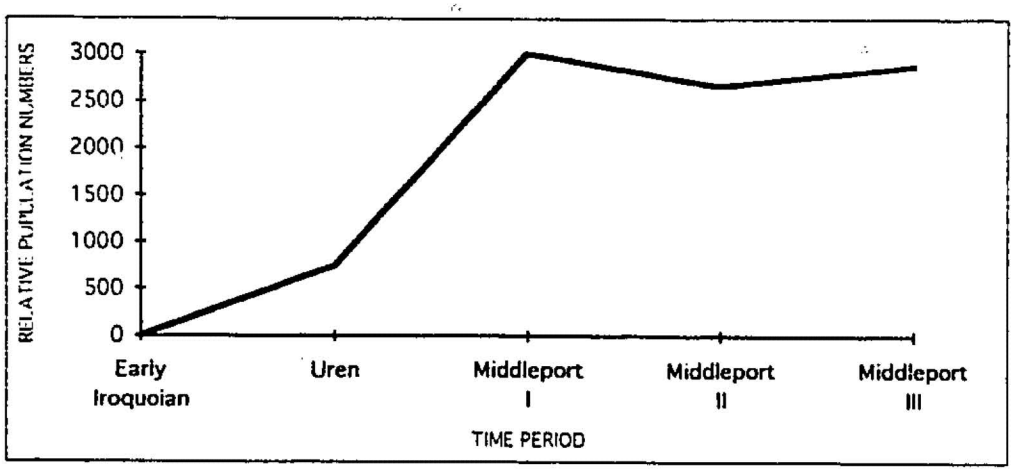


Figure 28. Simcoe County Middle Iroquoian Population Growth Curve.

Handwerker 1983: 20; Hassan 1981:221). It is only in regions which are experiencing considerable in-migration that we see annual growth rates which exceed 3.0% per annum (Lefferts 1977:41; Simkins and Wernstedt 1971:87).

The nature of the population growth curves in Figure 28 reveals several things concerning the migration process in Simcoe County. The initial colonization consisted of the establishment of a very small number of communities in the frontier area. In this case, only two Uren phase sites have been identified, the Barrie site and the Holly site. The establishment of these pioneering communities is quickly followed in the Middleport I phase by the movement of a very large number of communities into the same area. This is a typical migration pattern. Modern migration studies have shown that after an area is successfully colonized and the flow of information to the source area increases, migration volume increases as more conservative groups join the initial colonists (Simkins and Wernstedt 1977:118).

By the end of the Middleport I phase, the most intensive period of in-migration to the region appears to have ended. After the end of the Middleport I phase the population level stabilized. The estimated relative dates for the Uren substage and the Middleport substage of the Middle Iroquoian period in southern Ontario are ca. A.D. 1280-1330 and ca. A.D. 1330-1400 , respectively (Dodd et al. 1990). Assuming that these dates are applicable to Simcoe County, the most intense period of colonization occurred between ca. A.D. 1330-1355.

It has been suggested that population levels in frontier areas stabilize when the local carrying capacity is reached (Renfrew 1984:188-189). Yet in Simcoe County the Middle Iroquoian population levels appear to have begun to stabilize well before the local carrying capacity was reached. While there is no way of knowing precisely how many sites were occupied in the region during this period, the history of archaeological research in this area suggests that a relatively large portion of the total number of Middle Iroquoian village sites have been identified. The density of known Middleport I phase village sites in Simcoe County is one village site per 297 square kilometres. Even if the number of Middleport I village sites were doubled, site density would still be quite low (148 square kilometres). Detailed regional studies which have traced single Iroquoian communities through time and space suggest that the total area utilized by Iroquoian communities over a long period of time was between 40-70 square kilometres (Finlayson and Smith 1982; Pearce 1984; Warrick and Molnar 1986). Site catchment areas of individual Middle Iroquoian village sites have been consistently estimated as having a two kilometre radius (Jamieson 1986; Kapches 1981; Warrick and Molnar 1986). This would suggest that Middleport I phase sites in Simcoe County were not in danger of reaching the local carrying capacity when their population levels began to stabilize. The

main cause of population stability appears simply to have been the discontinuation of significant levels of in-migration to the region by the late fourteenth century.

CHAPTER 9

ADAPTATIONS OF THE INITIAL MIDDLE IROQUOIAN COLONISTS

Introduction

An examination of the adaptive strategies employed by the Middle Iroquoian colonists of Simcoe County is the next step in examining the migration to this region. In fact, in order to fully reconstruct the migration process as a whole, it is necessary to examine the settlement-subsistence patterns, socio-political organization and material culture of the initial colonists.

The regional and individual site settlement patterns of the colonists provide insights into their familiarity with the region prior to the colonization. Inter and intra-site comparative analysis of their subsistence strategies will also provide an indication of their prior knowledge of local resources. The settlement patterns of the pioneering communities will provide information concerning migration demography, including the size of the initial colonizing groups and their socio-political organization. Significant differences between the settlement-subsistence patterns and material culture of the colonizing groups and other Middle Iroquoian village sites located elsewhere in southern Ontario, may point to some of the possible causes of the migration. Finally, the material culture assemblages of the early pioneering communities may provide evidence of continued contact and the maintenance of a migration stream with the source area.

Theoretical Approaches For Examining Expanding Agricultural Groups

Models which were developed in the 1960's and 1970's for examining expanding agricultural groups were based on optimization models initially formulated for the study of hunting and gathering groups (Jochim 1976; Pianka 1978). These early ecological models examined subsistence strategies, settlement patterns and social organization within a cost-benefit framework which measured costs in terms of energy expenditure (Keene 1983:140). In applying this approach to expanding agricultural groups, it was assumed that agricultural groups attempted to obtain their resources with the least possible effort and risk (Green 1979:74). The entire colonization process was assumed to follow the law of least effort, and subsequent adaptations were assumed to be attempts to minimize the risk of resource shortages (Green 1979, 1980; Hamond 1981; Hess 1979). On the basis of these assumptions, several predictions were made concerning the colonization process. It was suggested that the initial colonizing groups would follow the path of least effort into the new region (Green 1979:74); that the initial colonists would settle in groups large enough to ensure that there was an adequate labour supply to clear the forest, and establish villages and plant crops (Hamond 1981: 22; Harris 1972:246); and that the colonists would settle in areas with the highest resource potential, and employ a generalized subsistence strategy until they could produce adequate agricultural yields (Green 1980:221; Hamond 1981:224). It was also suggested that the colonists would maintain some level of social interaction with their parent communities to ensure that the exchange of resources could take place in times of crisis (Hamond 1981: 224). Finally, it was expected that the population of the colonists would grow rapidly to meet the carrying capacity

of the frontier area, and to reduce the isolation and economic risks involved in settling in a new region (Green 1980:220).

In the 1980's many archaeologists became dissatisfied with narrowly defined ecological approaches which assumed that all forms of human behavior were based upon the efficient pursuit of subsistence practices (Jochim 1983: 166; Keene 1983:148). Ecological approaches became expanded in order to encompass social and political factors (Butzer 1982; Bronitsky 1983; Ellen 1982). These new approaches to hunter-gatherer and agricultural settlement-subsistence patterns examined the interaction of both environmental and socio-cultural factors, including social and technological organization, resource management and the physical environment (Butzer 1982: 243; Green and Sassaman 1983:263).

Bogucki (1980) has recently applied a similar social ecological model to the analysis of the expansion of early farming communities in north-central Europe. This approach asserts that cultural groups interrelate with their natural and social environment through a number of behavioral subsystems including subsistence, settlement patterns, demography and socio-political organization (Bogucki 1988:6). This approach still assumes that when faced with environmental uncertainties or resource stresses, people will adapt to them in a way which reduces the risks involved and ensures an adequate food supply. However, this model recognizes the fact that humans do not always follow the ideal of optimization models, because their decision making process involves a number of different cultural and environmental factors (Bogucki 1988:9).

The approach taken here encompasses the broadened theoretical framework of expanded ecological approaches. The examination of the

adaptations made by expanding agricultural groups must encompass both social and environmental factors, as well as include an understanding of the migration process itself. It is assumed here that the successful colonization of Simcoe County required the Middle Iroquoian colonists to make certain behavioral adjustments. The purpose of this chapter is to examine some aspects of these initial adaptations in terms of settlement-subsistence patterns, socio-political organization and regional interaction. This examination will focus upon data generated during the recent excavation of one of the initial pioneering Middle Iroquoian communities in the region, as well as on comparisons with other Middle Iroquoian communities located elsewhere in southern Ontario.

The Barrie Site

The Barrie site (BcGw-18) is located in the City of Barrie, in Simcoe County, Ontario. The Barrie site was first reported by Andrew Hunter (1907) as Vespra Site #41 during his exhaustive survey of the archaeological resources of Simcoe County. In 1958 Frank Ridley, an avocational archaeologist, published an article in **Ontario Archaeology** entitled *The Boys And Barrie Sites*, in which he described the results of his test excavations at both of these sites (Ridley 1958a). Ridley identified the Barrie site as a Uren substage village site, based on the comparative analysis of rim sherd assemblages. Ridley (1958a:20) recognized the continuity in material culture between the Barrie site and both the earlier Early Iroquoian period and the subsequent Middleport substage of the Middle Iroquoian period in Simcoe County. In 1976, J. Hunter (1977) conducted test excavations at the Barrie site as a part of his archaeological resource assessment of the Barrie area. Hunter estimated that

the site covered 0.5 to 0.6 hectares. His analysis of the small artifact assemblage he collected from the site led him to agree with Ridley's chronological placement of the Barrie site.

Until the recent discovery of the Holly site (OACS 1991; DRP 1995), the Barrie site represented the only confirmed Uren substage (ca. A.D. 1280-1330) village site located in Simcoe County. In order to determine how the initial Iroquoian migrants adapted to this region, it was decided that excavations should be carried out at one of the earliest known Middle Iroquoian communities in the area. The Barrie site was the obvious choice. It also became apparent while conducting some preliminary research on the Barrie site in 1991, that there was a strong possibility that a large portion of the site would soon be destroyed by house construction. It was therefore decided to conduct a salvage excavation of the threatened portion of the site. With financial support provided by the Ontario Heritage Foundation, The Huronia Museum, and the City of Barrie, salvage excavations were conducted at the Barrie site between 1991 and 1993.

The objectives of the excavation represented a combination of research oriented questions, and a basic desire to salvage those portions of the site which were threatened by development. The most basic goals of the excavation were to determine the Barrie site's precise size and function. To that end, extensive excavations were undertaken to identify the nature of the settlement patterns at the site, and to recover a representative artifact sample. The data recovered formed the basis of a more detailed analysis of the community's population size, social organization, subsistence strategies, local environment, and level of regional interaction with both indigenous groups and parent communities in the colonists' source area. The results of the

excavation which are relevant to this study are discussed below. For a more detailed descriptive analysis of the Barrie site excavation results, the reader is referred to Sutton 1991 and 1996.

Site Location And Local Environment

The Barrie site is located on a sandy loam terrace (245 m. asl.), adjacent to the Simcoe Uplands which rise behind it to a height of 300 m., asl. The terrace occupied by the site is 25 metres above the floor of a wide, flat bottomed valley which is a part of the Simcoe Lowlands physiographic region (Figure 29).

The Barrie site itself, and much of the adjacent upland area, are located on sandy loam soils of the Tioga series. The Tioga series sandy loam soil is well drained, with a low moisture holding capacity and low natural fertility. On the class scale of 1 to 7 which has been established by Environment Canada (1967) for determining the capability of soils to sustain modern agriculture, the Tioga series sandy loam in this area is rated as Class 3. This area of sandy loam soils in the area of the Barrie site extends for a short distance southward on to the valley floor. The surrounding lowlands contain large swampy areas and poorly drained sandy loam soils.

The Barrie site is bisected by Dyments Creek, which issues as a spring part way down the upland slope just north of the site area. Dyments Creek flows southward down onto the valley floor and then turns eastward to drain into Kempenfelt Bay and Lake Simcoe, located only 3 kilometres east of the site. The site area on both sides of the creek was used for agricultural purposes from the late nineteenth century until the 1960's. The site is now located within an urban environment, on the western edge of the City of Barrie. The

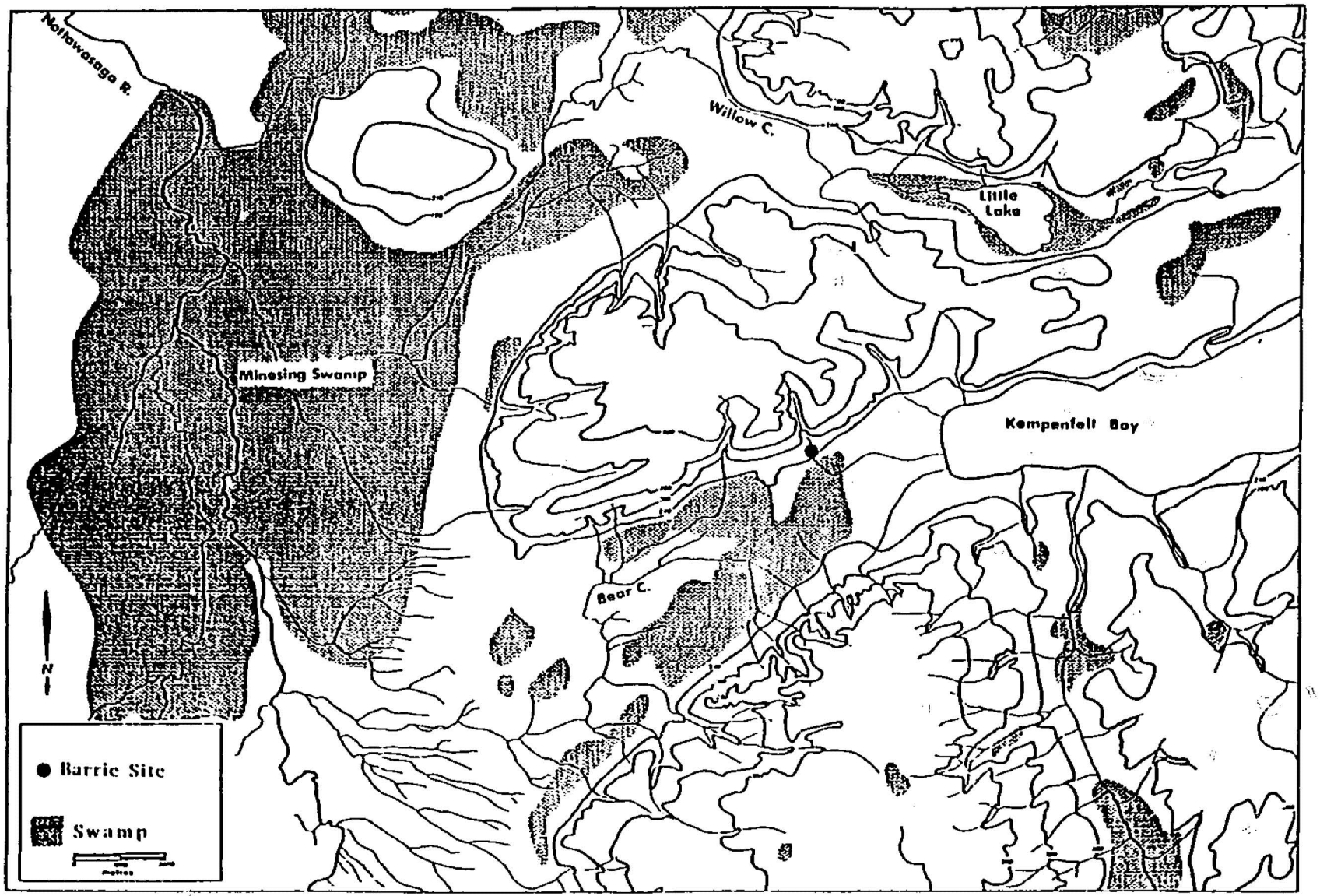


Figure 29. Location of the Barrie Site.

results of previous research at the site combined with my own investigations between 1991 and 1993, suggest that the original size of the Barrie site was in the area of 0.8 to 0.9 hectares. Subsequent urban development in the form of a parking lot and city street have destroyed or rendered inaccessible approximately 0.3 hectares, or 30% of the original site area. Approximately 0.5 to 0.6 hectares of the site is located east of Dyments Creek, while another 0.3 hectares is located west of the creek (Figure 30).

Excavation Methods

In 1991 twenty-two one metre units were excavated in five discrete areas of the Barrie site in order to determine the site's integrity and information potential (Sutton 1991). The test excavation confirmed that the site was still relatively intact, and contained recognizable settlement patterns and undisturbed midden areas. More extensive excavations were carried out at the Barrie site over a four month period in the summer of 1992. A series of 78 one metre square test units were excavated at five metre intervals across the suspected site area on the east half of Dyments Creek in order to determine the site's size, and to identify potential midden areas.

Shovel test pitting at five metre intervals on the west side of Dyments Creek immediately opposite the known area of the Barrie site revealed that the site also extended into this area. A series of 50 x 50 centimetre test units were then excavated at five metre intervals in the area west of the creek to determine the extent of the site in this area. A total of 101 50 x 50 centimetre units were excavated, consisting of 74 positive and 27 negative units. Also, a single one metre unit was excavated in a plough disturbed midden (Midden E) located along the extreme northwestern periphery of the site. The small

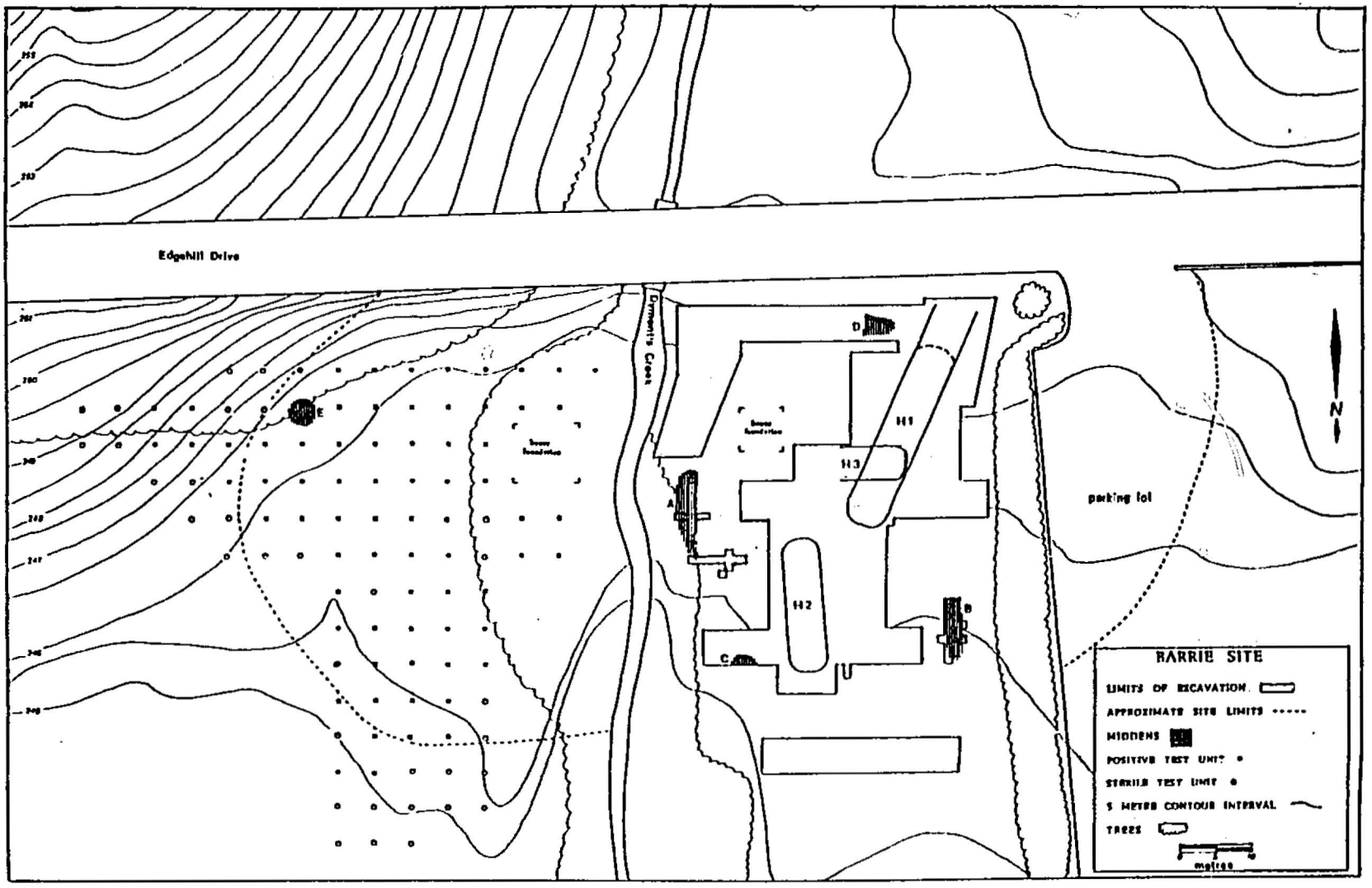


Figure 30. Results of the 1991-93 Excavations at the Barrie Site.

diagnostic artifact assemblage recovered from this area suggested that the occupation areas on the east and west sides of the creek were contemporaneous with one another.

Given the low density of artifacts in the ploughzone over the eastern site area, and the plans to develop this portion of the site, it was decided that select areas would be stripped of the ploughzone to facilitate settlement pattern identification. This soil stripping was carried out by a gradall. Midden areas were avoided, and the ploughzone stripping was limited to the area of the proposed development. The total area stripped was approximately 1200 square metres in size. Once an area was stripped, it was shovel shined and trowelled in order to identify features and postmoulds. Feature and post mould locations were recorded using cross tape triangulation from two five metre grid stake corners. Post mould diameter was also recorded, and approximately 35% of the posts were sectioned to confirm their identity and measure their depth and angle. All feature plan views and profiles were measured, mapped and photographed. All prehistoric and historic features had their fill screened through 6 mm. mesh. Flotation samples were taken from a representative sample (38%) of the prehistoric features, support posts and undisturbed midden areas. A total of 751 litres of soil was gathered for flotation. Flotation was carried out on site, utilizing the two bucket method. The heavy fraction from the flotation was screened through 3 mm. mesh while the light fraction was gathered from a series of fine mesh screens (0.8-0.425 mm).

In 1993, some additional salvage excavation was carried out at the Barrie site in advance of construction activities associated with the expansion of the Dyments Creek culvert. This resulted in the excavation of 10 one metre square units and the mechanized stripping of a 175 square metre area just east

of Dyments Creek. Overall, between 1991 and 1993 a total of 152 one metre square units and 101 50 x 50 centimetre units were hand excavated at the site. A total of 1,375 square metres were excavated with the aid of heavy machinery. The total area excavated represents approximately 17% of the estimated original site area.

Settlement Patterns

Longhouses

The identification of prehistoric settlement patterns at the Barrie site was hampered by the leaching of organic material through the fine sandy soils of the site, and disturbance caused by recent cultural activity. Nonetheless, two or possibly three longhouses were identified in the area excavated on the east side of Dyments Creek. One longhouse, House #2, was completely excavated, while portions of two other houses (House #1 and House #3) were partially excavated. All three of the houses were oriented in different directions (Figure 26).

House #1 is located in the northeastern section of the site. The original length of House #1 was 25.7 metres, with a maximum width of 6.7 metres. The maximum house length appears to have been extended at least another 6.5 metres beyond this, resulting in a length of 32.2+ metres. The north end of House #1 appears to have been destroyed by the construction of a road. House #1 contains at least 48 features including 3 central hearths, 2 peripheral hearths, 14 ash pits, 1 semi-subterranean sweatlodge, 1 refuse pit and 27 general purpose pits. The concentration of features and post moulds near the south end of House #1 suggests that there may have been a third house in this area of the site (House #3). However, due to the presence of a

large historic feature just west of this area, the presence of a third house could not be confirmed.

House #2 is located in the southwestern portion of the site. It was 17.6 metres long and 6.1 metres wide. House #2 contained a total of 36 features, including one central and one peripheral hearth, 4 ash pits, 1 semi-subterranean sweatlodge and 29 general purpose pits. In addition to the longhouses at the Barrie site, there were a total of 39 exterior features (excluding four midden areas) which were identified. This total includes 2 hearths, 12 ash pits and 26 general purpose pits. The Barrie site appears to have been unpalisaded. The exterior post moulds and features do not appear to form any identifiable pattern.

Middens

A total of five midden areas were identified at the Barrie site. Midden A is located along the east bank of Dyments Creek. Its size is estimated to have been approximately 85 square metres. The southeast portion of this midden was heavily disturbed by the construction in the 1970's of a septic tank drainage bed. This drainage bed was associated with a nearby house which was recently abandoned. A total of 18 one metre squares were excavated in Midden A. The northwestern section of the midden was stratified and contained an undisturbed layer of cultural material ranging in depth from 5-36 centimetres. Midden B is located along the southeast periphery of the site. Its precise dimensions are not known, but it covers at least a 20 square metre area. A total of 20 one metre squares were excavated in Midden B. Eighteen of these squares contained a thin, undisturbed cultural layer varying in depth from 1- 5 centimetres. Midden B was created by the placement of cultural

refuse in a narrow natural gully which runs north-south along this section of the site. Midden C is located in a natural depression along the southern periphery of the site. This small midden is 3.7 metres long along its east-west axis. Its dimensions running north-south are unknown. The undisturbed portion of Midden C had a maximum depth of 40 centimetres, and was stratified into three successive layers. Midden D is located at the north end of the site. This midden appears to originally have been a deep pit which was gradually expanded and filled with refuse. It is irregular in shape and had dimensions of 4.3 x 3.6 metres. Its maximum depth is 70 centimetres, and its undisturbed portion is stratified into three layers. Midden E is located west of Dyments Creek along the extreme northwestern periphery of the site. A single one metre square was excavated in this midden. It was completely plough disturbed. The dimensions of Midden E are not known.

Site Function

Iroquoian village sites are generally defined as large nucleated settlements which contained multiple contemporaneous multi-family longhouse structures and discrete midden areas (Noble 1975:38). While Iroquoian villages served as year round settlements, they were primarily occupied during the winter months when there was decreased activity away from the village at special purpose hunting, fishing, and horticultural campsites (Thwaites 1896-1901 8:143; 10:51-53). While Iroquoian researchers have tended to concentrate on locating and excavating village sites, a small but representative sample of Iroquoian special purpose sites have also been identified and excavated. This includes hunting camps (Poulton 1985a), fishing camps (Smith 1979; Pendergast 1969; Wright 1972a, 1972b), wild plant

gathering and nut processing camps (Williamson 1983), and agricultural cabins and campsites (MacDonald and Cooper 1992; Williamson 1983). A number of different attributes have been identified which help to distinguish Iroquoian village sites from special purpose sites including site size, location, extent of settlement patterns, artifact density and composition, and floral and faunal assemblages (Lennox 1984; Noble 1975; Pendergast 1969; Poulton 1985a; Smith 1979; Williamson 1983). Site size is often the first and most obvious general indication of Iroquoian site function. While Middle Iroquoian village sites range in size from 0.3 to 4.0 hectares (Dodd et al. 1990: Table 10.4), most special purpose sites are under 0.3 hectares in size (Warrick 1990: 219). Site location also provides a general indication of site function. Fishing camps, for example, are always located immediately adjacent to major bodies of water such as lakes or rivers, usually in low lying or poorly drained locations (Pendergast 1969; Smith 1979; Tummon and Gray 1994; Wright 1972a, 1972b). Village sites are usually located farther inland from major bodies of water on well drained soils in upland or tableland locations (Dodd et al. 1990).

The clearest indications of Iroquoian site function are the nature and extent of settlement patterns. Many Iroquoian hunting, fishing and gathering campsites do not contain any evidence of longhouse structures or midden areas. Instead, when present, sub-surface features at these sites are generally limited to a small number of pit or hearth features, and a sporadic distribution of post moulds (MacDonald and Cooper 1992; Smith 1979; Timmins 1993; Tummon and Gray 1994; Warrick 1988a; Wright 1972a). The lack of substantial sub-surface features at these sites is interpreted as reflecting their brief period of occupation and/or their use on a seasonal basis. The brief period of occupation at many of these special purpose sites is also reflected in

the small size and low density distribution of their artifact assemblages. In the case of fishing camps, the artifact assemblages are often multi-component, reflecting the repeated use of these locations over hundreds or thousands of years (Smith 1979; Timmins 1992; Wright 1972a).

Some Iroquoian sites which have been interpreted as special purpose camps do contain one or more longhouse structures (Poulton 1985a; Williamson 1983, 1985; Wright 1972b). The Uren substage Willcock site consisted of a single longhouse and has been interpreted as a late fall to winter hunting site, as well as a spring fishing site (Poulton 1985a). A winter occupation of this site was suggested by the concentrated nature of features in the longhouse, including central hearths and storage pits, and by the low number of exterior house features (Poulton 1985a:78). The Robin Hood site contained four longhouses, and was interpreted as a warm season cabin site occupied for planting, maintaining and harvesting corn fields (Williamson 1983:57). This interpretation was based in part on the low density of features within the longhouses. Only 38.5% of the features at this site were located within the houses. The majority of features were located in exterior areas, suggesting that most of the activity at the site took place outdoors. The Robin Hood site also apparently contained very few central hearths or interior ash pits, again suggesting a warm season occupation (Williamson 1983:55). The general paucity of artifacts, a lack of midden areas, and settlement data led to the conclusion that this was a seasonally occupied site. At the Steward site, a fishing site on the St. Lawrence River, several large longhouses were also uncovered (Wright 1972b). These longhouses deviated from typical longhouse forms in that they were quite wide, and contained very few interior features. Wright (1972b:7) interpreted this as reflecting a lack of concern for heating

the structures, a lack of indoor activity, and the possible use of the buildings for drying fish.

Faunal assemblages may also provide an indication of site function. The faunal assemblages from Iroquoian village sites usually contain a wide variety of species. Iroquoian special purpose sites which were only occupied for a brief period of time often contain very little in the way of faunal material (MacDonald and Cooper 1992; Williamson 1983). Faunal assemblages from hunting camps may be dominated by a single mammalian species such as white-tailed deer (Williamson 1985: 256), while fishing camps will be heavily dominated by various species of fish (Pendergast 1969: 45). Paleobotanical analysis has also been utilized to determine Iroquoian site function. Williamson (1983: 39) has argued that the prevalence of carbonized seeds of fleshy fruits at the Robin Hood site, supports the interpretation of this site as an Iroquoian agricultural cabin site that was only occupied during the summer months. However, plant remains are considered by paleoethnobotanists to be very poor indicators of seasonality because they can be dried and stored for winter use (Monckton 1992:10). The absence of paleobotanical material from a site, or the low frequency of cultigens within the carbonized seed assemblage, have also been used to support a non-village function for some Iroquoian sites (Pendergast 1969:46; Williamson 1983:39).

The Function Of The Barrie Site

The size and location of the Barrie site is typical of Middle Iroquoian village sites in both Simcoe County and southern Ontario in general. The estimated size of the Barrie site is between 0.8 to 0.9 hectares. Within southern Ontario, Uren substage village sites range in size from 0.4-2.0 hectares, with an

average of 1.0 hectares (Dodd et al. 1990 Table 10.4). In Simcoe County, Middle Iroquoian village sites range in size from 0.3 to 2.2 hectares, with an average of 1.1 hectares. The location of the Barrie site is also typical of Middle and Late Iroquoian village sites in Simcoe County. Heidenreich (1971:111) was the first to note that the majority of village sites in Huronia were located on the edges of the upland areas, along the terraces or recessional shorelines of glacial Lake Algonquin. The well drained sandy soil uplands provided conditions suitable for permanent settlements and corn horticulture. More importantly, the major sources of water in the uplands are the numerous springs or creeks which emanate from the edges of the uplands and drain into the lowlands (Heidenreich 1971:11). There is generally a lack of surface water in the interior areas of the uplands in Simcoe County, which explains the location of village sites on the upland edges. Of the 24 confirmed Middle Iroquoian village sites in Simcoe County, 17 villages, or 70.8% of the total (including the Barrie site), are located along the edges of the uplands (Figure 31).

The settlement patterns at the Barrie site also indicate that it was a village site occupied throughout the year. The Barrie site longhouses are fairly typical Iroquoian longhouses in that they contain a high density of features and post moulds, including central hearths, ash pits and general purpose storage pits. The location of central hearths and ash pits within the Barrie site longhouses suggests that they were occupied during the cold winter months. One hundred and fifteen (74.7%) of the 154 prehistoric features encountered at the Barrie site were located inside the longhouses. This also suggests that the site was occupied in the winter when most activities took place indoors.

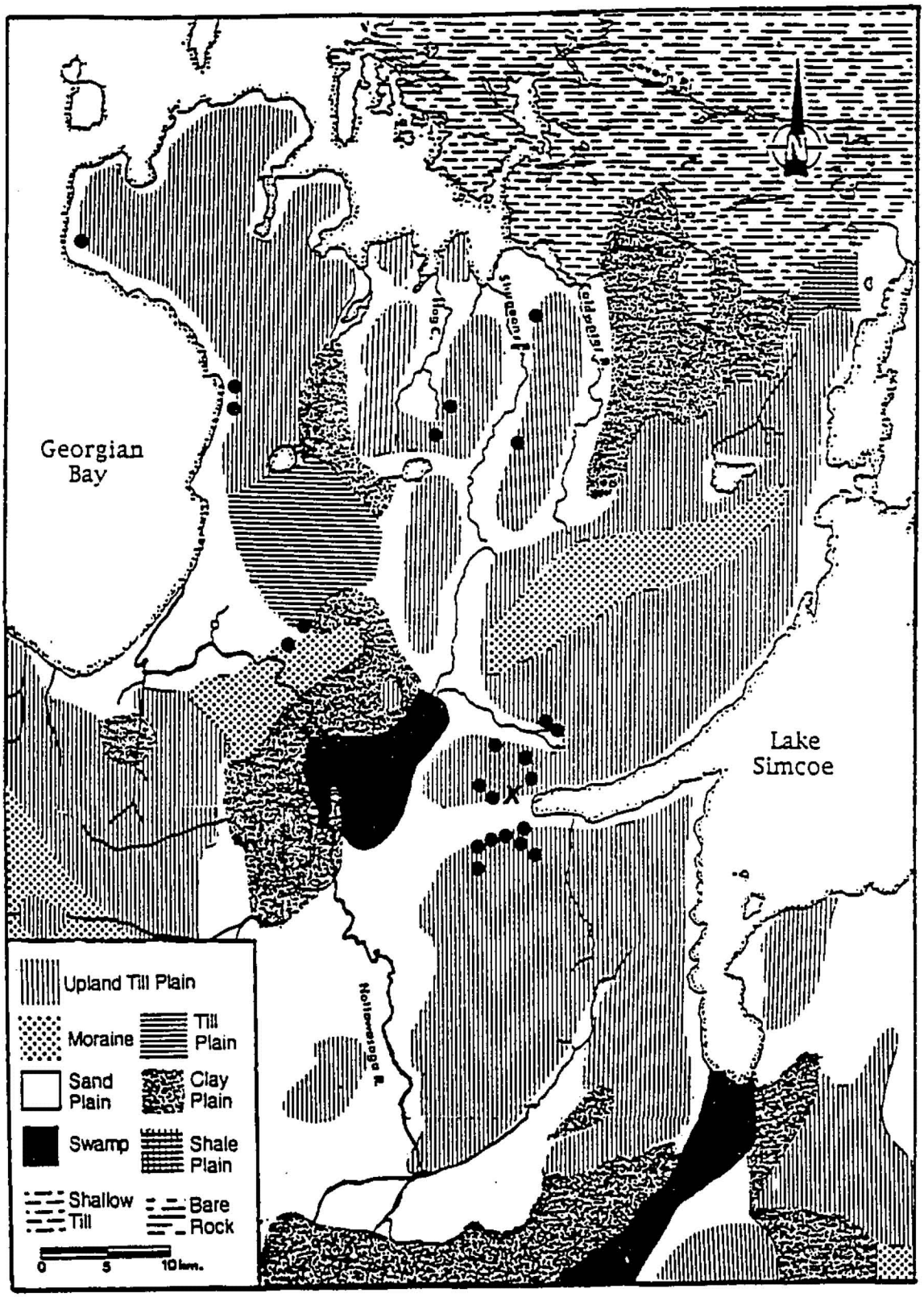


Figure 31. Relationship Between Physiographic Regions and the Location of Middle Iroquoian Village Sites in Simcoe County.

In House #2 at the Barrie site, there were 2.98 features per square metre, and 1.93 posts per square metre. The density of features within Uren substage longhouses averages 0.63 features per square metre, while interior house post mould densities average 1.47 posts per square metre (Dodd et al. 1990:349). Assuming that interior feature and post mould densities reflect the relative length of occupation (Dodd 1984:298), this would suggest that House #2 was occupied for a considerable length of time. It has been suggested that house wall post density (calculated as the number of house wall post moulds per linear metre of house wall) also reflects the length of site occupation on Iroquoian sites. It is assumed that a longhouse which was occupied over a long period of time will contain a high density of wall posts due to the continual replacement of rotted posts (Dodd 1984:284-285; Lennox 1984:266; Warrick 1988b:34). House #2 at the Barrie site had an average of 5.2 house wall post moulds per metre. This is only slightly lower than the average of 5.5 posts per metre calculated by Warrick (1988b: Table 9) for Middle and Late Iroquoian village sites in southcentral Ontario. This suggests that the length of the occupation of the Barrie site was comparable to the 10-30 years which has been estimated for other Middle and Late Iroquoian village sites (Fitzgerald 1986:4; Sykes 1980:51; Thwaites JR 10:275, 15:153; Warrick 1988b:49).

What cannot be determined at this time is whether the function of the Barrie site changed through time. Prior to the late thirteenth century, Iroquoian village site locations were abandoned and reoccupied over a considerable period of time (Dodd et al. 1990:357; Timmins 1992:180; Williamson 1990:306). The function of some of these site locations changed through time, evolving from seasonally occupied hunting or fishing camps, to more sedentary village sites (Timmins 1992:180). This is reflected in the complex

settlement patterns at many Early Iroquoian village sites, where there are multiple overlapping houses and palisade enclosures. By the late thirteenth century, as the reliance on corn horticulture increased, Iroquoian village sites appear to have become more permanent, and were occupied for a shorter period of time. The function of most Middle Iroquoian village sites does not appear to have changed through time. Although village size and the number of contemporaneous longhouses within a village may have changed, during the Middle Iroquoian period these sites appear to have begun and ended their use lives as permanent village occupations. This is reflected in the general lack of overlapping structures and the planned appearance of many Middle Iroquoian villages (Dodd et al. 1990:357; Trigger 1985:92; Williamson 1990:319).

While the complexity of the occupation history of Iroquoian villages may have lessened by the end of the thirteenth century, this may not have been true of pioneering Middle Iroquoian communities. A fascinating insight into the process of establishing an horticultural community in a distant region is provided by Wright's (1974) complete excavation of the Nodwell site. The Nodwell site is a late Middle Iroquoian village site located near Port Elgin, in Bruce County, Ontario. It is the only known Iroquoian village site in the region. The closest contemporaneous group of Middle Iroquoian village sites is located 120 kilometres to the east in Simcoe County. The Nodwell site clearly represents a pioneering Middle Iroquoian community (Wright 1974:303). The site consists of 12 longhouses surrounded by a double row of palisade, with one additional longhouse located outside of the palisade (Figure 32). The arrangement of the longhouses within the village and the artifact assemblage suggests that they were all generally contemporaneous with one another. The one exception to this was House #5, which was located in the central portion of

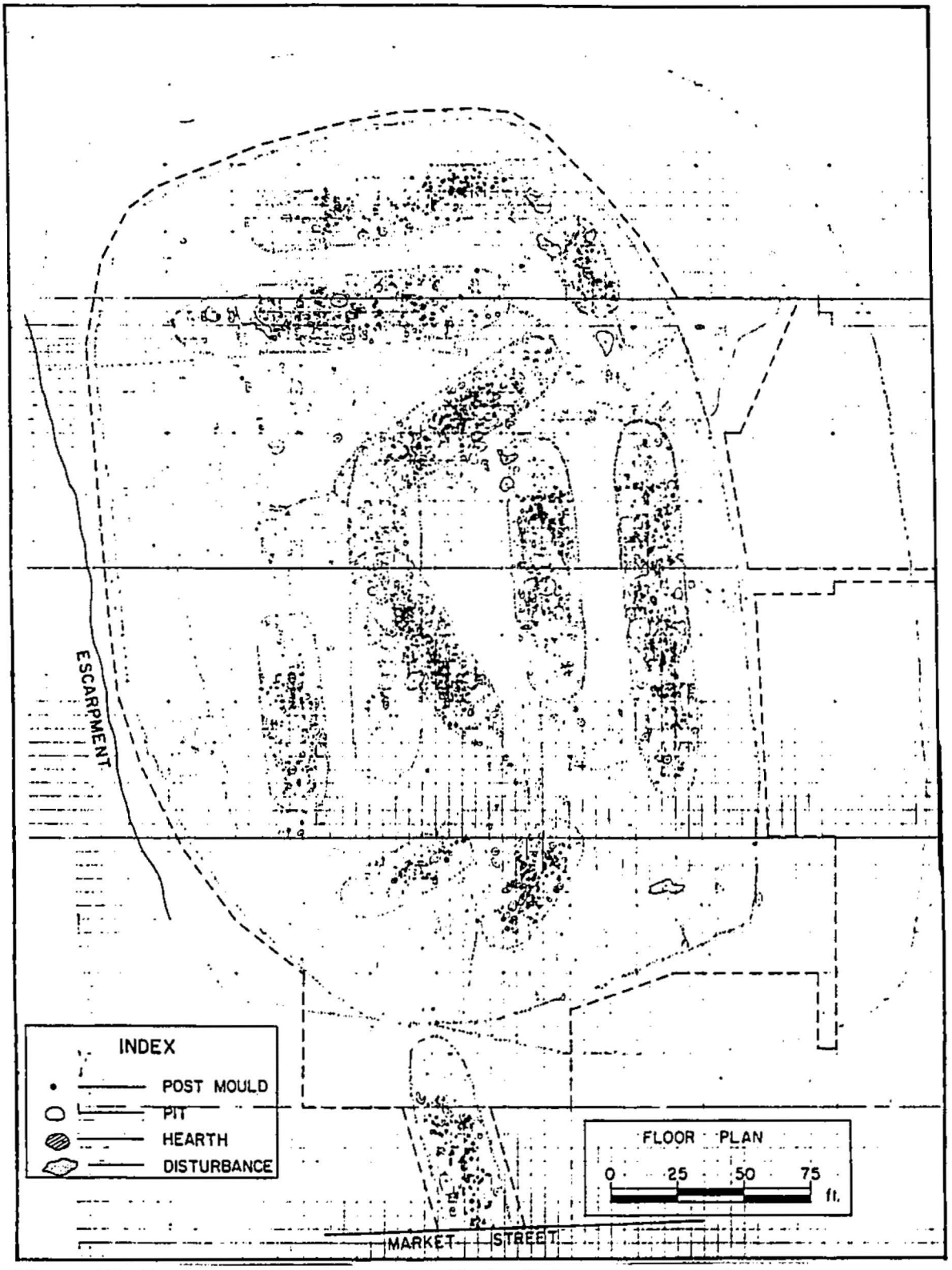


Figure 32. Settlement Patterns at the Nodwell Site (after Wright 1974: Figure 2).

the village and was overlapped by two later houses. House #5 was quite different from the other houses at the site. In comparison to the other houses, House #5 had a very low interior feature and post density, suggesting that it was only occupied for a short period of time (Wright 1974:67). The faunal assemblage from House #5 had the highest frequency of fish, bird and amphibian elements from the site, suggesting that it was only occupied in the spring, summer and fall (Stewart 1974:48). Overall, House #5 appears to have been a temporary structure occupied sometime between the spring and fall. Wright (1974:34) suggests that House #5 was constructed and occupied by the initial work parties who established the village. The house was then torn down and replaced with more permanent structures when the remaining members of the community arrived.

To determine whether the Barrie site was established in a fashion similar to the Nodwell site would require additional large scale excavation. Analysis of the faunal components from the different longhouses and stratified midden deposits at the site failed to reveal any significant spatial differences, and does not suggest a change in site function through time. Comparative analysis of the diagnostic ceramics from the different site components suggests that they were all roughly contemporaneous with one another. If the site did evolve from a seasonally occupied camp site into a village site, it was over a very short period of time.

Artifact Analysis

A total of 15,037 artifacts were recovered during the 1991-1993 excavations at the Barrie site. As with most Iroquoian village sites in Simcoe

County, this total is dominated by ceramics, followed by a very small lithic assemblage (Table 14).

TABLE 14. Barrie Site Artifact Classes

Class	#	%
Ceramics	13833	92.0
Lithics	1194	7.9
Worked Bone	10	0.1
Total	15,037	100.0

The Barrie site ceramic assemblage is dominated by ceramic body sherds, followed by rim sherds, shoulder sherds, neck sherds, and a small pipe assemblage (Table 15). A total of 869 rim sherds and rim sherd fragments were recovered from the Barrie site between 1991 and 1993. Of this total, 398 rim sherds were considered to be analyzable in that they have an intact lip, collar, collar base, interior, and at least a portion of the neck. Following the matching of rim sherds from the same vessel, and the exclusion of isolated castellations and juvenile vessels, the rim sherd assemblage is reduced to a minimum vessel count of 275. The Ridley (1958a) artifact collection from the Barrie site, housed at the Huronia Museum in Midland, contained an additional 58 analyzable rimsherds. This collection was reanalyzed and combined with the 1991-1993 assemblage, to bring the total minimum vessel count to 333. The results of a typological and selected individual attribute analysis of the Barrie site rimsherds have already been presented in Chapter 7 and 8 of this dissertation. For a more detailed descriptive analysis of the entire Barrie site ceramic assemblage the reader is referred to Sutton 1996.

TABLE 15. Barrie Site Ceramics

Item	#	%
Pottery Vessels		
Body sherds	12729	92.0
Shoulder Sherds	130	0.9
Neck Sherds	84	0.6
Rim Sherds	869	6.3
Pipes		
Stems	3	0.02
Bowls	18	0.1
Total	13833	99.92

Lithic Analysis

The lithic tools and debitage from the Barrie site include 1,194 chipped and ground stone artifacts which account for 7.9% of the total artifact assemblage by count. The lithic assemblage is dominated by chipped stone debitage which accounts for 79.3% of the entire lithic assemblage, followed by utilized flakes (7.5%), cores (4.2%), and a variety of more formal chipped and ground stone tools (Table 16).

The small size of the Barrie site chipped lithic assemblage is typical of Iroquoian sites in Simcoe County and in southcentral Ontario in general. These regions of Ontario lack primary source areas containing high quality cherts. As a result, Middle Iroquoian sites in Simcoe County (Barrie, Wiacek) and in the Toronto area (Elliot, Thompson, New, and Robb), contain very small chipped lithic assemblages in relation to the large ceramic assemblages (Figure 33). Other Middle Iroquoian sites located closer to high quality chert source areas in the Hamilton area (Gunby, Olmstead), contain much larger chipped lithic assemblages.

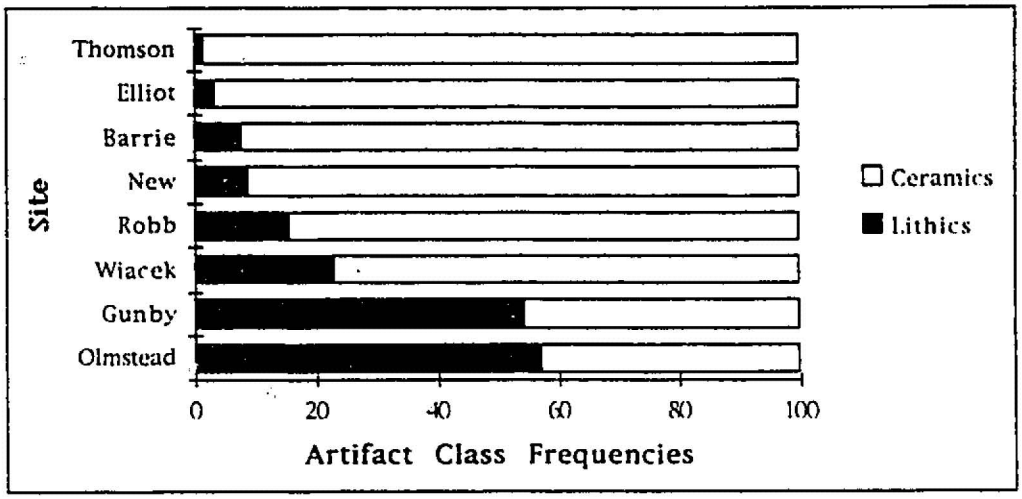


Figure 33. Artifact Class Frequencies on Middle Iroquoian Village Sites.

TABLE 16. Barrie Site Lithics

ITEM	#	%
Debitage	945	79.3
Utilized Flakes	90	7.5
Cores	50	4.2
Scrapers	31	2.6
Gravers	17	1.4
Wedges	13	1.1
Projectile Points	13	1.1
Hammerstones	7	.6
Bifaces	5	.4
Celts	5	.4
Misc. Groundstone	4	.3
Grinding Stones	3	.3
Abraders	3	.3
Drills	3	.3
Whetstones	2	.2
Pestles	1	.1
Netsinkers	1	.1
TOTAL	1194	100.2

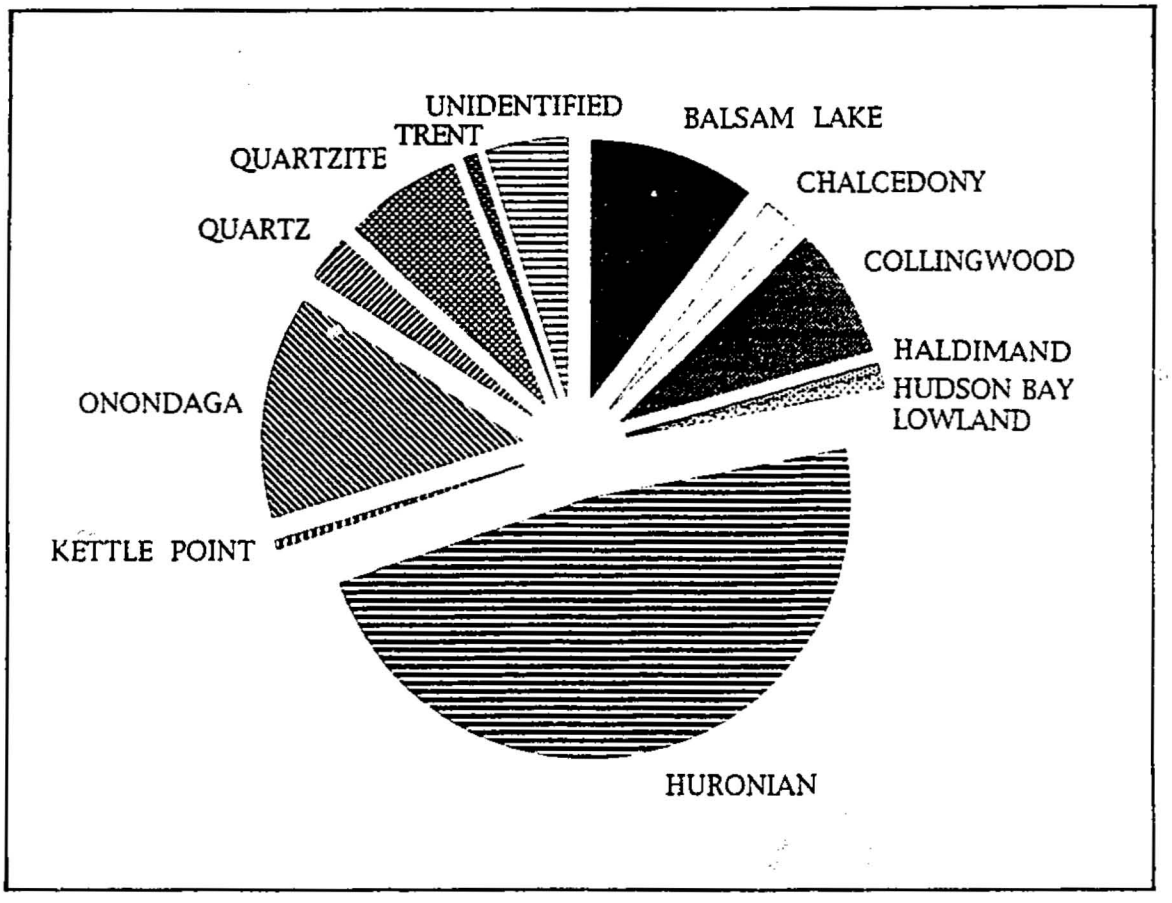


Figure 34. Barrie Site Chipped Lithic Material Types.

The wide variety of chert types found at the Barrie site (Figure 34) is also typical of Iroquoian sites in this region (Fox 1979:80; Lennox et al. 1986:76). The majority of the assemblage consists of cherts which were available as small water worn nodules in the local tills, such as Huronian, Balsam Lake and Trent chert, along with quartz, quartzite and chalcedony (Fox 1979:80; Lennox et al. 1986:77). These local cherts account for 63.0% of the Barrie site assemblage by count. However, there is a fairly high incidence of exotic cherts at the site, representing 21.2% of the debitage assemblage.

Imported cherts such as Onondaga, Kettle Point and Haldimand chert originated from the Niagara Peninsula and southwestern Ontario (Fox 1979). Collingwood chert was obtained from the Bruce Peninsula or the Collingwood area, while Hudson Bay Lowland and Detour chert originated from the north shore of Lake Huron (Fox 1991). Locally available cherts, such as Huronian chert, derive from small nodules which are difficult to work and have a high percentage of inclusions. The preference for higher quality imported cherts is made obvious by comparing the debitage material types with the utilized and retouched chipped stone tool material types (Tables 17 and 18). In contrast to the debitage assemblage, almost half of the chipped stone tool assemblage consists of imported cherts (48.8%).

TABLE 17. Barrie Site Debitage Material Types

MATERIAL	#	%
Huronian	400	42.3
Onondaga	117	12.4
Balsam Lake	86	9.1
Collingwood	67	7.1
Quartzite	60	6.3
Quartz	23	2.4
Chalcedony	19	2.0
Hudson Bay Lowland	7	.7
Trent	7	.7
Haldimand	4	.4
Kettle Point	4	.4
Detour	1	.1
Burnt	109	11.5
Unidentified	41	4.3
TOTAL	945	99.7

It is difficult to compare the variety of chert types found at the Barrie site to other Middle Iroquoian sites located elsewhere because of a lack of

detailed analyses of the lithic assemblages from most of these sites. As would be expected, Middle Iroquoian sites located close to the source areas for high quality Onondaga chert near Lake Erie contain lithic assemblages which are almost exclusively made from that chert type (Welsh and Williamson 1994:25; Wright 1986:21). Although detailed analyses regarding the lithic assemblages from Middle Iroquoian sites in the Toronto area are not yet available, Late Iroquoian lithic assemblages in this region are also heavily dominated by imported Onondaga chert (Poulton 1985b:4).

TABLE 18. Barrie Site Utilized and Formal Tool Material Types

MATERIAL	#	%
Onondaga	73	42.4
Huronian	59	34.3
Balsam Lake	7	4.1
Collingwood	7	4.1
Quartzite	6	3.5
Chalcedony	3	1.7
Hudson Bay Lowland	2	1.2
Trent	2	1.2
Quartz	1	.6
Detour	1	.6
Haldimand	1	.6
Burnt	8	4.7
Unidentified	2	1.2
TOTAL	172	100.2

Debitage Morphology

The chipped stone assemblage from the Barrie site was analyzed and categorized following the methods and formats outlined by Fox (1979) and Lennox et. al (1986). The most common category is shatter (47.7%), followed by broken flakes (21.3%), primary flakes (8.9%), biface thinning flakes (8.9%),

secondary decortication flakes (7.5%), primary decortication flakes (3.9%) and secondary retouch flakes (1.8%). The debitage category is dominated by local cherts (65.2%). The broken flake category is made up of 56.7% local cherts and 27.4% imported cherts. The primary flakes consist of 58.3% local chert specimens, and 34.5% imported chert. The biface thinning flake category is made up of 66.2% local cherts and 33.8% imported cherts. Of the 108 primary and secondary decortication flakes, 81(75%) are made from local cherts. All of the analyzable cortex areas of these flakes were nodular in shape, indicating that they were obtained from secondary (local till) sources. The low frequency of decortication flakes from imported cherts suggests that most of these chert types were traded as rough or finished bifaces.

Cores

A total of fifty lithic cores were recovered from the Barrie site. The vast majority of these are bipolar cores (84%), followed by random (12%) and unipolar (4%) cores. The bipolar cores were produced from Huronian chert (45.2%), Balsam Lake chert (14.3%), Onondaga chert (7.1%), Collingwood chert (7.1%), chalcedony (4.8%), Detour chert (2.4%), quartz (2.4%) and quartzite (2.4%). The high frequency of bipolar cores is typical of sites in Simcoe County (Fox 1979:82; Lennox et. al 1986:82). The bipolar technique was often utilized in areas where lithic resources were scarce. By placing the core on an anvil and striking it from above, additional flakes could be removed from an exhausted random core (Lennox et al. 1986:82). This technique also allows flakes to be removed from small nodular till cherts which cannot be hand held (Poulton 1985b:5). In Simcoe County, 90-100% of the lithic cores recovered from most Middle and Late Iroquoian sites are bipolar (Fox 1979:63; Lennox et

al. 1986:82). At other Middle Iroquoian sites which are located closer to the primary sources of high quality chert, reported bipolar core frequencies range between 51% and 56% of the total core assemblages (Rozel 1979:66; Wright 1986:24).

Utilized Flakes and Formal Tools

Utilized flakes and formal tools (projectile points, drills, scrapers, bifaces, gravers, wedges) account for 18.9% of the total chipped stone assemblage by count from the Barrie site. The tool to debitage ratio of 1:5 at the Barrie site indicates extensive utilization of the lithic resources which were available to the site's inhabitants. In fact, this ratio is among the highest reported for a Middle Iroquoian lithic assemblage. At the Wiacek site, the tool to debitage ratio was 1:11 (Lennox et al. 1986), while those reported for the Elliot and New sites in the Markham area are 1:7 and 1:16 respectively (Kapches 1981). Middle Iroquoian sites located closer to high quality chert source areas, such as Gunby (Rozel 1979) and Olmstead (Welsh and Williamson 1994), have tool to debitage ratios of 1:30 and 1:25.

Summary of the Barrie Site Lithic Assemblage

The initial Middle Iroquoian colonists of Simcoe County employed a number of different strategies in order to adapt to the poor lithic resources of the region. A wide variety of different materials was utilized, including ten different chert types, as well as quartz and quartzite. Higher quality imported cherts from the Niagara peninsula were used for many of the utilized flakes and formal tools at the site. The presence of a significant amount of Onondaga chert indicates that there was continual contact and communication between

the colonists and other Iroquoian groups to the south and southwest. The flow of information and trade goods between the two regions was probably continuous as a result of the maintenance of a migration stream or travel route between the colonists' source and destination areas.

The majority of the chipped stone assemblage consisted of local cherts, indicating that the colonists were quick to take advantage of local chert resources. This also suggests that the colonists' had some familiarity with local lithic resources prior to the colonization. Although the quantity and quality of the local lithic resources were low, what was available was utilized to the maximum possible extent. The use of the bipolar technique maximized flake production. Also, the high ratio of tools to debitage indicates that the small quantity of chert which was available was extensively utilized.

Faunal Analysis

The Barrie site prehistoric faunal assemblage is derived almost exclusively from undisturbed subsoil features and post moulds, and plough disturbed and undisturbed midden areas. The majority (67.8%) of the total faunal assemblage by count was recovered by dry sieving through 6 millimetre mesh. The remaining portion of the assemblage was derived from heavy and light flotation fractions. The initial identification of the faunal elements to the class level was conducted by the author. The breakdown of the assemblage by faunal class is presented in Tables 19 and 20, and suggests that fish and small mammals were the principal meat supplement to the diet of the Barrie site inhabitants.

TABLE 19. Barrie Site Faunal Remains Identified To Class

Class	#	%
Osteichthyes	2368	71.9
Mammalia	688	20.9
Aves	106	3.2
Pelecypoda	68	2.1
Reptilia	62	1.9
Amphibia	3	0.1
Total	3295	100.1

* excludes unidentifiable total of 167 (represents 4.9%) of total of 3462

A more detailed analysis of the Barrie site faunal assemblage was conducted by Suzanne Needs-Howarth (1995), a Ph.D. candidate specializing in zooarchaeology at the Biologisch-Archaeologisch Instituut, Rijksuniversiteit Groningen. A randomly selected sample, representing approximately 70% of the total faunal assemblage, and consisting of material derived from undisturbed features, post moulds and midden areas, was analyzed by Needs-Howarth. Identifications were made at the Howard Savage Faunal Archaeo-Osteology Laboratory at the University of Toronto, and the Departments of Ornithology, Ichthyology and Herpetology, and Vertebrate Paleontology at the Royal Ontario Museum in Toronto. Due to the relatively small size of the sample identified below the class level, no attempt was made to estimate the minimum number of individuals in the assemblage (MNI). Instead, the faunal assemblage was analyzed using the number of identified specimens per taxon (NISP). MNI is closely related to sample size and requires several hundred NISP per species within an assemblage in order to be accurate (Hess and Perkins 1974:151). With small faunal samples, NISP appears to be a more

accurate measure of the relative abundance of different taxa (Grayson 1984:62).

A total of 694 elements were identified below the class level in the Barrie site faunal assemblage. While fish (49.6%) represent the majority of the identified sample, they are closely followed by mammals (41.3%).

TABLE 20. Barrie Faunal Class Frequencies Identified Below Class

Class	#	%
Osteichthyes	344	49.6
Mammalia	287	41.3
Aves	22	3.2
Pelecypoda	22	3.2
Reptilia	15	2.2
Amphibia	4	0.6
Total	694	100.1

The discrepancy among the class frequencies between the total faunal assemblage and the assemblage identified below the class level probably reflect biases in recovery techniques and the difficulty in identifying fragmented and non-cranial fish elements. Only 16% of the faunal assemblage identified below the class level was derived from floated samples. Floated faunal samples usually contain a higher frequency of fish and a lower frequency of mammals than do screened samples, because of the small size of fish elements (Lennox et al. 1986:124).

The most common identified fish species is yellow perch (32.0%), followed by lake sturgeon (19.5%), white sucker (5.5%), northern pike (5.2%), pumpkinseed (4.7%), brown bullhead (4.4%), largemouth bass (3.5%), smallmouth bass (3.5%), and small frequencies of a wide variety of other species (Table 21).

TABLE 21. Barrie Site Identified Fish Species

Class/Species	#	% class	% total
Fish:			
Ameiurus nebulosus (Brown Bullhead)	15	4.4	2.2
Ictalurus/Ameiurus sp. (Brown or Yellow Bullhead or Channel Catfish)	4	1.2	0.6
Ictalurus punctatus (Channel Catfish)	2	0.6	0.3
Acipenser fulvescens (Lake Sturgeon)	67	19.5	9.7
Salvelinus namaycush (Lake Trout)	5	1.5	0.7
Coregonus clupeaformis (Lake Whitefish)	1	0.3	0.1
Catostomus catostomus (Longnose Sucker)	6	1.7	0.9
Catostomus commersoni (White Sucker)	19	5.5	2.7
Catostomus sp. (Longnose or White Sucker)	12	3.5	1.7
Catostomidae (Sucker or Redhorse)	4	1.2	0.6
Esox masquinongy (Muskellunge)	4	1.2	0.6
Esox lucius (Northern Pike)	18	5.2	2.6
Esox sp. (Northern Pike or Muskellunge)	7	2.0	1.0
Lepomis gibbosus (Pumpkinseed)	16	4.7	2.3
Lepomis sp. (Pumpkinseed or Bluegill)	1	0.3	0.1
Moxostoma sp. (Redhorse)	3	0.9	0.4
Amboplites rupestris (Rock Bass)	4	1.2	0.6
Micropterus dolomieui (Smallmouth Bass)	12	3.5	1.7
Micropterus salmoides (Largemouth Bass)	12	3.5	1.7
Micropterus sp. (Small or Largemouth Bass)	4	1.2	0.6
Centrarchidae (Sunfish family)	10	2.9	1.4
Stizostedion vitreum (Walleye)	1	0.3	0.1
Stizostedion sp. (Sauger or Walleye)	3	0.9	0.4
Perca flavescens (Yellow Perch)	112	32.0	16.1
Percidae (Perch, Walleye or Sauger)	2	0.6	0.3
Total	344	99.8	49.5

Although there is some overlap between the generally preferred habitats of the fish species utilized at the Barrie site, most of them would have been available within Kempenfelt Bay, located only 3 kilometres east of the site. Data on habitat preferences were obtained from Scott and Crossman (1979), MacCrimmon and Skobe (1970), and Mr. R. Craig, the Area Biologist for the Ontario Ministry of Natural Resources. Over 50% of the fish species which

are present in the assemblage were available in Kempenfelt Bay, 35% in the Nottawasaga River, and only 13% in the local creeks of the region.

If it can be assumed that a major proportion of the fish assemblage was obtained during the spawning season when large quantities of fish could have been captured with relative ease (Cleland 1982:766), then it is possible to reconstruct the probable fish procurement strategies at the site. Needs-Howarth and Thomas (1994) have identified three distinctive Lake Simcoe fisheries in the late prehistoric period: an inland and lake shore spring spawn run fishery, a warm weather generalized lake shore, river and stream fishery, and a fall fishery in Kempenfelt Bay and Lake Simcoe. Species such as sturgeon and longnose sucker would have only been available in large numbers in accessible locations during their spring spawning runs (Scott and Crossman 1973:86,532; Needs-Howarth and Thomas 1994), while other species such as lake trout and whitefish would have only been readily available in the fall (MacCrimmon and Skobe 1970:54; Needs-Howarth and Thomas 1994). Although species such as brown bullhead, rock bass, pumpkinseed and northern pike are spring spawners, their spawning behavior does not involve high density movements which would have significantly increased their availability (Scott and Crossman 1979: 589, 703, 716; Needs-Howarth and Thomas 1994). It is more likely that these species were a major component of the warm weather generalized lake shore, river and stream fishery (Needs-Howarth and Thomas 1994). Other species such as white sucker, yellow perch and small-mouth bass would have probably been available in large numbers during the spring spawning season, as well as during the rest of the warm weather season (MacCrimmon and Skobe 1970: 67, 101, 118; Needs-Howarth and Thomas 1994).

In order to gain further insights into the scheduling of fishing activities among Middle Iroquoian groups in Simcoe County, Needs-Howarth and Thomas (1994) examined the composition of the fish assemblages collected from individual features at the Barrie and Dunsmore sites. Their analysis of the species which most commonly occur together in several large in-house features from the Barrie site suggest that sturgeon, longnose and white sucker, as well as some yellow perch and smallmouth bass, were likely caught during the spring fishery. Brown bullhead, pumpkinseed, rock bass, northern pike, as well some yellow perch and smallmouth bass, were likely caught during the warm season. Overall, the prevalence of spring spawners such as sturgeon, suckers and yellow perch in the Barrie site faunal assemblage suggests that the inland and lake shore spring spawn run was the most important fishery at the site (Needs-Howarth and Thomas 1994). This is not surprising given the fact that this was the time of year when the largest quantities of fish could be caught over the shortest period of time with the least amount of effort.

Based on habitat preferences and spawning behavior, as well as the composition of species found together in feature deposits, it appears that almost half of the fish in the Barrie site faunal assemblage were likely caught in the spring (sturgeon, white and longnose sucker, some yellow perch and some smallmouth bass; Figure 35). A large component of the assemblage were also likely caught during the warm weather season (brown bullhead, rock bass, pumpkinseed, northern pike, some yellow perch and some smallmouth bass). Only a very small percentage of the assemblage were likely caught during the fall spawning run (lake trout and whitefish).

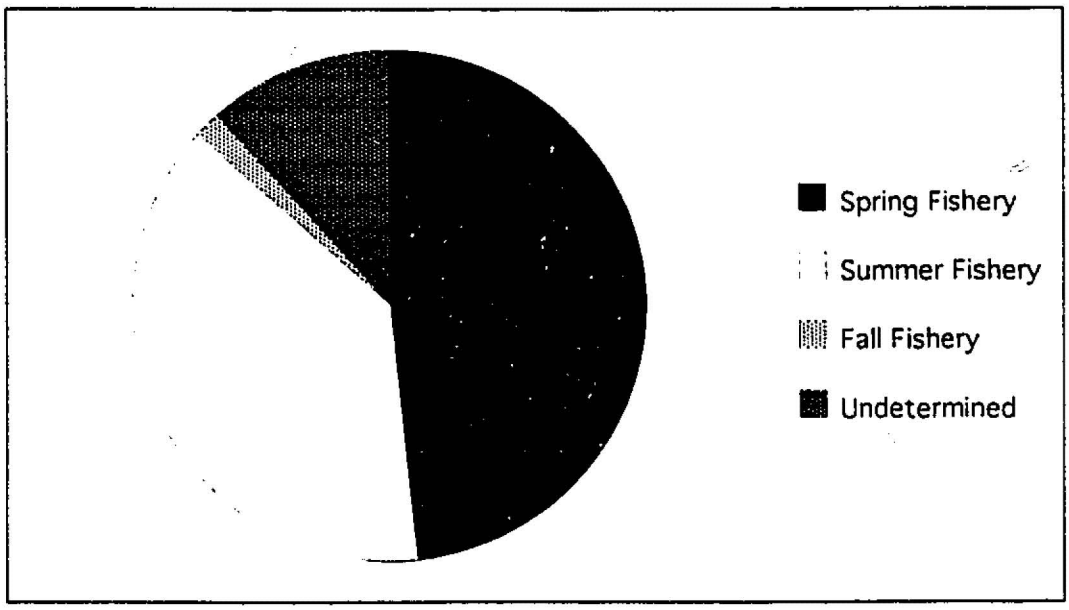


Figure 35. Fishery Scheduling at the Barrie Site.

The most prevalent species of mammal in the assemblage is woodchuck (30.4%) followed by domesticated dog (12.2%), beaver (10.8%), black bear (9.4%), and smaller frequencies of a wide variety of other species (Table 22). The preferred habitats of the mammals which are present indicate the exploitation of a variety of different micro-environmental zones including climax forest (black bear, chipmunk, fisher, marten, porcupine, red and grey squirrel, and snowshoe hare), semi-open or disturbed areas (red fox, white-tailed deer, woodchuck) and aquatic habitats (beaver, muskrat, mink and raccoon). The small sample of birds in the faunal assemblage includes waterfowl (bufflehead, Canada goose, common merganser and northern shoveler), and forest dwellers (passenger pigeon, ruffed grouse and yellow bellied sapsucker). Additional exploitation of aquatic areas is indicated by the presence of some freshwater mussels, turtles and frogs in the assemblage.

TABLE 22. Barrie Site Identified Mammal Species

Class/Species	#	% class	% total
Mammals:			
Castor canadensis (Beaver)	31	10.8	4.5
Ursus americanus (Black Bear)	27	9.4	3.9
Canis familiaris (Domesticated Dog)	35	12.2	5.0
Tamias striatus (Eastern Chipmunk)	16	5.6	2.3
Martes penanti (Fisher)	2	0.7	0.3
Sciurus carolinensis (Grey Squirrel)	3	1.0	0.4
Martes americana (Marten)	2	0.7	0.3
Mustela vison (Mink)	1	0.3	0.1
Ondatra zibethicus (Muskrat)	4	1.4	0.6
Erethizon dorsatum (Porcupine)	2	0.7	0.3
Procyon lotor (Raccoon)	20	7.0	2.9
Tamiasciurus hudsonicus (Red Squirrel)	6	2.1	0.9
Vulpes vulpes (Red Fox)	2	0.7	0.3
Lepus americanus (Snowshoe Hare)	22	7.7	3.2
Odocoileus virginianus (Whitetailed Deer)	23	8.0	3.3
Cervidae (Whitetailed Deer or Elk)	4	1.4	0.6
Marmota monax (Woodchuck)	87	30.4	12.6
Total:	**287**	**100.1**	**41.5**

Comparative Analysis

A comparative analysis of Middle Iroquoian village site faunal assemblages was undertaken in an attempt to identify any potentially significant differences between the subsistence strategies of the occupants of the Barrie site and sites located elsewhere in southern Ontario. The site sample utilized in the comparative analysis was limited by the small number of Middle Iroquoian faunal analysis reports which were readily available in the literature. This sample includes a maximum total of 13 sites, including three from Simcoe County (Barrie, Dunsmore and Wiacek), five from the Toronto area (Elliot, Millroy, New, Robb, Thompson), two from the Burlington-Hamilton area (Crawford Lake, Gunby), and three from southwestern Ontario (Bonisteel,

TABLE 23. Other Identified Faunal Species

Birds:	#	% class	% total
Bucephala albeola (Bufflehead)	1	4.5	0.1
Branta canadensis (Canada Goose)	2	9.1	0.3
Mergus merganser (Common Merganser)	3	13.6	0.4
Anas clypeata (Northern Shoveler)	1	4.5	0.1
Ectopistes migratorius (Passenger Pigeon)	5	22.7	0.7
Bonasa umbellus (Ruffed Grouse)	5	22.7	0.7
Sphyrapicus varius (Yellow-bellied Sapsucker)	3	13.6	0.4
Anatinae (Duck subfamily)	2	9.1	0.3
Total	**22**	**99.8**	**3.0**
Pelecypoda:			
Elliptio complanata (Eastern elliptio)	2	9.1	0.3
Elliptio dilatata (Lady-finger)	1	4.5	0.1
Lampsilis sp. (Lamp-mussel)	1	4.5	0.1
Unionidae (Freshwater mollusc)	18	81.8	2.6
Total	**22**	**99.9**	**3.1**
Amphibia:			
Anura (Frog/Toad)	3	75.0	0.4
Rana sp. (Frog)	1	25.0	0.1
Total	**4**	**100.0**	**0.5**
Reptilia:			
Chelydra serpentina (Snapping Turtle)	1	6.7	0.1
Emydoidea blandingi (Blanding's Turtle)	1	6.7	0.1
Chrysemis picta (Painted Turtle)	5	33.3	0.7
Emydidae (Turtle family)	8	53.3	1.2
Total	**15**	**100.0**	**2.1**

Slack Caswell, Uren). The quality and detail available in these faunal reports vary greatly. Consequently, the number of sites included within the different components of the comparative analysis also varied according to the availability of relevant data within each report.

Differences among the faunal assemblages included in this sample may reflect a number of factors. Aside from possible variations in the

taphonomic processes associated with faunal samples from different sites, there are also significant differences in terms of sample size, recovery techniques, and locally available micro-environmental zones within the comparative site sample. However, by limiting the comparative analysis to basic aspects of the faunal assemblages, such as relative class frequencies, mammals sizes and species diversity, certain general differences between Simcoe County Middle Iroquoian sites and those located elsewhere do emerge.

A comparison of faunal class frequencies for all faunal elements identified to the class level (Table 24 and Figure 36) clearly indicates the importance of fish in the diet of Middle Iroquoian groups in Simcoe County. The high frequencies of fish in the faunal assemblages at the Barrie, Dunsmore and Wiacek sites also reflect in part the analysis of flotation samples at these sites. The four Middle Iroquoian sites in this analysis with the highest frequencies of fish are also the only sites in the sample which contained faunal material derived in part from floated samples. However, the use of this recovery technique alone does not account for the prevalence of fish on these sites. A comparison of class NISP frequencies derived from elements identified below the class level from 9 Middle Iroquoian sites also indicates the importance of fish on the Simcoe County sites (Figure 37). While 79% of the Wiacek site NISP identified below the class level is from floated samples (Lennox et al. 1986:126), only 16% of the Barrie site NISP and 8% of the Dunsmore site NISP are from floated samples (Needs-Howarth and Thomas 1994).

Assuming that Iroquoian non-horticultural subsistence practices were based primarily on the exploitation of locally available micro-environmental zones and species, the importance of fish to Middle Iroquoian

TABLE 24. Faunal Assemblage Class Frequencies on Middle Iroquoian Sites.

Class	Barrie	Bonisteel	Crawford Lake	Dunsmore	Elliot	Gunby	Milroy	New	Robb	Slack Caswell	Thompson	Uren	Wiacek
Method of Excavation	S/F	WS	S/F	S/F	T/SS	S	S	S	?	S/F	?	S	S/F
	#	#	#	#	#	#	#	#	#	#	#	#	#
	%	%	%	%	%	%	%	%	%	%	%	%	%
Osteichthyes	2383	189	4462	614	1223	4692	378	1180	367	666	69	656	13348
	68.1	14.7	79.1	72.9	61.7	31.1	8.0	43.1	30.8	9.5	43.3	18.2	83.5
Mammalia	707	1082	709	148	483	9106	3083	1189	557	5418	36	2688	2000
	20.2	84.1	12.6	17.6	24.4	60.3	65.1	3.5	46.7	76.9	22.6	74.4	12.5
Aves	108	5	114	52	202	1114	581	151	105	77	18	217	216
	3.1	0.4	2.0	6.2	10.2	7.4	12.3	5.5	8.8	1.1	11.3	6.0	1.4
Pelecypoda	68	1	25	12	37	46	447	111	150	741	32	0	80
	1.9	0.1	0.4	1.4	1.9	0.3	9.4	4.1	12.6	10.5	22.1	0	0.5
Reptilia	62	9	5	15	18	56	244	25	13	67	4	28	15
	1.8	0.7	0.1	1.8	0.9	0.4	5.2	0.9	1.1	1.0	2.5	0.8	0.1
Amphibia	3	0	326	1	9	55	0	80	0	74	0	22	297
	0.1	0	5.8	0.1	0.5	0.4	0	2.9	0	1.1	0	0.6	1.9
Total	3498	1286	5641	*842	1982	15102	4733	1192	1192	7043	159	3611	15988

* Dunsmore site species NISP

Method of Excavation: S/F: screened and floated
WS: wet screened
T/SS: trowelled and screened
S: screened
?: unknown

Sources: Kapches 1981; Lennox et al. 1986; Needs-Howarth 1994; Pengelly and Pengelly 1987; Rozel 1979

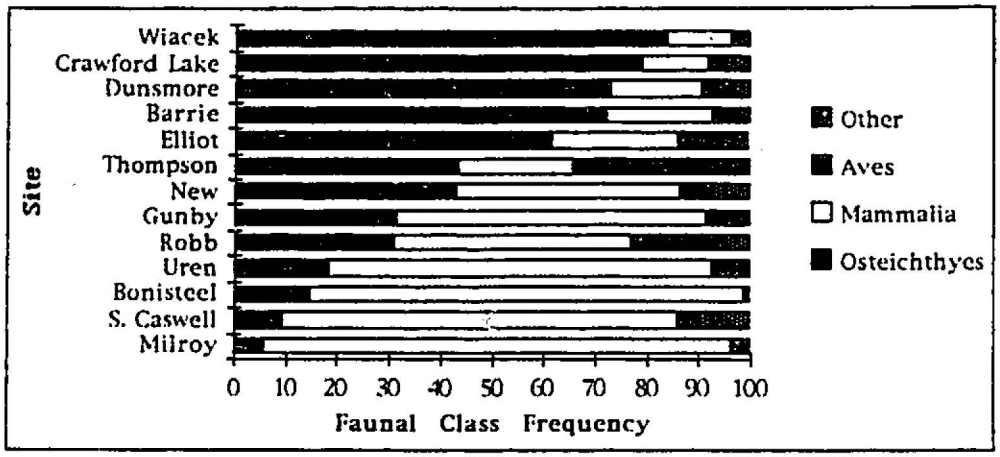


Figure 36. Faunal Class Frequencies on Middle Iroquoian Village Sites.

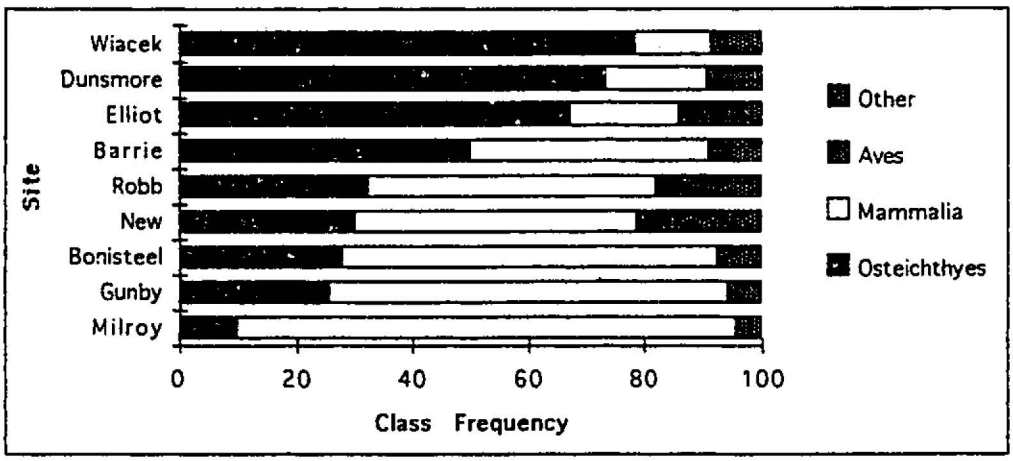


Figure 37. Faunal Class Frequencies Identified to Species on Middle Iroquoian Village Sites.

communities in Simcoe County is not surprising given the rich fishing resources of the region. Paleoenvironmental reconstructions of Simcoe County in the fourteenth century suggest that fish would have been one of the most plentiful food resources in the region. Palynological data from lake and bog cores in Simcoe County indicate that the upland areas which were

colonized by Middle Iroquoian groups were dominated by a climax maple-beech forest (Burden at al. 1986:49; McAndrews 1981:329). Wood charcoal and macro-plant assemblages from Middle and Late Iroquoian archaeological sites in the region also support this interpretation (Lennox et al. 1986:143; Monckton 1992:87). This type of environment would not have supported large populations of large mammals such as white-tailed deer, which prefer more open and disturbed habitats. Unlike most mammals in the climax mixed temperate forest of Simcoe County, fish represented a resource which was very plentiful, easy to catch, and very predictable in terms of their habits and habitat (Heidenreich 1971:212). The inhabitants of the Barrie site relied to a great extent on spring spawners, which could be caught in huge numbers in nets. This indicates that the initial Middle Iroquoian colonists already had a detailed knowledge of fish resource availability in the region at the time of colonization. The people at the Barrie site were therefore able to schedule and coordinate their fishing activities in order to maximize their catch.

Another difference between the Simcoe County Middle Iroquoian sites and those located elsewhere in southern Ontario is the predominance of small mammals within the identified mammalian species on the Simcoe County sites (Figure 38). At the Barrie, Dunsmore and Wiacek sites, small mammals account for between 81.5% and 96.7% of the identified mammal assemblages. Large mammals such as white-tailed deer are present in only very low frequencies at these three sites. This is in contrast to most of the other Middle Iroquoian sites where white-tailed deer are usually the most common faunal species present. The lack of large mammals such as white-tailed deer on Middle Iroquoian sites in Simcoe County reflects the mature closed forest upland environment where these sites were located (Lennox et al. 1986:109). Most of the smaller mammals

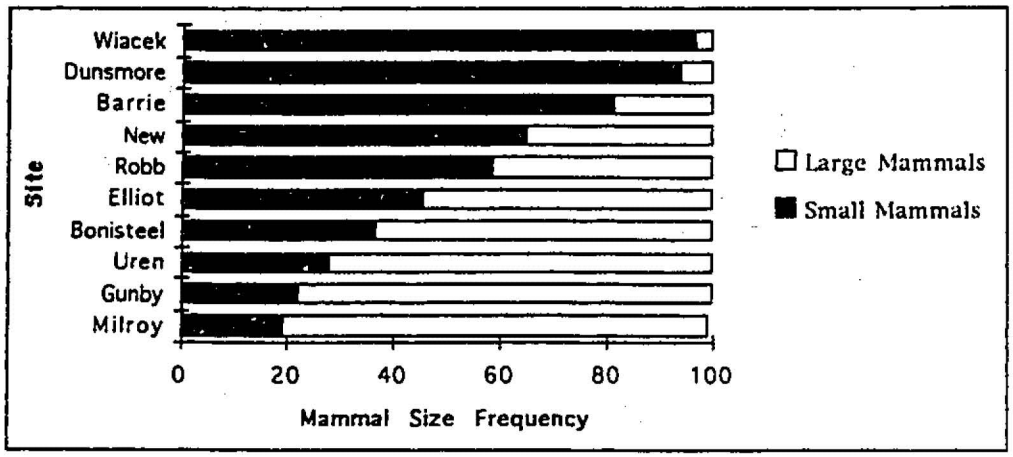


Figure 38. Mammal Sizes on Middle Iroquoian Village Sites.

present at Barrie, Dunsmore and Wiacek (black bear, chipmunk, fisher, marten, porcupine, red and grey squirrel, and snowshoe hare) are more prevalent in mature forest habitats. Kapches (1981:219) has argued that the frequency of white tailed deer should be expected to increase through time on Iroquoian sites as the landscape became more modified by horticulture. This may explain the higher frequency of deer on Middle Iroquoian sites located south of Simcoe County where horticulture was being practiced prior to the Middle Iroquoian period. By contrast, Simcoe County appears to have remained untouched by horticulture until the early fourteenth century.

One important aspect of the Barrie site faunal assemblage is the diversity of species which are present. Although only 286 mammalian elements were identified below the class level, a total of 16 different mammal species are present. When compared to the mammalian diversity at nine other Middle Iroquoian sites, the Barrie site stands out as having one of the most diverse assemblages, despite the relatively small size of the sample (Figure 39). The occupants of the Barrie site were clearly practicing a broadly based and

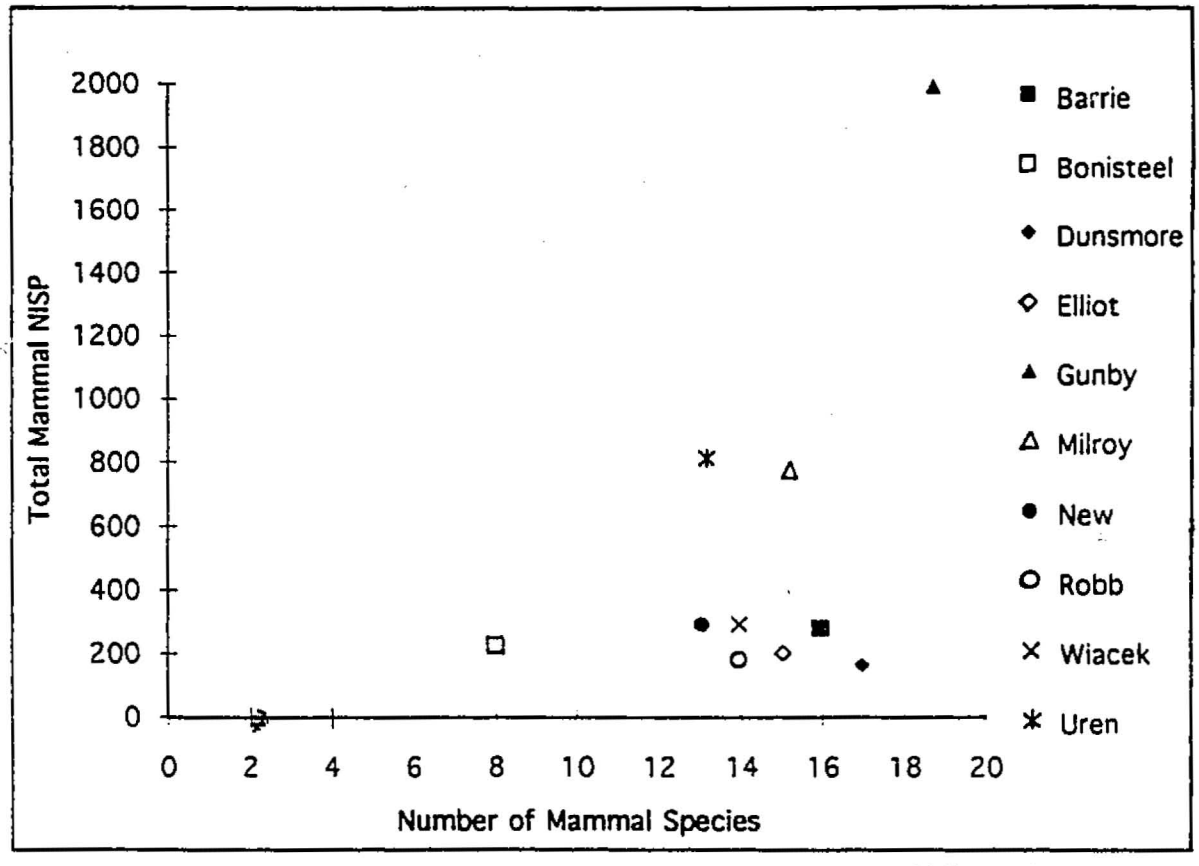


Figure 39. Diversity of Mammal Species on Middle Iroquoian Village Sites.

largely opportunistic hunting strategy which took advantage of all of the potential mammalian resources in the region.

Paleobotanical Analysis

A total of 751 litres of soils were collected for flotation from the Barrie site. This total included 317 litres from in-house features, 112 litres from exterior features and 322 litres from three undisturbed midden areas. The soil samples were processed on site using the two bucket method and were passed through a series of screens measuring between 0.425 to 0.750 millimetres. The

flotation light fractions were analyzed by Dr. Stephen Monckton, a research associate in the Department of Botany, at the Royal Ontario Museum in Toronto. Due to financial constraints, a total of only 13 samples were examined. This included samples from 8 in-house features, 4 exterior features and Midden D (Table 25).

A variety of plant taxa were identified from the samples. The cultigens maize (*Zea mays*) and tobacco (*Nicotiana* sp.) were identified. Wild plant species are represented by both fleshy fruits, greens and grains. Included among the fleshy fruits are bramble (*Rubus* sp.), elderberry (*Sambucus* sp.), pincherry (*Prunus pennsylvanica*), and hawthorn (*Crataegus* sp.). Other taxa which were identified include chenopod (*Chenopodium* sp.), knotweed (*Polygonum* sp.), small grass (*Gramineae*), purslane (*Portulaca oleracea*), bush honeysuckle (*Diervilla lonicera*) and sumac (*Rhus typhena*). Maize accounts for 20.2% of the total number of seeds identified at the site, while fleshy fruits contributed 47% of the seeds, and greens/grains and other plant taxa 20%. The wood charcoal assemblage was dominated by maple and beech, followed by elm, pine, ironwood, ash, tamarack, oak and birch. While the wood charcoal indicates the presence of a mature maple-beech forest in the area, the large number of fleshy fruits suggests that disturbed or forest edge habitats were also present in the area of the site.

Although the identified sample from the Barrie site is quite small, the relative abundance of seed categories is comparable to other Middle and Late Iroquoian village sites in Simcoe County (Monckton 1994). At the Dunsmore, Hubbert and Wiacek sites, cultigens account for between 5% and 40% of the total number of seeds, while fleshy fruits account for between 30% and 50% (Monckton 1994). In Simcoe County, the paleobotanical assemblage from the

Table 25. Barrie Site Plant Remains (modified from Monckton 1994: Figure 1)

Feature Number		Cultigens: Maize	Cultigens: Tobacco	Cultigens: Total Cultigens	Fleshy Fruits: Elderberry	Fleshy Fruits: Bramble	Fleshy Fruits: Pincherry	Fleshy Fruits: Hawthorn	Fleshy Fruits: Total Fruit
House 1									
22				0					0
77		6	3	9		4			4
147		3		3					0
173				0					0
Sum	sum	9	3	12	0	4	0		4
	%	42.86	14.29	57.14	0.00	19.05	0.00	0.00	19.05
Houses 2									
193		1		1		1			1
203		1		1					0
226		1		1		1			1
232							1		1
Sum	sum	3	0	3	0	2	1		3
	%	30.00	0.00	30.00	0.00	20.00	10.00	0.00	30.00
External Feature									
12				0					0
52		4		4	1	9	1		11
62				0		1	1		2
108		1		1		1			1
Sum	sum	5	0	5	1	11	2		14
	%	14.71	0.00	14.71	2.94	32.35	5.88	0.00	41.18
Midden D		3		3	2	23		1	26
	%	8.82	0.00	8.82	5.88	67.65	0.00	2.94	76.47
	sum	20	3	23	3	40	3	1	47
	%	20.20	3.03	23 23	3.03	40.40	3.03	1.01	47.47

Table 25 continued. Barrie Site Plant Remains (modified from Monckton 1994: Figure 1)

Feature Number	Bush Honesuckle	Chenopod	Knot-weed	Grass	Purslane	Sumac	Total Other Taxa	Un-known	Unident-ifiable
House 1									
22			1	2			3		
77							0		
147							0		
173					2		2		
							0		
Sum	0	0	1	2	2	0	5	0	0
	0.00	0.00	4.76	9.52	9.52	0.00	23.81	0.00	0.00
							0		
Houses 2							0		
193							0		1
203							0		
226		1					1		1
232							0		1
							0		
Sum	0	1	0	0	0	0	1	0	3
							0		
	0.00	10.00	0.00	0.00	0.00	0.00	10.00	0.00	30.00
External Feature									
12							0		
52	1					1	2	2	1
62	8						8		
108						1	1		1
Sum	9	0	0	0	0	2	11	2	2
	26.47	0.00	0.00	0.00	0.00	5.88	32.35	5.88	5.88
Midden D	1	2				1	4		1
	2.94	5.88	0.00	0.00	0.00	2.94	11.76	0.00	2.94
	10	3	1	2	2	3	21	2	6
	10.10	3.03	1.01	2.02	2.02	3.03	21.21	2.02	6.06

Wiacek site (Lennox et al. 1986) indicates that all five cultigens utilized by Iroquoian groups were present in this region by the late fourteenth century. However, the absence of beans, squash and sunflower from the Barrie site may be due only to sample size and the poor preservation of carbonized bean and squash seeds on archaeological sites (Monckton 1994). The relative frequencies of plant species within the Barrie site paleobotanical sample suggest that maize was an important component of the diet, as were fleshy fruits. However, given the small size of the sample, the precise contribution of plant foods to the overall diet cannot be quantified.

Conclusions

Several studies have adopted an evolutionary interpretive framework in examining how agricultural colonists adapted to new regions. In central Europe, the initial Neolithic colonists established small temporary settlements in different environmental locations across the landscape. This has been interpreted as representing a tactical response to an environment with which the colonists were unfamiliar (Bogucki 1979:240). Over the course of several hundred years as their familiarity with the region grew, larger, more permanent settlements were strategically placed in areas which were highly favorable for agriculture (Bogucki 1979:243). A similar process has been observed among prehistoric agriculturalists in Missouri (Clay 1976) and in the Grand Canyon area of Arizona (Schwartz 1970). In the Balsam Lake area of Southern Ontario, which was colonized by Iroquoian groups in the Late Iroquoian period, Ramsden and Murray (1995) have suggested that the initial colonists followed a seasonally mobile settlement-subsistence pattern because they were unfamiliar with the resources of the area. In other cases, the

expansion of agricultural groups was very rapid, with the establishment of village sites within a very short period of time (DeAtley 1984:14).

The Middle Iroquoian colonization of Simcoe County appears to have been very rapid. While there are some seasonally occupied Early Iroquoian fishing camps in the region, the area was not heavily exploited prior to the early fourteenth century. From the beginning, the Middle Iroquoian colonization involved the establishment of permanent village sites. There is no evidence for the experimental placement of temporary sites prior to this time. Instead, the Middle Iroquoian pattern of settlement appears to have been introduced in its final form, and the adaptive strategies of the colonists were formulated prior to their arrival in the region. This suggests that the colonists were familiar with the resources of the region prior to the colonization.

The location of the Barrie site is typical of most Iroquoian village site locations in the region. It was located on an upland terrace where the site's inhabitants would have had easy access to the three major micro-environmental zones of the region: sandy well drained uplands (for crop growth), swampy lowlands (for hunting flora and fauna) and open water (for fishing). The strategic placement of the site also suggests that the colonists were familiar with the region prior to the colonization. Reconstructions of Uren settlement-subsistence patterns elsewhere in the province suggest that they involved the winter occupation of villages and the spring-fall occupation of fishing camps (Wright 1986:54). This pattern undoubtedly varied on a regional basis depending upon local resource availability. At the Wiacek site in Simcoe County, most of the fish present at the village site were likely processed at fishing camps on Lake Simcoe (Lennox et al. 1986:107). The presence of Uren components at multi-component fishing sites in Simcoe

County such as Methodist Point (Smith 1979) and Dougall (Wright 1972a) suggests that a similar pattern of village and fishing sites may have existed in this region. However, the strategic placement of most of the Simcoe County Middle Iroquoian village sites in close proximity to a variety of different micro-environmental zones may have made it unnecessary to establish a wide network of seasonally occupied special purpose camps. Instead, the village may have served as the staging area for most of the subsistence related activities. Village sites such as the Barrie site, which were located very close to Lake Simcoe, may not have required the establishment of seasonally occupied fishing camps.

By moving northward into Simcoe County from the north shore of Lake Ontario, Middle Iroquoian groups colonized a region which was near the northern limits for sustainable corn horticulture. The shorter growing season in this region would have increased the likelihood of crop failure. In the face of potential food shortages, the colonists relied heavily on wild foodstuffs. At the Barrie site, the inhabitants heavily exploited local fish resources, as well as a wide variety of small mammals and fleshy fruits. The location of the site close to several different micro-environmental zones also suggests that the initial colonists practiced a broad-based subsistence strategy. Fish were an important part of the subsistence economy because they were plentiful in the region and could be harvested in large numbers during the spawning season. The colonists adapted to the scarcity of large mammals in the region by intensively exploiting a wide variety of smaller mammals. By adopting a broadly based subsistence strategy, the colonists were able to reduce considerably the risks involved in practicing horticulture in a region with a relatively short growing season.

The adaptations made by the initial Middle Iroquoian colonists of the region do concur with certain aspects of the optimization models developed for expanding horticulturalists (Green 1979, 1980; Hamond 1981). The colonists did establish settlements in areas with a high resource potential, the initial population size was large enough to provide an adequate supply of labour, the colonists employed a generalized subsistence strategy, they maintained some contact with their parent communities, and the population grew quite rapidly. However, these colonization patterns and adaptations are also closely interrelated to socio-political factors and the dynamics of the migration process itself.

The rapid establishment of village sites in strategically placed locations reflects in part the knowledge of the region which the migrants possessed prior to the colonization. This is a typical migration pattern. Migrants generally do not colonize regions they are unfamiliar with (Greenwood 1970; Brown et al. 1975). The settlement patterns at pioneering Middle Iroquoian communities such as the Barrie site and the Nodwell sites indicate that the primary migrating unit involved multiple extended family groups. In the Middle Iroquoian period, villages were composed of several large segmented multi-lineage groupings (Timmins 1992:487). The village is believed to have been the largest socio-political unit, and was probably self governing and autonomous (Williamson and Robertson 1994:32). The village itself was the primary decision making unit at this time, and this explains why the colonizing groups consisted of entire communities.

The presence of significant amounts of imported chert at the Barrie site indicates that there was continued interaction with other Iroquoian groups located south of Simcoe County. While resource exchange was one of

the functions of this interaction, other processes were also involved. The migration process itself often involved the maintenance of a migration stream and a continual flow of information between the source and destination areas (Simkins and Wernstedt 1971). Return migration also played a role in maintaining communication and interaction between the two regions (Lee 1966). The rapid growth in population among the colonists may not have been the result of a greater carrying capacity in the frontier area, or the desire to reduce the economic and social costs of isolation. The successful colonization of a region has a snowball effect which encourages more and more groups to migrate. The flow of additional migrants tends to continue even when the original conditions which caused the migration in the first place have changed (Simkins and Wernstedt 1977). This leads to rapid population growth in the destination area. Thus, the adaptive decisions made by the Middle Iroquoian colonists were the result of several interrelated factors, including the resource potential of the local environment, socio-political organization, and the dynamics of the migration process.

CHAPTER 10
CONCLUSIONS

Unlike some other areas of southern Ontario where there is clear evidence of in situ development from the Early Iroquoian through to the Middle and Late Iroquoian periods, the earliest Iroquoian village sites in Simcoe County date to the Middle Iroquoian period. A few components in the region provide evidence that Early Iroquoian groups visited Simcoe County on only a seasonal basis, probably to fish and hunt, and/or to trade with Algonkian groups. The lack of Early Iroquoian village sites in Simcoe County cannot be explained in terms of natural or cultural site destruction processes, ecological or socio-political constraints on Iroquoian settlement, or archaeological survey bias. The most likely explanation for the sudden appearance of Iroquoian village sites in the region in the Middle Iroquoian period is that they represent a migration into the area from the south.

However, confirming that such a migration actually took place requires the application of a suitable theoretical and methodological framework for examining archaeological migration. The model which appeared to be the most appropriate for this study was David Anthony's (1990) archaeological migration model, which was formulated by bringing together various aspects of migration models created by anthropologists, demographers, and geographers as a result of their analyses of modern migrations. By consolidating the results of recent migration studies, Anthony (1990) came to the conclusion that migration is a structured process that develops in a

predictable manner once it has begun. His analysis of modern migration studies indicated that a number of general characteristics that were shared by most migration processes should be identifiable using archaeological data. These characteristics included the appearance of basic structural conditions which favored migration, prior knowledge of potential destination areas, the creation of a leapfrog pattern of settlement in the frontier area, the development of a migration stream or corridor to the destination area, return migration to the source area, a history of prior migration activity among the colonists, and the tendency of the initial migrants to be young adult males and small incomplete families.

Several of these aspects of migration were identified as a result of the examination of the Middle Iroquoian colonization of Simcoe County. Comparative ceramic analysis suggests that the source area for the colonists was the north shore of Lake Ontario somewhere between the Credit and Rouge River drainage systems. Using a push-pull model, several structural conditions were identified in the source and destination areas which could have favored a migration. The primary cause of the migration appears to have been population pressure in the source area. Simcoe County was likely selected as a destination area because the potential colonists were familiar with the region, it was easily accessible from the source area, and it lacked an indigenous population of agriculturalists. Archaeological evidence clearly indicates that the potential Middle Iroquoian colonists were familiar with Simcoe County prior to the migration. The presence of Early Iroquoian ceramics on sites both within Simcoe County and in areas to the north probably reflects both indirect and direct contact between Early Iroquoian groups who occupied the north shore of Lake Ontario and Algonkian groups to

the north. Early Iroquoian groups may have seasonally exploited the fishing resources of Simcoe County, and undoubtedly travelled through the region on trading expeditions. The nature and location of the initial Middle Iroquoian village sites established in Simcoe County also indicate that the colonists were familiar with the region prior to the migration. From the beginning, the Middle Iroquoian colonization involved the establishment of permanent village sites. There is no evidence for the experimental placement of temporary sites prior to this time. Instead, the Middle Iroquoian pattern of settlement appears to have been introduced in its final form, and the adaptive strategies of the colonists were formulated prior to their arrival in the region. Even the earliest village sites were strategically placed on the edges of the uplands in order to have easy access to several different micro-environmental zones. The use of local lithic resources and the emphasis on exploiting spring fish spawning runs by the initial colonists also indicates a detailed understanding of the region's local resources.

The colonization of Simcoe County appears to have been the result of a very rapid, highly directed migration. The distribution of the initial Middle Iroquoian village sites resembles a leapfrog settlement pattern, in which less favorable settlement locations such as the Oak Ridges Moraine and the Holland Marsh were avoided in favor of more attractive conditions in the Kempenfelt Bay area of Lake Simcoe. The location of the initial pioneering Uren communities at the head of Kempenfelt Bay acted as a magnet for subsequent colonists. While transient sites between the source and destination areas could not be identified, the migration corridor was likely the east and west arms of the historically documented Toronto Carrying Place trail system. When placed into a chronological framework, the estimated population size of the Middle

Iroquoian village sites in the region clearly shows that there was a rapid rise in population during the early part of the Middle Iroquoian period. The estimated annual population growth rate between the Uren and Middleport I chronological groups was 5.7%. This is typical of frontier areas where continued in-migration and high fertility result in extremely high growth rates. High annual growth rates such as this are impossible to reach without a considerable level of in-migration. In terms of migration frequency, it seems likely that the colonization of Simcoe County represents only one of a series of migrations by Iroquoian groups. If the intrusion hypothesis for Iroquoian origins can be substantiated (Snow 1995), then Simcoe County was simply one of the last frontier areas in southern Ontario to be colonized by Iroquoian peoples.

In applying Anthony's (1990) migration model to this case, several inappropriate aspects of the model became apparent. Evidence of a migration corridor or migration stream in the form of transient sites located between Simcoe County and areas to the south could not be found. In part this is because a large portion of the migration corridor was probably traversed by canoe. However, the identification of a migration corridor is also hampered by the fact that transient sites are very difficult to identify archaeologically. Even when found, transient sites which may have been occupied by migrants are probably impossible to distinguish from similar sites created through the pursuit of other activities, such as trade expeditions or hunting and fishing. Instead of attempting to identify transient sites, it appears to be more productive to identify historically documented travel and trading routes between the source and destination areas which were also likely used in the prehistoric period.

Archaeological evidence for return migration was also very difficult to identify in this study. There is evidence of some contact between Middle Iroquoian sites in Simcoe County and contemporaneous sites in the source area near Lake Ontario. However, it may be impossible to determine that this contact was the result of return migration, as opposed to other forms of interaction such as trade. Although return migration is clearly a phenomenon associated with historically documented migrations, it may be impossible to identify using archaeological data.

Migration demography is another issue which also requires some refinements. Modern migration studies indicate that the initial migrants consist of young adult males and small incomplete families. However, settlement pattern data examined in this study suggest that the initial colonization of Simcoe County involved the movement of extended family groups and entire communities. This is not surprising given the labour requirements of slash and burn horticulture and the extended multi-family basis of Middle Iroquoian social organization. It is expected that a similar pattern would also be found among other migrating prehistoric agricultural groups. The small incomplete families of modern migrants reflects in part the smaller economic and social units which have resulted from the development of a market economy.

It is suggested here that the initial investigation of archaeological migrations will involve several aspects of the traditional methodologies developed by Haury (1958) and Rouse (1958). That is, the initial basis for suspecting that a migration has occurred is the appearance in the archaeological record of an archaeological culture which appears to be intrusive and not the result of in situ development. Other factors which may

account for the apparent lack of local antecedents must then be systematically eliminated. These factors include inadequate or biased archaeological survey and excavation, and taphonomic processes which may have hidden or destroyed relevant archaeological components. If migration still appears to be the mostly likely explanation, an attempt should be made to identify the source area for the migrants. Once the source area has been identified, a push-pull model should be used in an attempt to identify the structural conditions which may have caused the migration. However, given the complex nature of the migration decision making process, it may be impossible to identify the precise causes of the migration.

Once these preliminary steps have been taken the migration process itself should be examined to identify the following patterns:

1) There should be archaeological evidence which indicates that the eventual migrants were familiar with the destination area prior to the actual migration itself. This may consist of the use of seasonally occupied resource exploitation camps in the destination area prior to the migration, or evidence of trade between the source and destination areas.

2) If the colonists were familiar with the resources of the region prior to the colonization, then their initial sites will be located in strategic locations within resource rich areas. The initial settlement patterns will have been introduced in their final form and will be the result of the migration of entire communities. In the case of small-scale agriculturalists, this will consist of the occupation of permanent or semi-sedentary village sites. If the colonists were unfamiliar with the region prior to the migration, then the initial settlement

patterns would likely consist of small temporary settlements situated in different environmental locations across the landscape.

3) The initial site locations of the migrants in the frontier area should resemble a leapfrog settlement pattern with settlement clusters situated in attractive locations surrounded by large unoccupied areas. The earliest pioneering community or communities will act as a magnet for subsequent migrants.

4) The destination area will likely be easily accessible from the source area through the use of previously established trading and travel routes. The migration corridor may be identifiable by reconstructing travel routes used between the two regions in the early historic period.

5) Population growth rates in the destination area should mimic a logistic growth curve, where population size increases dramatically in the beginning as a result of continued in-migration, and then levels off as the flow of new migrants dwindles.

Migration should only be offered as a reasonable explanation for significant changes in the archaeological record of a region after at least some of these patterns have been identified.

By moving northward into Simcoe County from the north shore of Lake Ontario, Middle Iroquoian groups colonized a region which was near the northern limits for sustainable corn horticulture. The shorter growing season in this region would have increased the likelihood of crop failure. In

the face of potential food shortages, the initial colonists adopted a broadly based subsistence strategy. Subsistence data from the Barrie site indicate that the initial colonists practiced corn horticulture, but also relied heavily on wild food stuffs. The spring spawning fishery was very important to the initial colonists, as was the hunting of a wide variety of small mammals and the gathering of fleshy fruits. The adaptations made by the initial Middle Iroquoian colonists of the region do concur with certain aspects of the optimization models developed for expanding horticulturalists (Green 1979, 1980; Hamond 1981). However, the colonization patterns and adaptations of the Simcoe County Middle Iroquoian colonists are also closely interrelated with socio-political factors and the dynamics of the migration process itself.

If the recently reformulated intrusion hypotheses for Iroquoian origins are valid, the patterns identified in this analysis may also be present during the Early Iroquoian period in northern New York State and southern Ontario. If Early Iroquoian groups in southern Ontario originated from central Pennsylvania, I would expect some of the following migration patterns to be present in the archaeological record:

1) Prior to the migration, there should be archaeological evidence of contact between indigenous populations in upstate New York with the Clemson's Island culture in central Pennsylvania, as well as between the early colonists in upstate New York and indigenous groups in southern Ontario.

2) Radiocarbon dating and ceramic seriation of Early Iroquoian and Owasco village sites in Southern Ontario and New York State should clearly show the

hypothesized northward direction of the migration, with the earliest components situated closest to the migrant's source area.

3) Early Iroquoian sites in southern Ontario dating to the early part of the Early Iroquoian period (ca. A.D. 900-1000) should be situated in clusters similar to the leapfrog settlement patterns of the initial Simcoe County colonists.

4) The earliest Early Iroquoian site clusters should be situated closer to the entry points to southern Ontario from the south, such as the Niagara Peninsula and the east end of Lake Ontario, than later Early Iroquoian sites.

5) Population growth during the Early Iroquoian period should resemble a logistic growth curve with rapid population growth during the initial stages of the colonization due to continued in-migration.

Although it has become unfashionable to search for uniformitarian patterns among archaeological cultures, the analysis of the Middle Iroquoian colonization of Simcoe County has shown that archaeological migrations do share some common features with historically documented migrations. The dynamics and patterns of a migration will undoubtedly vary to some extent from case to case depending on the socio-political organization, technological sophistication and settlement-subsistence patterns of the group involved, and the physical environment of the source and destination areas. Nevertheless, the migration patterns identified here are applicable to other suspected Iroquoian migrations and, to a certain extent, to archaeological migrations involving other slash and burn horticulturalists.

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