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RECONSTRUCTION OF NEETS' AII GWICH' IN LAND USE:  
A METHODOLOGICAL STUDY

A  
THESIS

Presented to the Faculty  
of the University of Alaska Fairbanks

in Partial Fulfillment of the Requirements  
for the Degree of

MASTER OF ARTS

By

John Carl Peirce Jr., B.A.

Fairbanks, Alaska

December 1995

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RECONSTRUCTION OF NEETS'AII GWICH'IN LAND USE:  
A METHODOLOGICAL STUDY

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## ABSTRACT

This thesis attempts to determine to what extent land use patterns for the Neets'aiti Gwich'in of Alaska can be reconstructed from the period of contact to the present, particularly in their spatial dimensions. Written narratives are reviewed, such as those related by explorers, missionaries, traders and prospectors, for information on land use. Also reviewed are key sources of data that give a broad array of subsistence, demographic, geographical or other relevant information concerning land use such as biological and geological reports, economic studies, census reports, Neets'aiti Gwich'in oral narratives, archaeological studies, ethnographic studies, place name studies and maps, and land use and occupancy studies. Methodological models for gathering land use data are reviewed to establish a foundation from which the land use data discussed in this thesis can be compared. Finally, after a discussion of the limitations of applying the data reviewed for graphic reconstruction of Neets'aiti Gwich'in land use, an analysis of the extent to which this can be accomplished is applied to various conceptual levels of understanding Northern hunter and gatherer land use.

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Specific guidance concerning certain questions covered in this thesis was given by Richard Caulfield, Jim Kari, and Frederick Hadleigh-West. Jim Marcotte and David Anderson of the Subsistence Division of the Alaska Department of Fish and Game helped to find land use harvest data published by the Division. Judy Bush of Alaska Legal Services provided the supporting documents for the case of Native Village of Venetie I.R.A. Council vs. State of Alaska, and was generous with her time and xerox paper.

The research that went into the production of this thesis did not involve any field work, and the nature of the topic did not necessitate a visit to any of the communities discussed, nor did it involve any interviews with members of those communities. Because this thesis is largely a methodological critique, it seemed only to peripherally involve the people in the Neets'ait Gwich'in communities. Still, I struggled to keep in mind

throughout the process of researching and writing that the material with which I was dealing involved real people with real concerns about the future of land use in their area. Therefore if any benefit accrues from the completion of this thesis, I hope the people of Arctic Village and Venetie are able to share the rewards.

Finally, I wish to thank my wife, editor, and hiking companion, Jana, and my daughter Maia for their patience and constancy while I struggled with researching and writing this work. This thesis is dedicated to them.

## INTRODUCTION

This case study seeks to determine in what ways and to what extent the subsistence land use patterns of the Neets'aiti Gwich'in of Alaska can be graphically reconstructed using ethnohistoric sources from the period of contact to the present. The reconstruction of land use patterns in a graphic form that detailed the spatial and temporal variation of subsistence activities would give historical depth to land use and occupancy studies which have proliferated in the North since the mid-1970s and would provide a much needed spatial dimension to ethnohistoric analyses of Northern hunter and gatherer subsistence. In attempting to gather and organize data in order to understand land use, methodologies in addition to ethnohistoric reconstruction have been developed. Recent land use studies in the North, modeled primarily on the *Inuit Land Use and Occupancy Project* (Freeman, 1976), have provided a wealth of information concerning land use data, as well as reasonably consistent methodologies for collecting and analyzing them. Although many of these studies (Brody 1982; Caulfield 1983; Nelson et al. 1982) have represented subsistence land use data in the form of lifetime map biographies, achieving considerable breadth in the graphic depiction of land use, these studies are limited in that they generalize the spatial nature of land use over time, making it difficult to determine historic changes in the spatial dimension of land use for the communities being studied. Furthermore, these recent land use and occupancy studies give us insufficient information concerning land use prior to the lifetimes of the individuals interviewed. Aggregated maps correlating the graphic depiction of subsistence land use during various historic periods with important historic events would be of great benefit to the understanding of the dynamic interaction between land use patterns and historic events.

In order to understand the changing nature of subsistence land use over a long period of time, it is necessary to go to sources of information familiar to the ethnohistorian. In the case of the Neets'aii Gwich'in these include early narrative accounts of Indian hunting and travel by explorers, missionaries, traders and prospectors; biological and geological reports, economic studies, census reports, Native oral narratives (transcribed or in tape form), archaeological and ethnographic studies, place name maps, and land use studies themselves. Previous reconstructions of subsistence land use patterns among Northern Athabaskans using ethnohistorical methods, although useful, have been limited in their illumination of land use trends for these people and in predicting the future of Northern Athabaskan subsistence economies as well (cf., VanStone 1963, 1974, 1979). An approach using ethnohistoric reconstruction aimed at gathering data that may be graphically depicted in the form of land use maps is proposed here in order to enhance the spatial understanding of historic Neets'aii Gwich'in land use. If successful, this approach could help overcome some of the limitations of previous ethnohistorical studies in attempting to understanding historic land use among Northern Athabaskans in general.

The objective of this study, then, is to analyze the problem of systematically converting historic land use data from a variety of sources to a form comparable, though not identical, to recent subsistence land use studies which provide a graphic baseline for many areas of the north — that is into a form that can be depicted graphically or mapped. As a case study, this methodological research attempts to give examples of the limitations and possibilities of this task. A second objective is to assess the degree to which something substantive can be said about the spatial nature of Neets'aii Gwich'in

land use using such methods of reconstruction. The nature of this assessment is laid out in the following section on methods.

The Neets'aiti Gwich'in of the Chandalar River region of Alaska have been chosen for this case study because there are recent and ongoing land use and occupancy studies published or being conducted concerning the subsistence land use patterns of these people with which ethnohistoric data may be compared, and because they represent a more easily defined historic and contemporary regional band or tribe than do some Athabaskan groups in Alaska.

## METHODS

In order to provide a context for the discussion of Neets'aai Gwich'in land use, a background section has been included to discuss relevant aspects of territory, social organization, subsistence ecology, and general land use history. The primary body of the thesis consists of a review of a variety of sources which provide temporal and/or spatial information on Neets'aai Gwich'in land use. Early written sources, biological and geological reports, economic studies, census reports, Neets'aai Gwich'in oral narratives, archaeological studies, ethnographic studies, place name studies and maps, and land use and occupancy studies were reviewed for information on land use. All sources with relevant land use data were reviewed with an eye to obtaining information concerning the year, time of year, geographic location, type of resource sought and/or acquired, number of animals taken (if applicable), and method of acquisition, as well as for any additional pertinent information that might shed further insight upon the spatial nature of Neets'aai Gwich'in land use. Although there was not room in this thesis for a full accounting of all land use information on the Neets'aai Gwich'in, sources with important contributions have been summarized.

In the section on land use studies, some methodological models for gathering land use information were reviewed in order to establish a foundation from which the other land use data reviewed in this thesis can be compared. The two land use studies which have been conducted in the Neets'aai Gwich'in area, as well as related place name information were also reviewed for their contribution to understanding Neets'aai Gwich'in land use.

In the analysis section, an effort was made to put the information from various

sources in historical context, discussing the intent of the documentation and any other factors which might affect their feasibility in reconstructing land use. The limitations of other forms of data for graphic reconstruction of land use patterns were also discussed. The data reviewed in the body of this thesis were tested at a nominal level for their usefulness in understanding the extent of use, extent of territory, the intensity of use for certain species in certain areas, and the changes in geographic patterns of use over time of the Neets'ait Gwich'in. The analysis of the ethnohistoric data sought to determine whether they were sufficient in quality, amount and of a comparable nature with existing forms of mapped data to tell us something significant concerning the spatial dimensions of Neets'ait Gwich'in land use.

Finally, some conceptual models for organizing spatial data in a way which might shed further light on Neets'ait Gwich'in land use are briefly outlined for possible further research.



## BACKGROUND

### Sources

There were a number of primary sources consulted for both land use and ethnographic information for this work. McKennan's (1965) study provides the first baseline ethnographic information on the Neets'ait Gwich'in. McKennan spent nine weeks in the field in the summer of 1933, traveling to a number of the Neets'ait Gwich'in villages and camps to compile this ethnographic portrait. Despite McKennan's relatively brief time in the field, *The Chandalar Kutchin* is still in many ways the most complete ethnographic work on the Neets'ait Gwich'in. However, other than a general delimitation of territory, both at the regional and local band level, McKennan's published ethnography is generally short on spatially oriented land use information. The other principal ethnographic work on the Neets'ait Gwich'in is the PhD. dissertation of Frederick Hadleigh-West, *The Netsi Kutchin: An Essay in Human Ecology* (1963). As the title implies, the study is ecologically focused and therefore gives substantial, albeit generally non-spatial, information on land use. This study includes the first place name map collected for the Neets'ait Gwich'in as well as some updated ethnographic information from McKennan's account. Its major weakness is that it does not recognize the people of Venetie as a part of the Neets'ait Gwich'in, focusing solely on the people of Arctic Village. Other related ethnographic studies of a descriptive sort which have applications among all the Gwich'in have been done by Osgood (1936a) and Slobodin (1962; 1981), however neither of these studies deal directly or solely with the Neets'ait Gwich'in and reveal little additional on land use. Conversely, Nelson (1973) gives considerable

information on subsistence land use of the neighboring Dr'aanjik Gwich'in (Tranjik Gwich'in), some of which may be applied to the Neets'ait Gwich'in in terms of exploitive techniques and general ecology, but is of no value for specific spatial information concerning the Chandalar territory. Similarly, the dissertation of Acheson (1977) gives detailed information concerning the process of sedentization of the Vunta Gwich'in of Old Crow, Yukon Territory which parallels that of the Neets'ait Gwich'in to some degree.

Other important studies which concern, either directly or peripherally, the land use of the Neets'ait Gwich'in are by Campisi (1993), Ryan (1990), Mackenzie (1985), Caulfield (1983), Caulfield et al. (1983), Lonner and Beard (1982), Andrews (1977), and Warbelow et al. (1975). In particular, Caulfield's (1983) study is the only major subsistence land use and occupancy study to have been completed for the Neets'ait Gwich'in. This study contains much valuable information on the Neets'ait Gwich'in as well as data for comparison with the other Alaskan Gwich'in communities. This study is augmented by the complementary work by Caulfield et al. (1983) on place names. Campisi's (1993) report for the 1994 court case *Native Village of Venetie I.R.A. Council vs. State of Alaska* clarifies much of previous ethnographic information, particularly on band organization (specifically in terms of tribal status as defined by the U.S. Government) and political organization, as well as giving some information on land use. Warbelow et al. (1975) provide the most relevant archaeological data on the Neets'ait Gwich'in, giving information on land use through the documentation of the remnants of caribou fences.

First hand narratives of particular value concerning land given by Neets'ait Gwich'in individuals themselves are by Fredson (1982), Peter (1992; 1979), Tritt (n.d.),

and McDonald (n.d.).

### **Territory & Social Organization**

The Neets'aii Gwich'in are one of nine Gwich'in tribes in Alaska and Canada identified by McKennan (1935) who added the Dihaii Gwich'in to the eight tribes delineated by Osgood (1934). The name Neets'aii Gwich'in is the autonym of the Athabaskan speaking people who live in and exploit the territory of the drainage of the East Fork of the Chandalar River as well as some neighboring drainages and areas. The name Chandalar itself, originally applied to the Neets'aii Gwich'in by the Hudson's Bay traders in the nineteenth century, was a corruption of the term "Gens du Large", a name "that stressed their highly nomadic existence" (McKennan 1965:14). It is conceivable that since early documenters did not distinguish the Dihaii Gwich'in from other groups, the appellation Gens du Large may have referred to members of this northern group as well (Hadleigh-West 1963:10; 1959). Most early accounts of the people of the Chandalar area referred to them as either Gens du Large (spelled in several ways) or some rough variation in spelling of the phonetic equivalent of Neets'aii Gwich'in. According to Hadleigh-West, the meaning of Netsi Kutchin (Neets'aii Gwich'in) is unclear, although "there was . . . agreement among the many people queried on that point that it refers to the mountains and hill lands which comprise their country" (1963:14). A consensus in the accounts of the Neets'aii Gwich'in is the recognition that these people are essentially mountain and hill people with a corresponding emphasis on their subsistence upon resources particular to those areas.

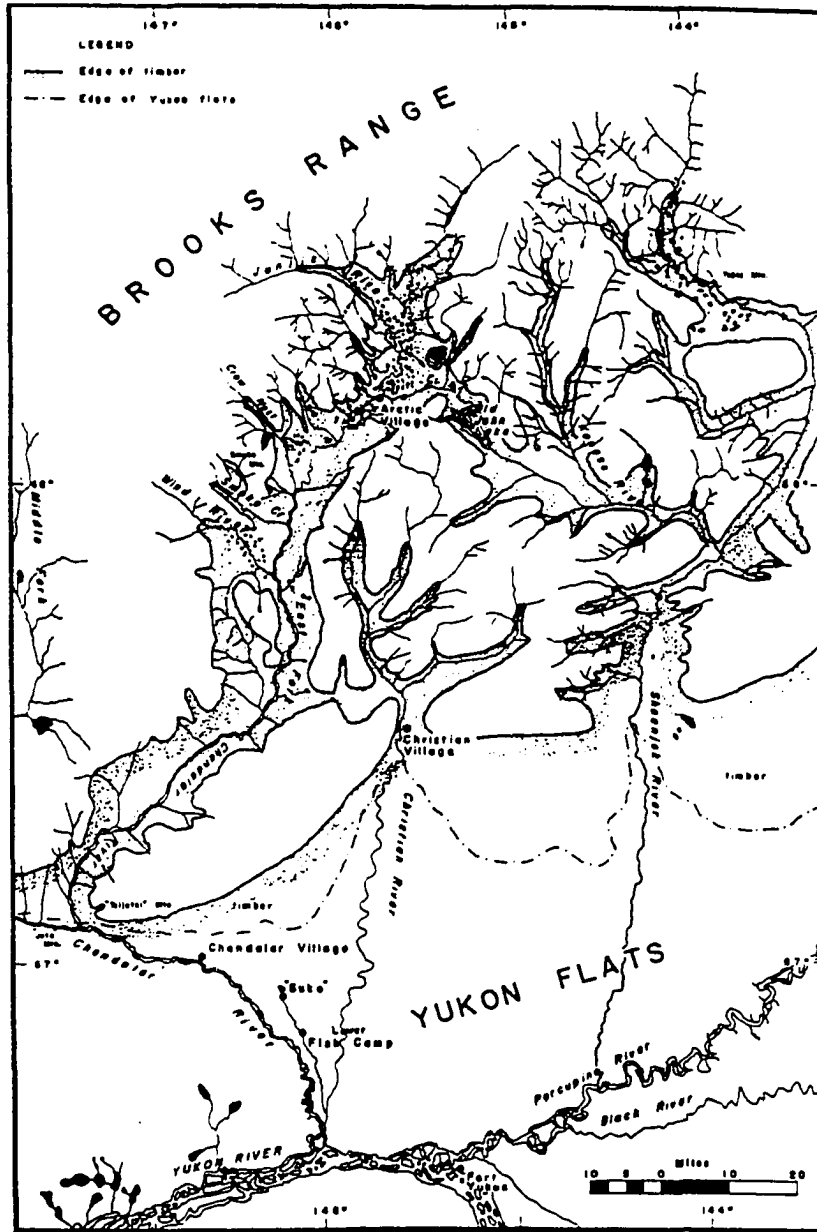
There is substantial evidence that the Gwich'in speaking peoples distinguish

themselves from other Athabaskan speaking peoples on linguistic and cultural grounds (Osgood 1936a:13; Slobodin 1981:514). Within this realm of Gwich'in speaking peoples, the Neets'ain Gwich'in presently occupy the northwestern-most portion of the Gwich'in speaking area. This was not the case until early historic times when it is conjectured that the numerically small Dihai Gwich'in were forced from the west by Nunamiut Eskimo into the Chandalar territory (McKenna 1935; Hadleigh-West 1959; Hall 1969). The remaining Dihai Gwich'in either died off or were absorbed into the population of the Neets'ain Gwich'in (McKenna 1935, 1965:23-24).

The Neets'ain Gwich'in occupy an area centered on the drainage of the East Fork of the Chandalar River north of Fort Yukon, Alaska. Although it is partially the purpose of this work to examine the nature of and changes in the extent of the territory of the Neets'ain Gwich'in, the territorial outline provided by McKenna gives a good overview from which to compare. In addition to the East Fork of the Chandalar, their territory

. . . also included the headwaters of the Sheenjek River to the east together with the intervening valley of the smaller Christian River. . . . One of my better informants said that his people had formerly ranged eastward as far as the Coleen River, a northern tributary of the Porcupine east of the Sheenjek. Dall, who visited Fort Yukon in 1867 says that the Chandalar Kutchin territory extended to the Porcupine River. When I visited them, their hunting and trapping activities were largely confined to the region of the East Fork of the Chandalar River, the Christian River, Old John Lake, and the Kones River. . . . Informants agreed also that only within the last forty or fifty years had their people moved into the Yukon Flats to the present settlements of Chandalar Village and "Suko". Their southern boundary then would have begun about where the East Fork joins the Chandalar River and continued east along the edge of the piedmont and the Yukon Flats to some point on or near the Coleen River. The summit of the

Map 1.



Territory of the Neets'aii Gwich'in

Source: McKennan 1965, after Mertie, 1929

Brooks Range may be considered the northern limit of their territory.  
[McKenna 1965:16; citations omitted]

In addition to the territory McKenna describes, other writers have added with more certainty the Coleen River to the Neets'ait Gwich'in territory (Andrews 1977:109; Hadleigh-West 1963:16-17).

The aspects of social organization of the Neets'ait Gwich'in which affect land use are outlined thoroughly in McKenna (1965) and Hadleigh-West (1963). The briefest sketch here will suffice for the purposes of this work. The Neets'ait Gwich'in constitute a band under the criteria set forth by Kroeber (1955:303-305), and a regional band under broad delineations developed by Helm (1965, 1968) for categorizing social organization as it applies to many Northern Athabaskans. The present communities of Arctic Village and Venetie, and the historic settlements of Christian Village and Sheenjok Village would constitute some of the residence areas of local bands under this schema. The local bands are flexible entities composed at their basis of nuclear families where "every Kutchin in the course of his life was at times a member of other groupings, kin-based and non-kin-based. These groupings included the paired family and several larger special-purpose groups" (Slobodin 1981:520). Both McKenna (1965:43) and Hadleigh-West (1963:28) described as fairly common the existence of the paired family of related or unrelated nuclear families living and traveling together. In practical terms the paired family often involved mutual support and dependence based on a hunting partnership that was the primary mode of hunting in situations which did not require the collective action of a larger group (McKenna 1965:63). McKenna (1965:60) described the Neets'ait

Gwich'in as having three exogamous matrilineal clans, while Hadleigh-West (1963:25-27) identifies four clans. Both authors agree that there were two primary clans while membership in the additional one or two clans resulted from the more unusual endogamous pairings.

The following statement by McKennan on the relationship of the band structure of the Neets'ait Gwich'in with their patterns of movements rings true for many subarctic bands. From the seasonal villages or temporary camps the Neets'ait Gwich'in

. . . ranged out over the surrounding territory following the seasonal round of their hunting, trapping, and fishing activities. To a certain extent membership in these bands was flexible and families could and did shift from one band to another. Such shifts were facilitated by the fact that the bands did not claim exclusive hunting or fishing rights over any particular territory. [McKenna 1965:19]

McKenna's usage of "band" here is the local band as defined by Helm (1965)

The relevance of this classification is that the Neets'ait Gwich'in have in the past and continue to constitute a group which is culturally, politically and territorially distinct from neighboring Gwich'in, Koyukon and Inupiat groups, and that although connected to a degree with the outside world through trade and kin relations, their land use patterns show an internally consistent pattern which is not particularly dependent upon the activities of others outside their territory. This autonomous activity is reinforced by a distinct sense of self-identity which affects social and kin relationships and reciprocal obligations within this group as well as distinguishes the Neets'ait Gwich'in from other Alaska Native groups. To underscore the bounding of the Neets'ait Gwich'in as a cultural group, it is relevant to point to a recent court decision (1994) given by the U.S.

Federal District Court in the case of the Native Village of Venetie I.R.A. Council vs. State of Alaska. The court in this case accepted the status of the Neets'aii Gwich'in as a sovereign tribal entity, reinforcing what was apparent from an ethnographic viewpoint with common law legal status.

Until sometime in the 1930s, culminating with the establishment of an Indian Reorganization Act (IRA) council in 1940, the Neets'aii Gwich'in had little or no formal political organization (Campisi 1993:19). Under certain instances such as the organization for labor in a collective caribou slaughter, prominent men in the local band wielded something akin to political authority. This authority, however, usually did not extend much beyond the accomplishment of the immediate collective goal. McKennan distinguishes two types of men likely to be leaders for the Neets'aii Gwich'in: "successful hunters and trappers, and consequently, wealthy men; [and] strong aggressive men, who dominated through physical strength and served as war leaders"(1965:65). In general, social control was dealt with by way of customary law involving social rewards for deeds that brought wealth or prestige to the group, or informal sanctions against those who transgressed against what was considered normative behavior (McKennan 1965:66). At times in the historic past, however, strong leaders among the Neets'aii Gwich'in have been able to effect large scale movements of people, altering the subsistence pattern of the regional band as a whole. One instance of this is when Chief Christian moved with a substantial number of the Arctic Village population to Christian Village while another strong leader, Albert Tritt, and others remained (McKennan 1965:86-7). It is probable that this population shift can be seen in the loss in population for Arctic Village in the U.S. Census from 1930 to 1940 (see Table 1).



Lonner and Beard (1982) indicate that even after the IRA council was formed in 1940, its role in representing the Neets'aii Gwich'in people of Arctic Village and Venetie was slow to develop:

As the IRA council, the Native Village of Venetie tribal government has been the official entity through which the federal government deals with residents of the reservation. Effective tribal government, in terms of this concentration of authority, has been a relatively new phenomenon. It resulted first from ANCSA and second, from the mid-1970's consolidation of the reservation's [ANCSA created] village corporations with the tribal government. Prior to these events, the tribal government is reported to have been somewhat inactive. [Lonner and Beard 1982:107]

The gradual shift of political control for the Neets'aii Gwich'in reflects and corresponds with developments concerning the formal status of the land which the Neets'aii Gwich'in used for hunting, fishing, trapping and other activities. In 1934 the Indian Reorganization Act (IRA) (with its 1936 amendment making it applicable to Alaska) made it possible for Alaska Native groups with sufficient evidence to form reservations in order to "deal with the federal and territorial government, to control the use of the reservation [lands], and to protect and foster Native life, arts, possessions, and customs" (Lonner and Beard 1982:101). In 1936, under the impetus of John Fredson, the Neets'aii Gwich'in of Arctic Village, Christian Village, Robert's Fish Camp and Venetie voted to establish a reservation (Abeita 1980). By 1940 the Neets'aii Gwich'in had an IRA council, and in 1943 the Chandalar Native Reserve was authorized by the Department of the Interior. For the Neets'aii Gwich'in, the necessity of the reserve was made clear by changing access to subsistence resources. John Fredson, the Neets'aii Gwich'in individual most responsible in establishing the Chandalar Native Reserve, noted in proposing the reserve

boundaries that “[air]planes are rapidly changing the methods of trapping,” and he feared the impacts increased access to individuals other than Neets’aii Gwich’in would have on the fish and game populations upon which his people depended (Mackenzie 1985:160). In order to create a protected reserve, Fredson had to draw up boundaries for the reserve based on criteria set out by the Bureau of Indian Affairs, and it is from his delineations that the reserve boundaries were created. In 1950 and 1957, Arctic Village made a petition to the Interior Department to expand the reserve boundaries to include additional hunting and fishing territory to the north and west of them, stating that they had been unaware of the original boundaries claimed. These claims were eventually denied (Lonner and Beard 1982:101-103). The criteria Fredson used in creating the Chandalar Native Reserve will be discussed later in the review of land use sources.

With the passage of the Alaska Native Claims Settlement Act (ANCSA) in 1971, the trust status of the Chandalar Native Reserve was revoked, and the ANCSA-formed Arctic Village and Venetie village corporations took over the lands themselves in the reserve rather than enrolling the lands in the Doyon Regional Corporation. In 1979 the still existent IRA tribal government took direct control over the 1.8 million acres of reserve land, having been voted the responsibility by the village corporations which were subsequently dissolved (Lonner and Beard 1982:103).

In effect the separate status of the reserve lands has meant little in the overall patterns of land use for the Neets’aii Gwich’in, except perhaps for the intensity of use. The Neets’aii Gwich’in still hunt and fish in adjacent non-reserve lands which they traditionally have used. There is, however, often a conflict between the Alaska or Federal Fish and Wildlife regulations and the Neets’aii Gwich’in hunter’s own perception of

conservation and proper forms of hunting. That this may create a differential in intensity of use between reserve and non-reserve lands is a possibility. However,

more likely, social reality is that their actual harvest will be limited by need, opportunity, and local rules rather than nonlocally generated rules. Nonetheless, they do not like to hunt, fish, harvest wood, trap, or cross over lands when they feel that they are doing so in violation of the law. [Lonner and Beard 1982:159]

### **Subsistence Ecology and Land Use History**

The reconstruction of land use of the Neets'ait Gwich'in prior to contact must be based on oral historical, archaeological and deductive historical evidence. Investigations of large scale movements and population fluctuations among the Gwich'in have been done by Hall (1969) and Krech (1978). From their conclusions it can reasonably be inferred that Neets'ait Gwich'in subsistence patterns and population were affected by the movement into their territory by, and the subsequent absorption of members of the Dihaii Gwich'in; and by the epidemic diseases that preceded and accompanied direct contact with European peoples. Trade for goods of English or Russian origin through Indian or Inupiaq intermediaries or sought in travel by Neets'ait Gwich'in individuals themselves must also have been a factor in the gradual change subsistence patterns (McKenna 1965:25). However, any conclusions as to the effects that such pre-contact shifts might make on specific local land use patterns of the Neets'ait Gwich'in would be highly speculative. For the reconstruction of patterns of this nature one must turn to documented instances of contact.

The first recorded contact with the Neets'ait Gwich'in was in 1847 by Alexander

Murray who established Fort Yukon for the Hudson's Bay Company. Early in the contact period, there is little definitive that can be determined of the effect on Neets'ait Gwich'in subsistence by this regional trading presence and economy except that some Neets'ait Gwich'in apparently worked to supply the fort with caribou meat and benefitted from trade items such as guns and European clothing. Before contact with traders at Fort Yukon, and to a large degree until the final abandonment of the caribou fences early in the twentieth century, the Neets'ait Gwich'in subsistence pattern depended a great deal on group mobility. Andrews summarizes the Neets'ait Gwich'in subsistence cycle for this period:

Throughout the course of a year, the Netsi Kutchin established semi-permanent settlements which served as base camps and storage places while food sources were pursued. The focus of subsistence activities was on the hunting of large game, especially caribou, although sheep, bear and musk oxen were also important in earlier times. During the spring and fall migrations of caribou travelling in herds, Netsi Kutchin gathered at caribou fences as essentially every member of the community participated in the acquisition and processing of this resource. During the winter, big game hunting was supplemented by fishing through the ice and the taking of beaver. Fishing was also important in the summer as was procuring ducks, geese and berries with sheep hunting in late summer. Throughout the year small game such as squirrel, ptarmigan, rabbit and porcupine were also sought after. [Andrews 1977:107; citations omitted]

The introduction of iron kettles and tools through trading intermediaries preceded white contact and may have influenced Gwich'in subsistence patterns to a minor degree (McKenna 1965:25). Probably more important in changing the hunting ecology of the

Gwich'in was the introduction of the rifle for hunting. Rifles became a trade item early in the contact period and gradually caught on as they became more reliable and their acquisition affordable. Andrews (1977:229) dates the replacement of the caribou surround by the repeating rifle at about 1870. The last caribou surround in the Neets'aiti Gwich'in territory was built in 1914 as part of a nativistic movement initiated by Albert Tritt. Its use, however, was quickly abandoned (McKenna 1965:87). This meant that caribou hunting effectively became the province of individuals or small groups rather than of primarily large organized ones. The change in hunting patterns would probably not have had a major impact on the seasonal round, since caribou hunting still would have occurred mainly during the fall and spring seasonal migrations, but it would certainly have altered dispersion patterns of hunting groups during caribou hunting season.

Additionally, the diminishment of collective hunting was accompanied by an increased reliance by Neets'aiti Gwich'in on trade items such as European clothing and canvas for tents, lessening the reliance on some of the traditional products that the caribou provided.

Caribou were the most important food resource for the Neets'aiti Gwich'in in pre-contact times and continue to be for many contemporary residents. However, moose has been ignored as a contribution to Neets'aiti Gwich'in subsistence by many observers. During the latter half of this century, populations of moose have expanded north in the Neets'aiti Gwich'in lands and are now an important secondary resource for the people in Arctic Village and a primary resource for the people in Venetie (Caulfield 1983). The characterization of the Neets'aiti Gwich'in as a mountain people, in this light, proves to be deceptive. Since the establishment of Venetie (and its associated historic camps of Suko and Lower Fish Camp) before the turn of the century, part of the population makes considerable use of lowland resources as well (McKenna 1965:16; Caulfield 1983:170).

The two communities in the Neets'ait Gwich'in territory today were both founded around the turn of the century, Venetie being founded in 1895 by Old Robert (and called Old Robert's Village and Chandalar Village, as well as Venetie in the literature) (McKenna 1965:19), and Arctic Village being founded by Chief Christian in 1909 (Lonner and Beard 1982:97). In 1933 McKenna characterized the three Neets'ait Gwich'in settlements (including Christian Village which was later abandoned as a primary settlement area) as "not inhabited throughout the year but [serving] as bases and storage places" (1965:19). These villages were semi-permanent residences for the Neets'ait Gwich'in for many decades, the semi-nomadic pattern of hunting being strong in both communities until approximately the date of the establishment of schools in each village, respectively. The existence of schools in these communities meant that whole families could not go into the bush for hunting as they could before, and typically part of every household stayed in the village much of the year. The dates for the establishment of schools were 1937 for Venetie, and 1959 for Arctic Village (Mackenzie 1985:155; Campisi 1993:36).

Campisi (1993:14-15) has identified other factors in the historic process of changing settlement patterns in the villages of Arctic Village and Venetie. Besides the establishment of schools, the development of regular air services, the establishment of cooperative stores, the adoption of snowmobiles, and the construction of modern runways all contributed to the process of centralization and to some degree to sedentization. All these factors allowed residents in the two villages to get to and from the villages quickly and with more ease, provided wage employment and at the same time caused a reorientation toward the villages for newer services such as health care or purchased food.

In a more schematic view of the historic changes which affect patterns of

subsistence land use, Acheson (1977:320) has identified three stages of community pattern in the process of centralization that the Vunta Gwich'in underwent. These may be applied in general terms to the Neets'ain Gwich'in. In the first, aboriginal stage, the pattern was of gathering and dispersal where the gathering periods tended to occur at times of collective hunting. Dispersal was necessary at most times since a large group would quickly deplete the local supply of food animals unless during an event such as the fall or spring caribou migrations. The second stage involved the concentration of winter subsistence efforts on fur trapping for an outside market. In this stage, the acquisition of western technology such as fish nets, guns, tents, stoves, and other metal items obtained in exchange for furs necessitated periodic visits to a trading center (Fort Yukon in the instance of the Neets'ain Gwich'in). In this second stage the time and place of community convergence began to focus more upon the trading post and its more western oriented traditions than upon aboriginal collective activities. The third stage followed the establishment of schools and other employment opportunities in the formerly seasonal settlements. Declines in fur prices made the alternative possibilities for wage employment attractive during this final stage of centralization.

Other historic events that have affected Neets'ain Gwich'in subsistence patterns and have sped the transition from one stage of community pattern to another include the gold stampede at Caro in the first decade of this century (Hadleigh-West 1963:22), and missionary activity based in Fort Yukon beginning in the 1870s.

## REVIEW OF LAND USE DATA

### Early Narrative Accounts

Narrative accounts, particularly those published before McKennan's baseline ethnographic study conducted in the summer of 1933 (1965), were examined in order to attempt to reconstruct historic use patterns for the Neets'ait Gwich'in. Narrative depictions of land use, especially from the early period of Euro-American contact with the Neets'ait Gwich'in, tended to focus around the nature of the territory in which the tribe inhabited rather than on the subsistence activity itself. The earliest accounts, at best, located the Neets'ait Gwich'in in the territory to the north or northwest of Fort Yukon. Such descriptions were usually second hand as it is probable that no white man documented going into the Chandalar territory before or soon after Archdeacon Robert McDonald traveled there in 1863 (Caulfield 1983:88). McDonald's journal remains the sole substantial 19th century account of direct contact with the Neets'ait Gwich'in in Chandalar country. Historical narrative accounts often include descriptions of Gwich'in technology or of particular historical events which can help fill in the picture of land use. However, descriptions of when game was hunted or trapped, plant matter was collected, or wood for fuel procured are fairly rare. Descriptions of where these activities occurred are even more scarce.

The first Euro-American to record his travels in the Alaska Gwich'in area was Alexander Hunter Murray who founded Fort Yukon in 1847. Murray (1910) had contact with "Ney-et-se-Kootchin" at Fort Yukon whom he described as a band of about 40 men and whom he recognized as inhabiting the area to the north of Fort Yukon "near to the



polar sea" (1910:62). Kennicott (1869:173) spent the winter of 1861-62 in Fort Yukon, and in April "started for the Small House, beyond which, on the Gens du Large Mountains, the Indians were encamped, and killing deer in a 'barrier.'" Kennicott then goes on to describe the method in which caribou are dispatched in a surround, but does not specify the location of this device. Most early accounts of contact with the Gwich'in at or around Fort Yukon made little or no reference to the Gens du Large to the north. Whymper (1868:222-3), who traveled the Yukon River in 1868, gives passing reference to the attendance of neighboring Gwich'in tribes for the trading of fur at Fort Yukon, but does not mention the Gens du Large in his account. The same is true for Kirkby (1872:418-19) in 1864, Raymond (1900:38) in 1869 and Schwatka (1900) in 1872. Jones (1872:321) briefly mentions the Nat-sit-Kutchin, but does not specify the area from which they come. Hardisty (1872:311) mentions only the Na-tsik-koo-chin as possessing a variation of the Loucheux (Gwich'in) dialect. Dall (1870:109) lists the "Natché Kutchin", also calling them the "Gens de Large" as being "represented at the fort [Yukon]." He also indicates that they occupy the area north of the Porcupine River. Similarly, J. H. Turner (1893:193-4) briefly mentions the "Natsei Kutchin" as residing in the country north of Fort Yukon and numbering about 150 people.

The Reverend V. C. Sim visited the Neets'ait Gwich'in in 1881 and commented on their eagerness for religious instruction, but does not discuss land use (Sim in Wesbrook 1969:36). Of the narratives of other missionaries, including the prolific Hudson Stuck, who was never able to venture far into the Neets'ait Gwich'in area, the 1863 account of Archdeacon Robert McDonald (n.d.) is easily the most detailed description of contact with the Neets'ait Gwich'in in their own territory before the turn of the century. The Archdeacon may have been the first white person to record a visit to the

Gens du Large north of Fort Yukon. McDonald departed Fort Yukon on March 17, 1863 with Strachan Jones, the Hudson's Bay Company fur trader, and describes in varying detail his interactions with the Neets'aai Gwich'in during his month and a half long visit to their area. His account includes good information on Neets'aai Gwich'in hunting methods and technology, particularly regarding the use of the "spring barriere" or caribou surround. But again, like other early accounts, his descriptions lack anything but the vaguest geographic detail.

Perhaps the only other significant account of Neets'aai Gwich'in hunting or fishing activity before the turn of the century has the Indians fishing outside what has been normally identified as their territory. Francois Mercier, a fur trader at Fort Yukon, describes the treatment of the Gens du Large or "Natché-Koutchin, by Sènatè the "Koutcha-Koutchin" chief. According to Mercier (1986:54), Sènatè planned unprovoked attacks on the Gens du Large one time while they were fishing on the Yukon:

Once, around 1850, Sènatè, knowing that the "Gens du Large" were fishing for salmon in the large eddy which is found at the foot of the rapids, called the first rampart of the Youkon, about 45 miles upstream from the Noukelakayet Station . . . , conceived the diabolical plan of treacherously massacring these poor fishermen . . . . [1986:54]

Mercier also reports that "another time Sènatè and another Indian of his tribe . . . were also out hunting in the region which the Porcupine River borders to the north, when they discovered a small part of Gens du Large hunters sleeping in their camp" (1986:56).

Around the turn of the century accounts of the Neets'aai Gwich'in begin to yield more information on land use. While first hand descriptions of hunting in the the Chandalar territory by Neets'aai Gwich'in were still rare, some sources gave more

information on hunting ecology. Richardson, for instance, in indicating the variability of the abundance of game in the interior says, "In the winter of 1897-98 one family of the Gens du Large Indians brought considerable caribou meat into Fort Yukon for sale. Last winter these same Indians were unable to get sufficient to keep them from starving to death" (1900:750). At about this time the first maps of the area appear as well. One early map of the area was created in 1901-1902 by the prospectors Carter and Marsh who came south into the Chandalar country from the North Slope drainages of the Canning and Colville Rivers (Orth 1967:19). While the Marsh and Carter map depicted a substantial portion of the Neets'ain Gwich'in territory, a more detailed map was produced by F. C. Schrader in 1899 in the first geological survey in the area. Although neither Schrader's nor Marsh and Carter's maps give any substantial information on Indian land use, Schrader's narrative gives the first published hints at a purposeful investigation of native land use. Schrader (1900) went with a surveying party up the West Fork of the Chandalar River to its headwaters, then portaged over a pass to the headwaters of the Koyukuk River. Except for its lower reaches, after the confluence with the Middle and East Fork of the Chandalar Rivers, the North Fork of the Chandalar is largely outside of the area normally associated with Neets'ain Gwich'in. However, on the lower Chandalar Schrader did give some of the first (if sometimes speculative) references to indigenous land use where the use was pinpointed geographically. That Schrader's account gave better spatial information than had previous narratives rests in two factors: he had been to the area himself, and land use information was part of his objective. Schrader wrote that the purpose of his expedition was

. . . to make a geologic and topographic reconnaissance of the Koyukuk district, embracing the upper branches of the Koyukuk River and contiguous territory . . . and to obtain such other information concerning routes of

summer and winter travel and conditions of subsistence as might be of advantage in planning future expeditions. [1900:447]

Schrader's descriptions do not predicate the sort of use occurring in any given area, although he does associate either hunting and fishing or corridors for trading with specific minor drainages. In one instance, Schrader identifies one area of use outside those identified by Caulfield (1983:188) in the map of the land use summaries for either Arctic Village or Venetie. In the upper reaches of the West Fork of the Chandalar River Schrader describes a route that, "leads from the region about the head of Chandlar [sic] Lake by way of Baby Creek to the head of Sheep Creek, above mentioned. The divide, however, seems to be high and rugged. The route is probably but little used, even by the natives, and then only in their hunting trips" (1900:454). Schrader also indicates that the Neets'ait Gwich'in traded to south from the main fork of the Chandalar at Fort Hamlin on the Yukon as well as with the post at Fort Yukon (1900:457).

In another, later geological survey of the area, Mertie describes the Chandalar territory settlements:

Two . . . native villages exist in this general region, of which one, known as Christian Village, is on the Christian River about 75 miles by winter trail from Fort Yukon. The other, called Arctic Village, is on the East Fork of Chandalar River about 150 miles distant by trail. No permanent native settlements are located in the Sheenjok and Coleen Valleys, and this region east of Chandalar and Christian Rivers is therefore uninhabited except for a few hunters and trappers. [1928:110-11]

Mertie's paper describes the geographic and geologic features of the area including the navigability of the rivers. Other than discussing the native settlements and a

brief cataloging of the flora and fauna, Mertie does not give any indication as to land use. It is interesting to note that his initial investigation doesn't discuss Venetie (by this or any of its old names) as a Neets'aii Gwich'in settlement.

In a more complete accounting of this same survey, Mertie (1929) gives an essentially expanded report to the preliminary 1928 report. The value of the expanded report for its application to land use is in its discussion of Neets'aii Gwich'in settlement locations and populations and its presentation of the first detailed fold out maps of the area which include villages, cabins, and some trails. A map included in the text (1929:106) also shows the distribution of timber in the general region. Although not highly detailed, this map might be compared with other maps to show the change in forest extent which could possibly indicate human use over time (if properly correlated with other sources). However, given the meager extent to which the large scale map is filled in with topographic detail — one of Mertie's primary objectives — one cannot depend too much on the detailed accuracy of the forest map, especially in areas where Mertie does not show contours. In this 1929 description of the area, Mertie does mention the existence of Chandalar Village. Although he does not give a population for this village, later to be named Venetie, he does put Arctic Village at "about 75," and Christian Village at "perhaps 20" inhabitants (1929:109).

The Episcopal missionary Hudson Stuck, although based in Fort Yukon and widely travelled in Alaska seems to have visited Neets'aii Gwich'in territory only twice, both times along the main course of the Chandalar River through Venetie. On one trip, while on his way to Bettles he passed through Chandalar Village (Venetie) in late 1905 where he stayed for a few days in order to deal with the beginnings of an outbreak of diphtheria (1914:27-33). On a later winter trip to the Arctic in 1917, Archdeacon Stuck

took approximately the same route staying at Robert John's camp and "Chandelar [sic] Village" along the way. Stuck describes the camp as an excellent spot for procuring resources:

A couple more families were housed within a stone's throw, so that the place was quite a little settlement. There was a good fishing stream nearby, firewood was handy, potato and turnip patches had been cultivated, and it was in a good region for moose and not far from the threshold of the caribou country; altogether an eligible situation for outlying Indians.  
[1920:12]

When the Archdeacon reached Chandalar Village, he described the scarcity of dog food due to the failure of the salmon run in the previous summer: "During the early summer, when the king salmon ran, the Yukon had been persistently bank-full, and the driftwood that always accompanies flood had clogged and stopped all fish-wheels. The later runs of silver and dog-salmon scarce came at all . . ." (1920:15). The use of the Yukon River by the residents of Venetie for salmon fishing has continued and is corroborated by Caulfield (1983:177). Stuck also notes the strong relationship between the people of Venetie and Fort Yukon, the latter being "their mart and metropolis; thither they go to be married and take their children to be baptized, sometimes spending weeks there at a stretch" (1920:14).

The account by Edington and Edington (1930) of Deputy U. S. Marshall A. H. Hansen's winter sled-journey in 1910 to the Chandalar country to investigate the death of prospector J. D. Clark in the Wind River area provides some insight into historic Neets'ain Gwich'in population dynamics regarding land use. Although McKennan

(1965:27) described the Edington's retelling of the journey as "unduly lurid," the factual accuracy in the observations concerning the settlements of Christian Village and Arctic Village in this account are, in general outline, corroborated by other sources. In the account, Hansen found Christian Village having more than 50 log cabins, "although it had been more than fifteen years since the Chandalar abandoned this place (Edington and Edington 1930:274). (This contradicts McKennan's (1965:19) assertion that Christian Village was founded in 1901, some four years after the Edington's account has it abandoned.) Later the Neets'aii Gwich'in encampment is described at "Big Lake" (Old John Lake):

As we approached the village I could see the great difference between it and the old Christian Village. Where there had been all cabins, here was one lone cabin, the rest tents. I found later that the timber for the cabin, which was the Chief's home, had been hauled on sleds with dog teams from a great distance—arduous miles—as the scrub timber here was poor stuff for building. [Edington and Edington 1930:288]

Given the newness of the state of the encampment at Old John Lake, it is easier ignore the assertion that Christian Village had been deserted for half a generation, and to believe McKennan's date for the founding of Christian Village. Even by the Edington's account, the condition of the abandoned village was excellent. While in Christian Village, Hansen recounts that, "there were not three cabins with the roofs broken in, and in many of them the doors and windows were in perfect condition" (1930:274). The account also describes among the Indian encampment Inupiat ("Husky Eskimos") from the North Alaskan coast who were visiting the Old John Lake encampment for trade (1930:288).

The written account with the greatest potential for helping to understand land use

patterns early this century was produced by Albert Tritt (n.d.). Recorded sometimes in English, but more often in Takudh, a written form of Gwich'in created by Archdeacon Robert McDonald in order to translate and teach the bible in the native language, Tritt's journal conveys information on subsistence, regional travels and history, demographic changes, and environmental conditions. There is some land use information to be found in the English portion of the journals, and likely there is significantly more in the Takudh portions. However, the English narrative of the journal is particularly non-linear (the problems associated with this are discussed below in the section on oral narratives) and the geography and time frames are vague. Therefore Tritt's English portion of the journal is of limited usefulness in reconstructing specific patterns. It is conceivable that the Takudh portion is of more value in this respect.

Most of the remaining narrative early twentieth century accounts reviewed are poor on land use information. In an account from the 1920s, Mason (1934:257-73) tells a brief and perhaps somewhat anecdotal tale of a Chandalar Indian and a white prospector on a caribou hunting foray in the Chandalar area. The veracity of the details of the account in this instance do not matter, since little of general patterns of land use can be determined from the story. Cadzow (1925) gives an account of the Neets'ain Gwich'in based largely on second hand information from earlier sources. Burke (1961:248-52) records a journey taken to Arctic Village in 1922 by her husband Grafton Burke, who was the doctor at the mission hospital in Fort Yukon, and John Fredson. Other than describing the trip from Fort Yukon to Arctic Village as taking 10 days (in winter), there is no information on spatial aspects of land use in the passage. A second version of this story was related by Fredson to Edward Sapir in Gwich'in, again with no substantial information on land use (Fredson 1982).

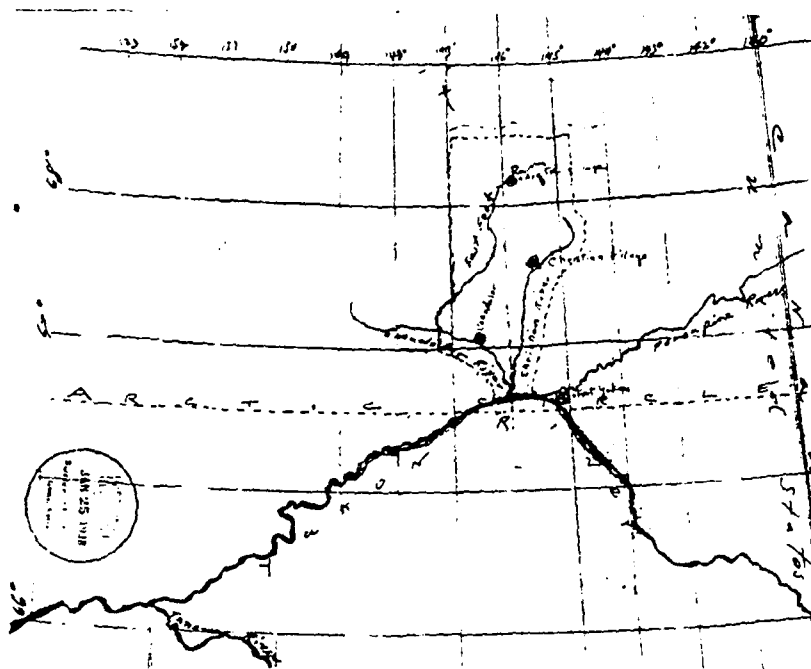


John Fredson was the first Neets'aii Gwich'in to receive a thorough western education and become an adept participant in both western and native cultures. In addition to other projects in which he sought to improve the conditions of his people, he took upon himself the task of organizing the establishment of the Chandalar Native Reserve. In drawing up the boundaries of the Chandalar Native Reserve in 1938, Fredson needed to determine the parameters of the reserve based on criteria set out by the Bureau of Indian Affairs. On a 1936 map provided by the Department of the Interior, he was required to add

. . . such things as trapping lines, cabins, trails, fish camps, and muskrat lakes as well as dog team trails, cabins for shelter of travelers, boat landings, trading posts, operating mines, timber claims, freight and passenger boat routes, and any white use and occupancy in the area.  
[Mackenzie 1985:168-9]

According to the Mackenzie “no copy of this detailed map has come to light” and we must rely on the hastily hand-drawn map which accompanied the original request Fredson made for reservation status (See Map 2) (1985:169). Even though the criteria for creating the reserve boundaries required an investigation that was in essence a land use study, it is clear from the delineations of territory determined by Mckennan (1965:16), and Hadleigh-West (1963:15-17) that Fredson's hand drawn map did not come near a complete circumscription of the territory of traditional use of the Neets'aii Gwich'in. This observation is reinforced by the request of the IRA tribal government in 1950, 1957, and 1981 to include substantially more land that they said was used for hunting and fishing within the reserve boundaries (Lonner and Beard 1982:103). It is likely that a factor in limiting the extent of Fredson's proposed reserve boundaries was his limited

Map 2.



Fredson's map of the proposed boundaries of the Chandalar Native Reserve

Source: Mackenzie 1985

knowledge of the entire area of traditional use of the Neets'aii Gwich'in. Reasons of practical and political expediency may have played a role as well.

McKenna's 1933 study (1965) provides a watershed between the early narrative accounts and later studies of the Neets'aii Gwich'in. This original ethnography of the Chandalar people gives a broad array of cultural and environmental information in the classic form of descriptive ethnography. Among the information useful for land use reconstruction are a discussion of territory, regional geography, divisions and ranges of local bands, population, recent environmental changes, history of relations with neighboring tribes, and subsistence. Of particular interest are McKenna's division of the Neets'aii Gwich'in into three local bands that he associates with several major families each. Additionally, McKenna corresponds each local band with a local territory, roughly dividing the bands into northern (Arctic Village), central (Christian Village), and southern (Chandalar Village) bands (1965:19-20). It is clear from the residence of present day Neets'aii Gwich'in families that there has been considerable intermarriage and movement between the villages so that it is difficult to correspond the location of families with a single village over a long period of time (Campisi 1993:10-11). Despite the quality of the information given by McKenna, his account does not give much information on specific land use. His work must be seen primarily as providing an ethnographic background by which historic land use may be understood.

### **Orally Transmitted Narratives**

Land use depictions taken from oral narratives given by Neets'aii Gwich'in individuals themselves need to be assessed individually for their value in engendering a systematic picture of land use from a western scientific perspective. There are a number

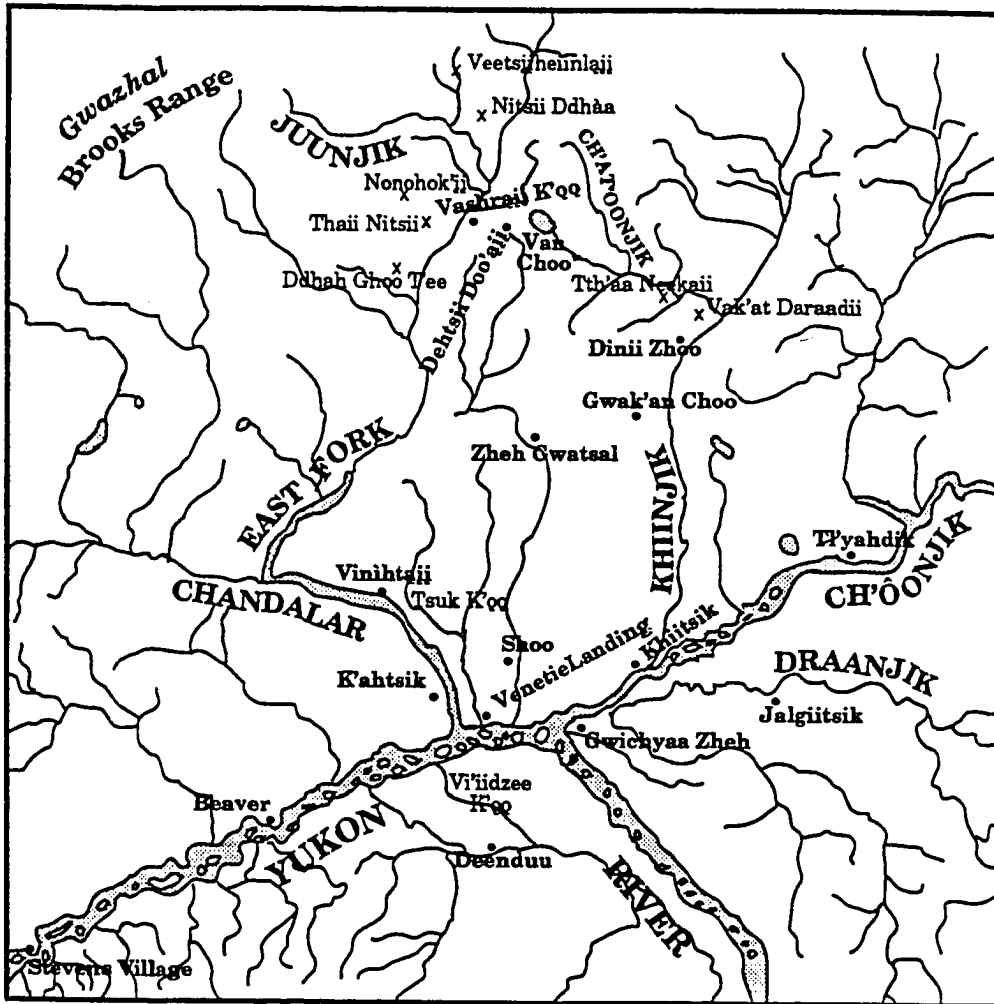
of problems with trying to take land use information directly from oral narratives to use as evidence in the western scientific milieu. J. Cruikshank states that “traditions passed on orally begin with very different premises from western science and cannot readily be interpreted out of context” (1981:72). Additionally, J. Cruikshank says that linguistic differences, problems of free-flowing access to oral traditions, differences in literary style and symbolism, different time and space perspectives, different notions and expressions of quantitative data, and deliberate distortions of information can hinder the translation of information in oral narratives into data for scientific use (1981:72-3). Clearly, traditional Gwich’in tales with a highly mythological element to them are not particularly reliable for reconstruction of land use patterns for spatial analysis in the western scientific paradigm, whatever their value as sources of information to the Gwich’in individual. Stories more easily classified as myth or legend will have less geographic value in this instance than accounts given of contemporary or near contemporary lives usually classed under the heading of oral history. For the Neets’ait Gwich’in there are a number of such accounts, all originally told in Gwich’in and then transcribed into English, which begin to give a picture of the Chandalar country. For reconstructing land use patterns, the accounts range in usefulness from brief statements about which areas were or are rich in resources to, more rarely, detailed accounts of resource harvesting trips. A particularly linear example of the latter form is told by Katherine Peter (1992) of a late summer trip up the Junjik (Juunjik) River drainage to harvest Dall Sheep. After camping next to the mountain “Kiini’rintin” for a month and a half, Peter, with a small group of Neets’ait Gwich’in started back for Arctic Village loaded down with sheep meat:

The next day, August 31, 1936, we—Soozun, Myra, and I— went off toward [the pack dogs]. It was at that time, that as we were approaching the pass, caribou were also going over the pass with us at a slight distance. They still had the velvet on their antlers. We came south over the mountain pass they call Veetsiiheinelaii. The next day, September 1, 1936, we woke up when the dogs barked a little, and down a ways from us the caribou were going, rubbing the skin off their antlers, it seemed, but even so we could not shoot them. We had enough to carry as it was. [1992:23]

This passage from Peter's account is unusual in that it specifies the date, time of year, location (in the form of Gwich'in place names), what resource was being harvested, who was involved in the trip, and to a certain degree in an earlier part of the account, how much was harvested. Peter's *Neets'aiti Gwiindaiti: Living in the Chandalar Country* (1992) is perhaps the most detailed account of life in the territory of the Neets'aiti Gwich'in that focuses on the day to day search and harvesting of resources. Although the bulk of Peter's account is not as specific in giving land use information as the passage cited, it provides considerable depth concerning how, where, and when some members of the Neets'aiti Gwich'in obtained resources in 1936 as well gives a social and economic context for the subsistence activities described. The 1992 edition of Peter's account also includes a map with the place names mentioned in the text (1992:100) (see Map 3).

Other published oral historical accounts of value are by Fredson (1982), and a collection of brief oral narratives by Gwich'in elders including a member of the Neets'aiti Gwich'in, Silas John, recorded and transcribed by Katherine Peter (1979). Silas John's account discusses land use to a considerable extent, interweaving information about where resources were or are abundant with concerns about how or whether his people will continue a traditional subsistence life in the future:

Map 3.



Place names mentioned in *Living in the Chandalar Country*

Source: Peter 1992

There's a place called Tsuk K'oo further south of here [Venetie] where my grandpa Robert John used to fish. I discovered there are lots of fish there in that lake. Peter Ts'ik fished on Old John lake too. They should fish there now, but I wonder why they don't fish there. I want people to make a living, but when I talk about it, it seems like I'm only talking to myself. [Peter 1979:36-38]

For the purpose of extracting specific land use data, John's account is less linear and presents greater problems of contextual translation than those given by Peter (1992) and Fredson (1982). However, his narrative is still full of valuable information. Fredson's account is perhaps the most fluid in English, reflecting his education and familiarity with the western cultural milieu, but has little specific on land use. Peter's account, as stated before, is also reasonably fluid in English, while Silas John's is more fragmented and therefore presents difficulties when trying to discern specific 'objective' information for land use analysis.

### Other Data

After the 1930s, information on Neets'ain Gwich'in land use comes from a variety of sources which differ in form and content from written narratives. These include census data, economic studies, fish and wildlife surveys, archaeological surveys, and impact studies associated with proposed or impending development projects, or any combination of these investigations. A few of the following studies provided analyses of land use that, in a limited way, foreshadowed later more methodologically comprehensive studies.

In the early 1950s, Shimkin published two studies; the first (1951) was an

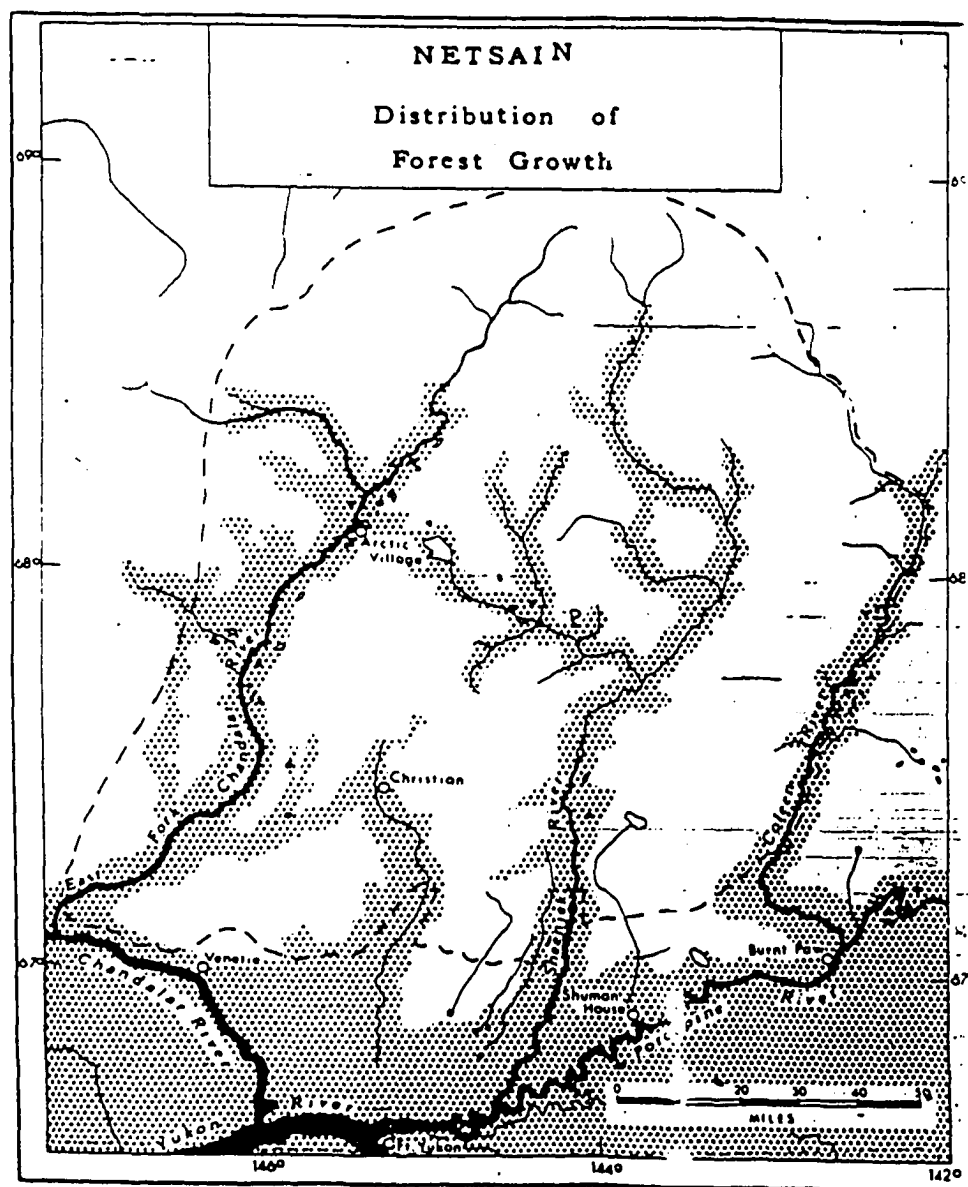
ecological description of the Fort Yukon area with a brief evaluation for potential development possibilities, and the second (1955) was essentially an assessment of economic possibilities as an addendum to the initial study. The study area, defined as the Fort Yukon area included the Neets'aii Gwich'in villages of Venetie and Christian Village, but kept out of its assessment consideration of territory beyond the Yukon Flats as well as considerations of the linguistic and cultural differences between the Gwich'in groups it encompassed. Shimkin provided a map that shows the traplines considered in the latter study (1955:230). Dr. Shimkin correlated "control" of each trapline in the study area to one or more individuals, cataloguing 63 traplines, some of which clearly belonged to Neets'aii Gwich'in individuals, trapping pairs or groups. In his ecological study (1951:37), Shimkin estimated the harvest of fur-bearers in the Fort Yukon trapping area, but does not break down the harvest data by villages, nor does he correlate the data with the traplines in his latter publication (1955). Shimkin therefore used some basic data gathering techniques useful in contemporary land use studies, but his focus on the Fort Yukon trapping area as a whole ignores the economic and social relationships between groups and/or villages on the Yukon Flats and neighboring areas outside his geographical focus of study. Furthermore, because he gave the harvest data for the Fort Yukon area as a whole, we can discern little specific about Neets'aii Gwich'in land use from his study. For the purposes of reconstructing land use patterns Shimkin's study reveals the existence of less than a dozen traplines and gives us an overall picture of the subsistence economy in his study area undifferentiated from the Neets'aii Gwich'in villages it includes.

Hadleigh-West (1963) produced another study which involved methodological elements used in contemporary land use and occupancy studies. Hadleigh-West's study was a descriptive ecological work which included the collection of place names with the



intent to augment the description of the Neets'aai Gwich'in territory and exhibit their knowledge of the landscape. In compiling his map of place names, Hadleigh-West used primarily one or two informants and gathered the data both in Arctic Village using appropriate topographic maps and while in the field gathering other information (Hadleigh-West pers. comm. 1995). As has been stated before, Hadleigh-West did not include Venetie in his study and therefore did not collect place names for the southern area of the Neets'aai Gwich'in range. The place name maps are useful in understanding certain aspects of the extent of Neets'aai Gwich'in territory, particularly if used in conjunction with Caulfield's place name maps (Caulfield et al. 1983). Hadleigh-West did not supply translations for his place names. The primary focus of Hadleigh-West's study was in describing the ecological adaptations the Neets'aai Gwich'in employed in order to live in a demanding environment. The description is general and provides much background information on subsistence while rarely specifying areas of use, except in one instance. Areas of forest growth (1963:57) and timber source areas (1963:65) are indicated on maps within the borders of the Neets'aai Gwich'in territory identified by a dashed line on Hadleigh-West's maps (see maps 4 & 5). These maps indicate both resource availability and usage areas, in this instance timber, and a graphic depiction of Hadleigh-West's conception of Neets'aai Gwich'in territory. Like McKennan, Hadleigh-West (1963:15-17) also gave a written description of the extent of the Neets'aai Gwich'in territory. Hadleigh-West repeats his exclusion of the southern local band of Neets'aai Gwich'in by asserting that the "southern boundary corresponds at least approximately to the rather abrupt face of the piedmont where it conjoins the Yukon Flats" (1963:16). Otherwise his territorial description corresponds with McKennan's (1965:16), with the

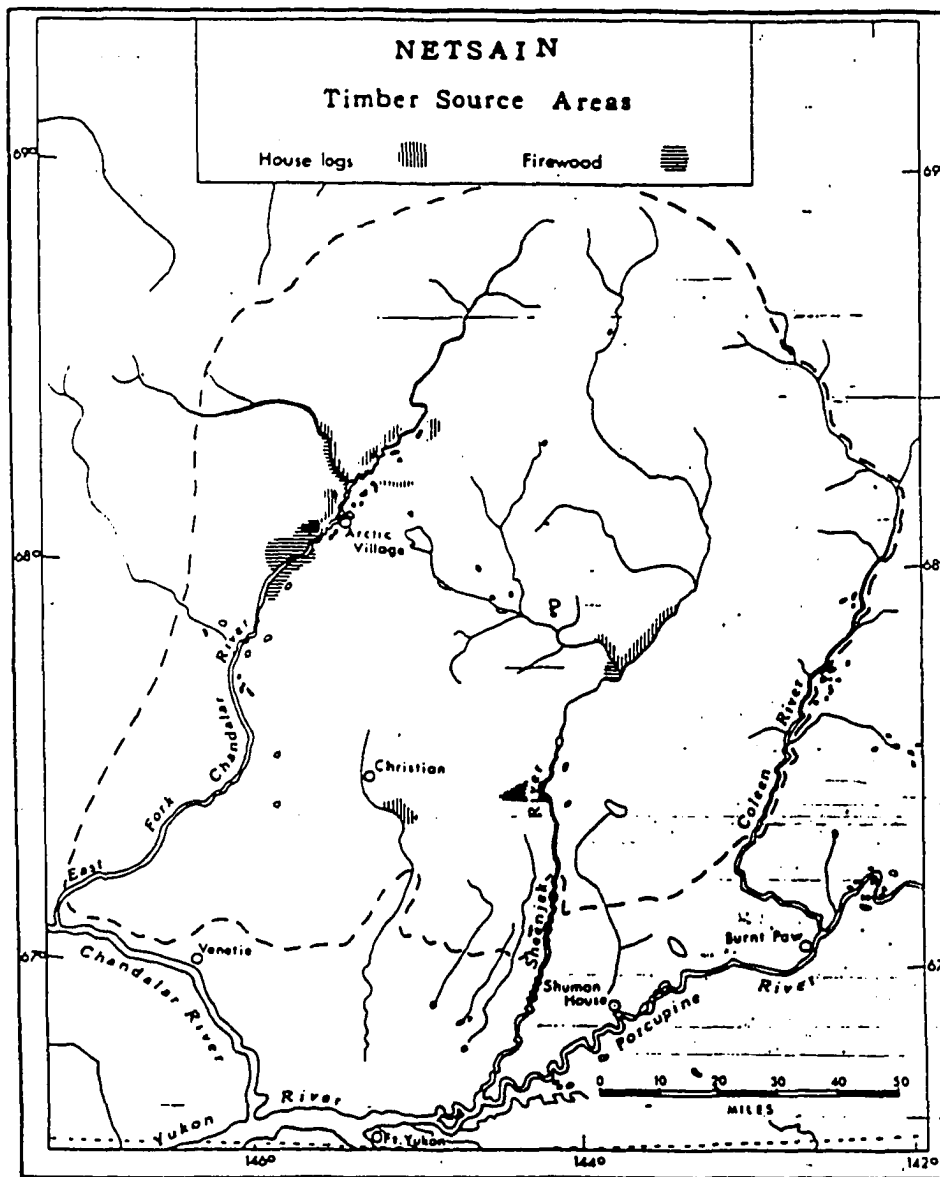
Map 4.



Distribution of forest growth in Neets'ain Gwich'in territory

Source: Hadleigh-West, 1963

Map 5.



Timber source areas in Neets'ain Gwich'in territory

Source: Hadleigh-West, 1963

inclusion that Neets'aii Gwich'in had formerly hunted in the headwaters of some the North Slope rivers somewhat beyond the crest of the Brooks Range (1963:16). Interestingly, McKennan (1965) describes a similar delineation of the southern boundary prior to the turn of the century:

Informants agreed also that only within the last forty or fifty years had their people moved into the Yukon Flats to the present settlements of Chandalar Village and "Suko". Their southern boundary then would have begun about where the East Fork joins the Chandalar River and continued east along the edge of the piedmont and the Yukon Flats to some point on or near the Coleen River. [1965:16]

It is conceivable that Hadleigh-West's exclusion of the Venetie band of Neets'aii Gwich'in in his study is based on this older notion of their territory.

In 1964, a report on the the potential effects of the proposed Rampart Dam on local fish and wildlife as well as on Alaska Native subsistence activities was published (U.S. Fish and Wildlife Service 1964). The Rampart Dam would have flooded the entire Yukon Flats area including the lower Chandalar River and with it the village of Venetie. The Rampart Dam study investigated the potential impacts on fish and wildlife populations in the proposed impoundment area. The method used for determining the impacts was to investigate the contemporary makeup and distribution of fish and wildlife in the impoundment area, determine the contemporary usage of these resources by subsistence, commercial and sport groups, and to project the make-up, distribution and foreseeable impacts of the changes on the various resource users if the impoundment were completed. In general the investigation focused on the distribution of

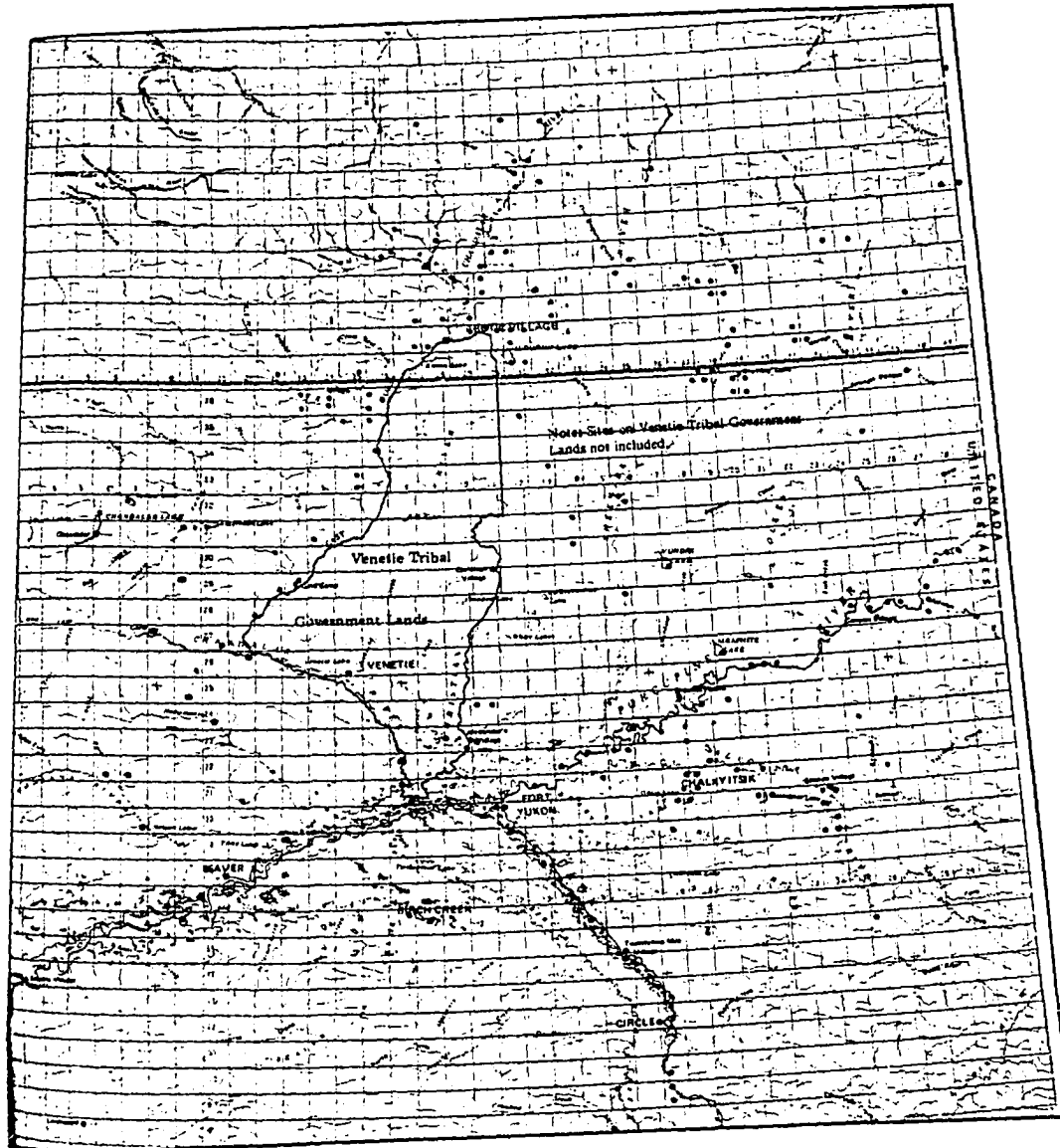
fish and wildlife species in certain areas, but not on the harvest by subsistence users of species in those areas. Also the subsistence analysis did not differentiate between the harvests of resources at Venetie from other communities along the Yukon Flats in the proposed impoundment area. For instance, in the investigation, the harvest data for fish were measured on a yearly basis and lumped together into one subsistence harvest category for the entire region under consideration. Again, because of the focus of the data gathering methods and the intent of the study, little specific can be determined of Neets' aii Gwich'in land use from this study.

Another study conducted to determine sites of historic, cultural or archaeological significance incorporated within the area of the Doyon Regional Corporation and selected under the Alaska Native Claims Settlement Act of 1971, section 14(h)(1) was conducted by Andrews (1977). Andrews inventoried 93 historic and cemetery sites in the territory of the Neets' aii Gwich'in. Locations for more than half the sites were collected from native residents in Arctic Village and Venetie. Locations for the remainder of the sites were collected in conjunction with D. Roseneau (Warbelow et al. 1975), particularly for caribou fences and caches. Sites included traditional settlements/camps (30% of sites), gravesites (not adjacent to camps) (26%), caribou fences (31%), caches (6.5%), and other sites (6.5%) (Andrews 1977:119). All such sites indicate land use in the area they are located, although with most of the sites it is difficult to associate anything but somewhat generalized dates of use. For instance, caribou fences were little used after the 1870s, so dating the construction and use of these artifacts usually falls at a date earlier than this, though specifically when is hard to determine. The location of the sites Andrews surveyed are referenced to United States Geological Survey topographic maps of the scale 1:250,000 by township and range. Within an identified 36 square mile township, the

location of each site is specified by which quarter of the township it is located in. This means that the descriptive identification of the sites in Andrew's survey falls within a range of 9 square miles. With this degree of accuracy, it is difficult to tell exactly where the sites are located, but contextual information helps pinpoint most sites. Regardless of the degree of accuracy or scale of the township and range coordinates, the referencing of sites helps to give a picture of overall use for certain types of subsistence activities. Andrew's study also gives specific contextual comments on historic use for many of the sites. Caulfield (1983:27) gives a graphic summary of the historic and cemetery sites found in this study (see Map 6). The Neets'ait Gwich'in sites are undifferentiated from other Gwich'in sites on the map.

Another study contemporary with Andrew's (1977) survey of historic and cemetery sites was done by Warbelow et al. (1975). This survey cataloged the remains of caribou fences in northeastern Alaska and northern Yukon Territory. Warbelow et al. found the remains or evidence of 46 caribou fences in the study area, 35 of which clearly fall within the area of traditional use of the Neets'ait Gwich'in. Nineteen of the caribou fences are located within a radius of 30 miles of Arctic Village (Warbelow et al. 1975:10). Map 7 shows the distribution of the caribou fences found in the survey. The caribou fences were not distributed throughout the territory of the Neets'ait Gwich'in, but rather are found within the migration path of the Porcupine Caribou herd and were therefore concentrated in the northern section of their territory. The use of the caribou fence has been documented in the Neets'ait Gwich'in territory by McDonald (n.d.), Murie (1935), Hadleigh-West (1963), and McKennan (1965). Constructed in a variety of

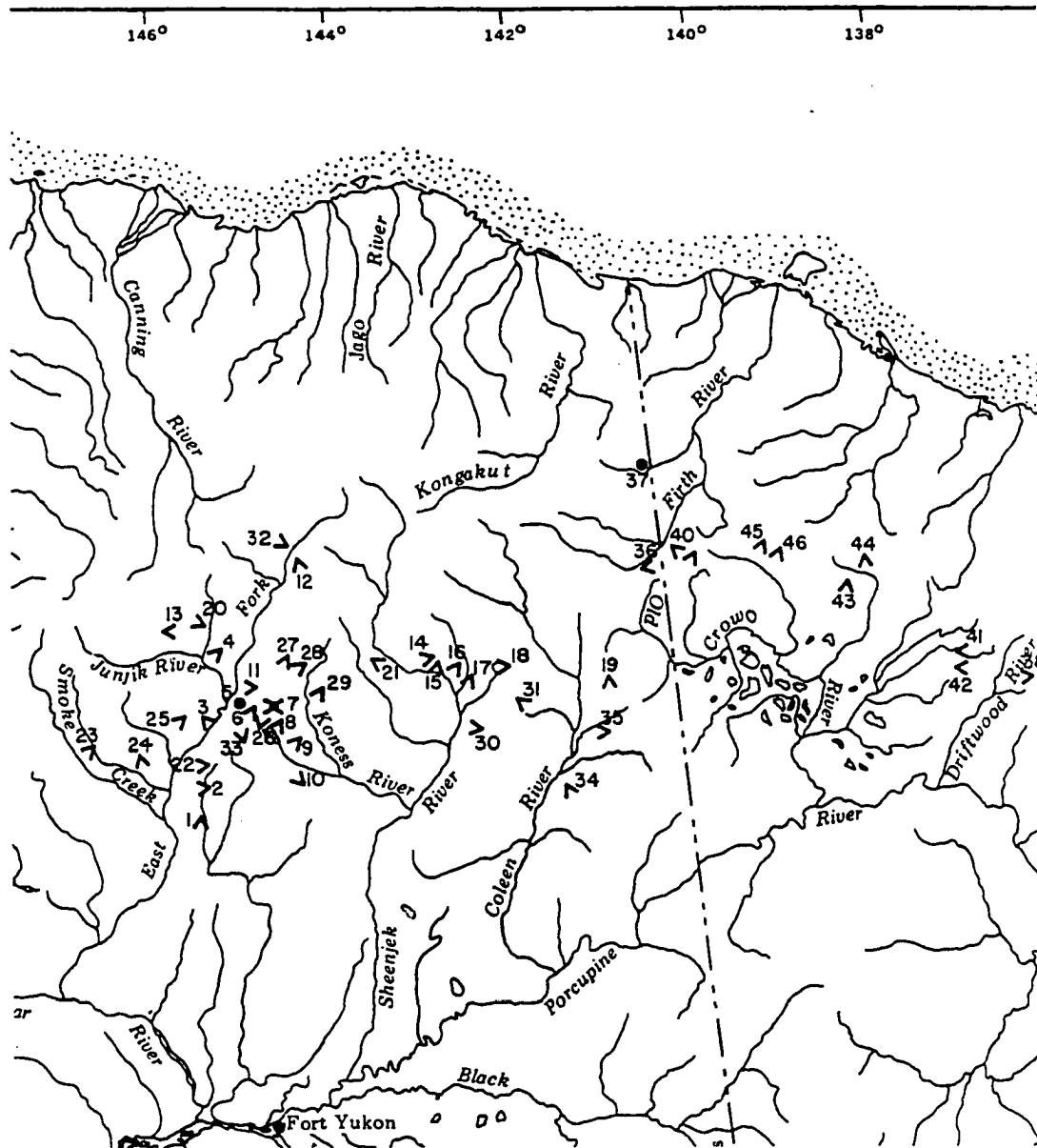
Map 6



General locations of historic and cemetery sites found in Andrews 1977.

Source: Caulfield 1983

Map 7



Distribution of caribou fences in northeastern Alaska and northern Yukon

Source: Caulfield 1983, after Warbelow et al. 1975



ways, forms, and sizes depending on the lay of the local landscape, the available materials, and the direction which the caribou traveled through the area, the caribou fences were designed to help funnel migrating caribou into a pound or constricted area where many of them could be dispatched efficiently using snares within the fence itself, or with lances or bows and arrows (and later rifles). The use of the caribou fence as the primary method for taking this most important resource for the Neets'aii Gwich'in declined with the introduction of dependable firearms. As was stated in the background section, the change from the use of the caribou surround which involved the collective use of labor, to the use of rifles meant that caribou hunting could be accomplished with as little as one person. Therefore, the intensity and pattern of land use connected with caribou hunting altered dramatically with the change in hunting technology and division of labor which accompanied the technological change. Understanding the pattern and distribution of caribou fences gives a glimpse into the early and pre-contact land use patterns of the Neets'aii Gwich'in.

More recent studies conducted by the Alaska Department of Fish and Game (ADF&G) Division of Subsistence have focused on the harvest of salmon on the Yukon River and its subsidiary drainages (Andrews 1986; Walker et al. 1989). Harvest data from the years 1977 through 1988 indicate that residents of Venetie caught significant numbers of fall chum salmon, as well as some chinook salmon. Spring chum salmon were also caught, although data for Venetie were only available for 1988. The other kinds of salmon available in the Yukon River fisheries were not caught or caught in negligible amounts by residents of Venetie. The ADF&G studies do not specify the locations where the salmon are harvested, although one of the principal investigators indicated that

residents of Venetie continue to use harvest sites on the Yukon River as well as the Chandalar (Anderson pers. comm. 1995).

Other data which indirectly support the understanding of land use over time can be found in the U.S. Census and other estimates of population of the Neets'aiti Gwich'in communities. Figure 1 shows the official U.S. Census populations for Arctic Village, Venetie, and Christian Village from 1920 to 1990. All population data must be taken with caution regarding its method of collection and with an eye to the impact of historic occurrences which may have affected population figures, and it is best to correlate estimated populations with as many other sources as possible before any population trend may be speculated. Nevertheless, the populations represented in Table 1 (though underrepresentative of the Neets'aiti Gwich'in as a whole) give some idea as to population movements and perhaps changing emphasis in land use and types of subsistence resources harvested over time. For instance, the low population figures for Arctic Village for the years 1930 through 1950 may indicate a lessening emphasis on caribou hunting during this period. However, such speculation would need to be correlated with other sources such as harvest data or oral histories which discuss the caribou harvest.

### Land Use Studies

Land use and occupancy studies represent the discipline of anthropology's most systematic attempt to understand the geographical nature of subsistence activities of northern native peoples. In practical terms, their application was aimed at public policy over conflicts concerning land and resource use. Principal aspects of the contemporary land use study were pioneered by Foote (Foote and Williamson 1961), but the most

Table 1

U.S. Bureau of Census populations for Arctic Village, Venetie, and Christian Village:

	<u>1920</u>	<u>1930</u>	<u>1940</u>	<u>1950</u>	<u>1960</u>	<u>1970</u>	<u>1980</u>	<u>1990</u>
Arctic Village		40	24	53	100	85	111	96
Venetie	32	62	86	81	107	112	132	182
Christian Village		36	34					

Source: Campisi 1993

comprehensive methodological model for the contemporary land use study is provided by the *Inuit Land Use and Occupancy Project (ILUOP)* (Freeman 1976). The primary thrust of the *ILUOP* was to expand understanding of land use by incorporating the perceptions of land use of the people who were being studied. To this end, the methodology for conducting the studies included extensive informant interviews and participation involving members of the communities being studied. The principle result of the Inuit participation in Freeman's overall methodology was the map biography. This technique was used in Caulfield's (1983) land use study of the Alaska Gwich'in communities and its application is reviewed below. According to Ellanna et al. (1985:86), the methodology employed by Freeman (1976) also emphasized the geographic extent of land use, placing the analysis at a nominal level (the presence or absence of use for any given geographical region), rather than as one of economic valuation, such as that conducted for the proposed Rampart Dam (U.S. Fish and Wildlife Service 1964). Ellanna et al. (1985) discuss the limitations of the *ILUOP* in relation to the broader applications of land use and occupancy studies. In addition to the map biographies, the *ILUOP* involved,

Supporting studies [which] included narratives describing subsistence patterns by region, prehistoric and historic accounts, ethnographic description, background data, linguistic maps, oral histories, emic perceptions of the land and resources, and methodological critiques. Noticeably absent are cash sector socioeconomic data and harvest levels, which were the keystone for the economic development, impact, or compensatory oriented studies prevalent in Canadian subsistence research. [Ellanna et al. 1985:89-90]

In the instance of the present Neets'ait Gwich'in communities of Arctic Village and Venetie, the first systematic land use study was conducted by Caulfield (1983) using methods similar to those developed for the *ILUOP* (Freeman 1976). Caulfield's study provides a good example of one of the ways subsistence land use data are collected and used in the contemporary land use study. The methods employed in this study included the development of land use maps (map biographies) where members of the study communities documented the areas where they harvested wild resources during their lifetimes. In gathering data in this manner, Caulfield's study relies primarily on the recall of native informants individually to document the harvest of various species of animals or plants by indicating the spatial extent of their harvest areas. These land use data are then collated and each composite map depicts the aggregated land use related to each species harvested for the community during the lifetime of its members. The aggregated data in the form of land use maps, therefore, represents the totality of land used by members of the communities surveyed over several generations. Caulfield used this approach, in part

. . . because of the belief expressed by local residents that land use maps must show sufficient time depth to accurately portray land use in an environment where resources are dynamic. Furthermore, the use of a methodology similar to that used elsewhere in the North makes the data suitable for comparative studies. [Caulfield 1983:8]

Since Caulfield's study is primarily interested in demonstrating "the nature and extent of land use for the harvest of wild resources through time" for Arctic Village, Venetie and other Alaskan Gwich'in communities (1983:3), it has the disadvantage that it generalizes

the dynamics of land use within the lifetimes of the individuals interviewed. This problem is mitigated by a thorough, though not exhaustive, review of literature pertaining to land use for the respective Gwich'in communities in which historic changes in land use patterns are discussed.

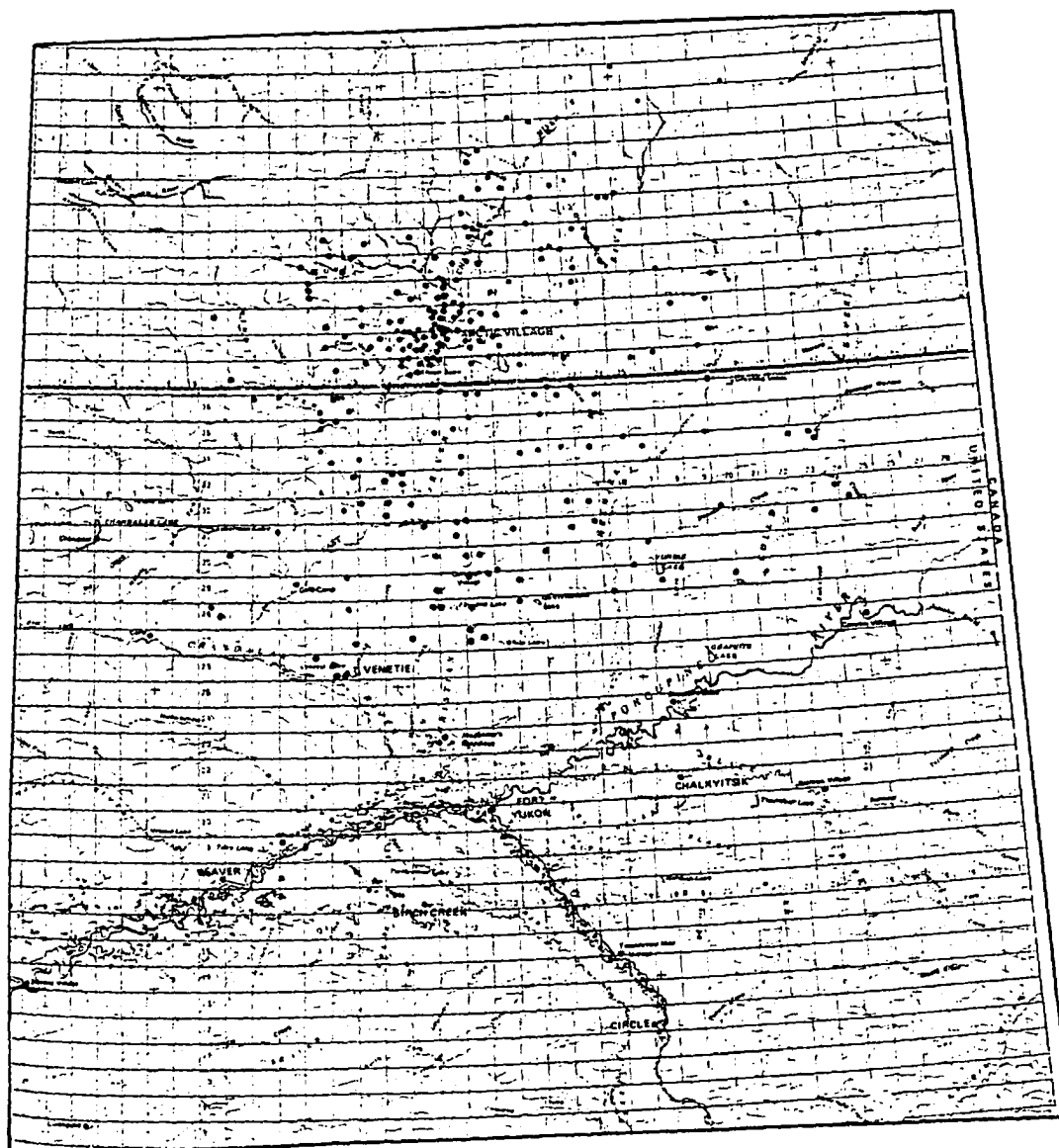
Caulfield also developed charts for the annual cycle of resource harvest in the Gwich'in communities where he conducted his study. The charts reflect when important species of plants and animals were harvested throughout the year. The information for the annual cycle charts were gathered through interviews with knowledgeable individuals in the community (1983:11). Similar to the difficulty with the lifetime map biographies, the annual cycle charts are likely to reflect a contemporary seasonal harvest cycle and cannot indicate temporal variation or changes in the species harvested over time.

Caulfield et al. (1983) also collected place names from selected informants to reinforce data gathered in the map biographies. Place names, which have become an integral component of many land use studies, are valuable to understanding the extent (general borders of land use territory) and to some degree the nature of land use in a particular area. Ritter (1976) and Kari (1989) have emphasized the importance of place names in understanding Northern Athabaskan environmental knowledge and land use. Ritter, in speaking of the distribution of place names within the traditional territory of the Peel River Kutchin (Teetl'it Gwich'in) observed that "certain areas within the general 'borders' of Peel River country are more densely named than others. This clustering together of named sites is a reflection of intensive, sustained land use patterns in these regions" (1976:129). Furthermore, Gwich'in place names may indicate areas of fauna or faunal activities, flora, activities associated with subsistence pursuits, or the identities of individuals and historical events (which may give clues to population distribution) (Ritter

1976). Ritter (1976:130) concludes that “traditional Kutchin place-names serve collectively to define the extent of lands occupied by three individual bands.” He also noted that historic changes in population distribution have been reflected in the Gwich’in nomenclature as well. Ritter’s observations concerning the Teetl’it Gwich’in may be applied in general terms to the Neets’ait Gwich’in as well. Caulfield’s (1983:109) compilation of Neets’ait Gwich’in place name occurrences is shown in Map 8 for Arctic Village and Map 9 for Venetie. The place names of Caulfield et al. (1983) have never been collated with those of Hadleigh-West (1963) (Kari pers. comm. 1995). Place names do not specifically show areas of use, although they can indicate places that were and/or are favored hunting or fishing spots. Rather, they show the approximate limit of territory through associations with landscape features developed through a cultural history of use.

The only other extensive land use studies in the Neets’ait Gwich’in area are ongoing and are being conducted by the U.S. Fish and Wildlife Service (USFWS) Office of Subsistence Management in conjunction with the Council on Athabaskan Tribal Governments (Sherrod pers. comm. 1995). The data for these studies are being gathered to be compatible with a Geographic Information Systems (GIS) format including locational information at the scale of a township and range based system and are intended to depict contemporary use. The GIS format requires that the researcher be able to put land use information in the form of points (i.e., fishing spots), lines (i.e., trails), or polygons (i.e., areas where moose are hunted or where firewood is gathered). Data in such a form are consistent with the aggregated data found in the model provided by the *ILUOP*, and the data produced by Caulfield (1983) in his study of the Alaska Gwich’in communities. In contrast to the *ILUOP* model, however, the USFWS study data are

Map 8

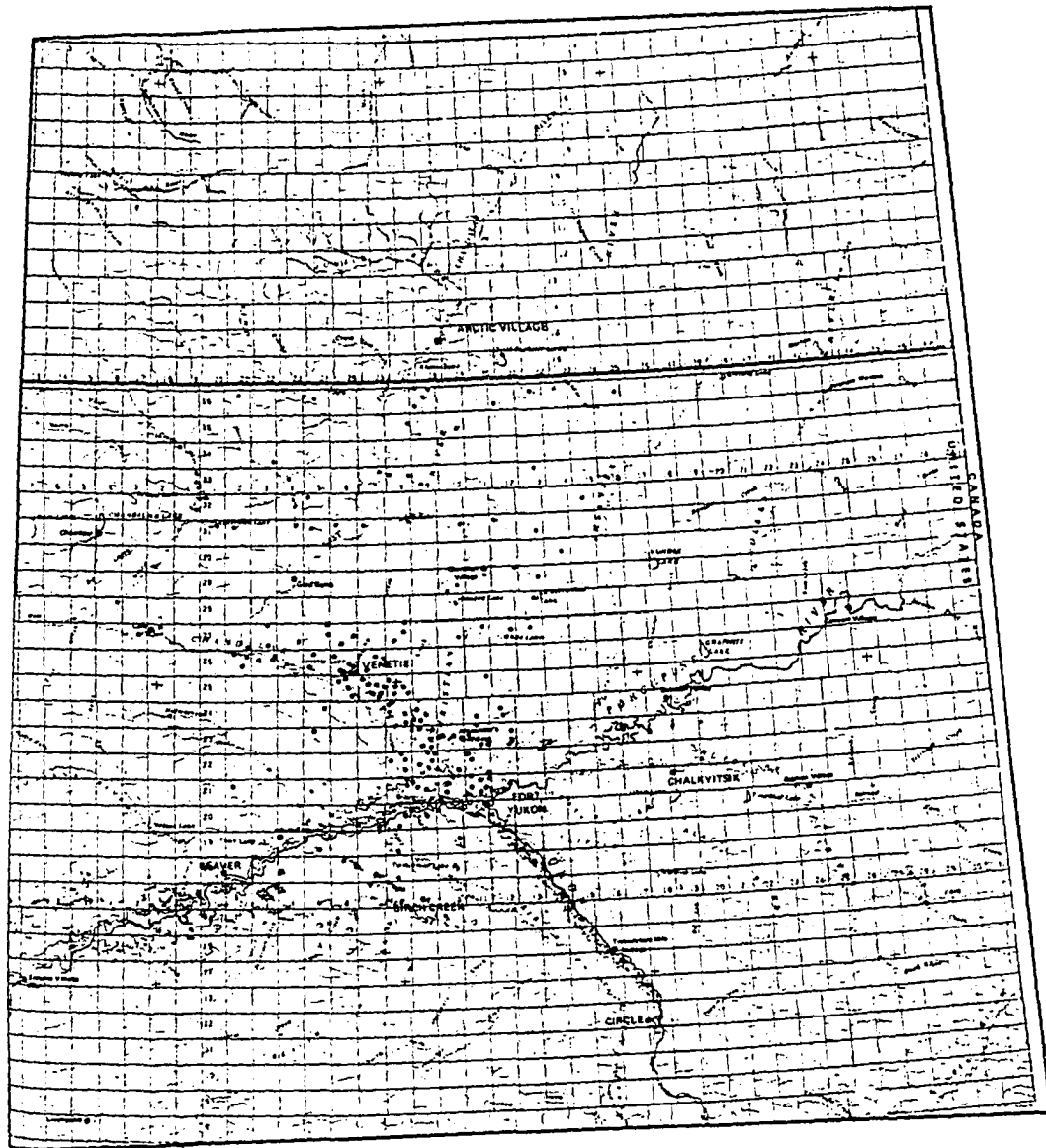


General locations of Arctic Village place names

Source: Caulfield 1983



Map 9



General location of Venetie place names

Source: Caulfield 1983

collected as each harvest occurs with the residence of the harvester, type and number of animals taken, location of the harvest (as a general description and by township and range), and date harvested recorded and entered into a database. It is important to note that this method of data collection does not record all land use, but merely use that results in the harvest of an animal, and therefore may not include all spatial variations of the community land use pattern.

## ANALYSIS

Before analyzing the data just reviewed for its value in conversion to graphically depicted land use information, it is first important to place the value of subsistence mapping in proper perspective. Ellanna et al. (1985:19-20) have stated explicitly that subsistence mapping methodologies are not in and of themselves sufficient to understanding subsistence based socio-economic systems. Subsistence maps can illuminate the relationship between harvesters, their land, and their resources, but only within a comprehensive study methodology which emphasizes a broader social, economic, and cultural perspective. The intent of this thesis is not to ignore the value of the contextual data which provides depth to land use and occupancy studies, but to review such data in order to determine whether and to what extent subsistence land use can be graphically depicted from historic sources in order to provide a better spatial sense of ethnohistoric reconstructions of land use. To this end it is helpful to review both the limitations and possibilities of such a reconstruction based on the nature of the data.

### **Limitations of Data**

The early written accounts of explorers, missionaries, traders, prospectors, and Neets'aii Gwich'in themselves present a challenge when attempting to systematically convert the information available in them into graphic depictions of Neets'aii Gwich'in land use. Cronon (1983:21) points out some of the difficulties of attempting to derive from historic accounts data which the accounts were not written to elucidate. Cronon was interested in reconstructing an image of the precolonial and colonial ecology of New

England. Among other things he had a problem with the early authors

Seeing landscapes in terms of commodities . . . treat[ing] members of an ecosystem as isolated and extractable units. Explorers describing a new countryside with an eye to its mercantile possibilities all too easily fell into this way of looking at things so that their descriptions often degenerated into little more than lists. [1983:21]

Cronon goes on to say that “Little sense of ecological relationships emerges from such lists. One could not use it to describe what the forest actually looked like or how these trees interacted with one another. Instead, its purpose was to detail resources for the interest of future undertakings” (1983:21). It is easy to take this analysis of the value of historic narratives in reconstructing the ecology of precolonial and colonial New England and applying its criticisms to searching narrative accounts for information on land use patterns in the country of the Neets’aii Gwich’in. Early fur traders in Fort Yukon were, among other things, interested in the abundance of fur or in the territory as well as the suitability of the Indians as producers of that commodity. Their accounts focus on the information in which they are interested and discussions of land use, if they occur, are brief and peripheral to the main thrust of their narratives. Missionaries, while often interested in a broader array of ethnographic details concerning Indian life, were primarily interested in the Indian’s beliefs, habits of hygiene, their prospects of conversion to the faith and the progress with which the latter was being accomplished. Early explorers, depending on their purposes or the aims of their sponsors, were interested in geographic detail of the territory and, perhaps, the temperament of the natives. In all accounts the *where* and *when* of the Indians movements to secure subsistence might be alluded to or suggested, but their comprehensive description was not done. *What* sort of

resource was sought, and *how much* or *many* were harvested are data that occur with only slightly more frequency.

Reports such as Mercier's (1986:54,56) point specifically to some of the difficulties associated with reconstructing land use from historical sources. His accounts are anecdotal, meant to demonstrate the cruelty of a rival chief rather than locate where the Gens du Large go to catch fish or hunt. Additionally, Mercier's account of the Gens du Large fishing downstream on the Yukon (1986:54) is obviously second hand, since the author did not arrive in the Fort Yukon area until well after 1850. Although Mercier is reasonably specific in his description of the fishing spot, the intent and secondary nature of the account may call its accuracy into question. Furthermore, while the account by Mercier of Gens du Large hunters on the Porcupine River (1986:56) is rare in its coupling of a form of resource use with a specific geographic locality, the latter account is more typical of the early narratives; the reader cannot tell with any certainty which animal the Gens du large are hunting, what season or year it is, or, other than generally, where their camp is located.

Obtaining land use information from orally transmitted narratives, or oral histories, in addition to the problems already discussed with written narratives, presents problems in interpretation as well. Katherine Peter's account (1992), as stated before, is reasonably fluid in English, while the one related by Silas John (Peter 1979) is more fragmented and therefore presents greater difficulties when trying to discern specific "objective" information. This problem reflects, perhaps, the more traditional manner in which John's narrative is told. Edwards and Sienkewicz (1991) have suggested that it is often difficult for individuals used to contemporary written narratives to grasp the meaning in stories coming from an oral tradition. Specifically, they say,

Oral tradition places more emphasis on personal topics, binding together speaker and audience in a single referential web. Strategies are geared towards personalization and bringing the conversation to life with actual instances and examples. Speech is immediate and interactive. Listeners can indicate approval or disapproval and speakers are therefore able to mould their performance accordingly. In contrast, writers are removed from their audience. It is important for writing to decontextualize content so that readers in different times and places can understand what is taking place. [Edwards and Sienkewicz 1991:197]

To compound the problem the reader has in being ignorant of the experiential context of an orally transmitted story, Edwards and Sienkewicz indicate that non-western stories lack the “essentially linear manner [which] state explicitly the relationship between points” (1991:195). Given the difficulty in translating information in more traditional stories such as the one by Silas John into a form which is usable in reconstructing land use, it may be that many oral narratives, either transcribed or recorded on tape, provide primarily contextual information rather than information from which objective data might be derived. On the other hand, orally transmitted narratives by individuals such as Katherine Peter who are familiar with the western narrative tradition may have considerable value, since their narratives may be altered to be understood by a wider audience.

The limitations of data from sources other than written or orally transmitted narratives are harder to generalize, and is variable depending upon the intent and execution of the methods employed in each source. The studies by Shimkin (1951; 1955), and the U.S. Fish and Wildlife Service (1964), although having aspects of their methodologies which would be incorporated into later land use and occupancy studies, combined the

Neets'aii Gwich'in land use activities with other groups in their studies. Therefore, land use information specific to the Neets'aii Gwich'in cannot be differentiated from those sources.

Census Data, when the limitations of its application to semi-nomadic populations are taken into account, and when correlated with other historic information on demographic change, can be helpful in understanding larger scale movements of people as well as the concentration of land use in certain areas over time. As has been suggested earlier, the U.S. Bureau of Census data (Campisi 1993:9) cited earlier for the villages of Arctic Village, Venetie and Christian Village have suggested, among other things, a movement of a substantial number of people from Arctic Village to Christian Village from between 1930 and 1940. This movement is corroborated by an ethnographic source (McKenna 1965:86-7). However, in terms of creating a visual representation of Neets'aii Gwich'in land use based on hard data, census data are limited in their usefulness.

The limitations of land use and occupancy studies have already been discussed in general terms. However, it should be noted that some of the specific methodological problems associated with collecting data from informants should be applied as well to taking information from written or orally derived sources as well. Land use maps using polygons to show areas of harvest of individual species may be artificial at times. Since hunting is an opportunistic endeavor as well as a planned one, land use polygons elicited for hunting a particular species may miss some of the unplanned encounters with game outside these areas (Freeman 1976:55). This problem is demonstrated in Peter's account of a group of Neets'aii Gwich'in traveling down the Junjik (Juunjik) River in a moosehide boat, returning from hunting Dall Sheep where they

. . . loaded up everything we were carrying along and then we set off. The dogs walked along the high steep banks above us. And then, when the boat was heavily laden, it went by two moose mating on the shore. Steven jumped ashore with his gun and shot them both. We barely managed to stop the boat, it was so heavy and was drifting so fast. There again we set up our tents. Myra cut the hair off the moose skins and Soozun sewed them up. Meanwhile Steven and David made [another] boat frame. [1992:25]

In this example, the two moose that the group happened upon were harvested within the territory identified by the polygon for moose harvest in Caulfield (1983:102-3).

However, there must certainly be instances where moose or other animals have been killed outside the areas shown by the polygons while the hunters were hunting other animals or working a trapline.

### **Levels of Usefulness of Data**

Using information from historic accounts or studies concerning the Neets'ait Gwich'in to systematically create graphic depictions of historic Neets'ait Gwich'in land use similar to the way the USFWS is applying present harvest data to land use map creation in its ongoing study is probably an untenable proposition. For the reasons discussed above, much of the information reviewed in this thesis is unsuitable for conversion to points, lines, or polygons within any specific time frame. While some data on the Neets'ait Gwich'in do exist that can be converted in this way, the amount of information of the quality needed to create land use maps with substantive information on historical subsistence variation is quite small. The land use maps which would be created



using this method would be largely incomplete. This does not mean that historic Neets'aai Gwich'in land use and occupancy fully resists graphic representation, but that the methods for translating historic information to a graphic form will vary with the nature of the material and must be applied on an *ad hoc* basis. The potential ways historic Neets'aai Gwich'in land use and occupancy may be graphically depicted are discussed below, starting with conceptual categories where much of the data reviewed applies, and moving on to categories where the task is more difficult. The categories for which land use mapping may apply in the case of historic reconstruction have been adapted from Ellanna et al. (1985:21-2).

### Extent of Use

Ellanna et al. (1985) indicate that it is necessary to differentiate between notions of extent of territory and extent of use, since they may be different in conception and in manifestation. The minimum extent of use of harvesting activities for the Neets'aai Gwich'in is indicated by the aggregated use maps in Caulfield (1983:188) for both Arctic Village and Venetie in his regional land use summary. The use areas of the two Neets'aai Gwich'in villages overlap with each other to some degree as well as with other neighboring Gwich'in groups. For the purpose of depicting the extent of use, any data concerning the harvesting of animals or plants among the Neets'aai Gwich'in may be useful for historic reconstruction, as long as some sort of time frame and geographic description accompanies the account. To this end, much of the historical data reviewed in this thesis that gives specific reference to use may be applied to a map indicating extent of use, and clearly the creation of such a map is feasible. A comparison of the extent of

use with the extent of territory may be instructive in illuminating the differences between the two concepts. Furthermore, with a more exhaustive review of data, it is possible that differences in the extent of use between periods rich in information (such as data from the 1930s compared with the 1990s USFWS data) may be seen.

### Extent of Territory

There is a good deal of information which can be applied to the understanding of the extent of Neets' aii Gwich'in territory. There are a number of early written accounts which describe Neets' aii Gwich'in territory, but for a more specific delimitation, McKennan (1965) and Hadleigh-West (1963) provide explicit statements based on informant interviews. Hadleigh-West (1963) gives a narrative description and provides forest growth distribution and timber source area maps which include a bounding of the extent of Neets' aii Gwich'in territory (excluding a consideration of the residents of Venetie). His place name map serves to reinforce his delimitations of territory. McKennan (1965) also provides a description of Neets' aii Gwich'in territory, including the ranges of the three local bands he identified in 1933. McKennan's description is specific enough to create a territorial map from which to compare other delimitations of territory. The place names collected by Caulfield et al. (1983) may also be correlated with the extent of territory, rather than with the extent of use of the Neets' aii Gwich'in, since place names reflect culturally defined notions of territory rather than indicating actual instances of present use. McKennan and Hadleigh-West's descriptions may be mapped and compared, as may the place name maps stated above, to give an overall sense

of Neets'aai Gwich'in territory. However, given that the nature and thoroughness of the data gathering methods were different in each case, the maps depicting the extent of territory should be considered at best incomplete approximations. For the same reasons they should not be compared to indicate change in territory over time. Because of the more complete nature of the documentation of place names, the place name maps are likely to give a more specific delineation of territory than the written descriptions in the either ethnographic study.

### Intensity of Use

Although the data reviewed were insufficient for the reconstruction of use areas for the harvest of most plants and animals in the Neets'aai Gwich'in area, usage sites or records of harvests of animals applied to maps as points may be collected in sufficient amount to identify general areas of use in some instances. As mentioned above, there may be additional sources that give accurate geographic and temporal information on such sites. Usage sites, harvest points, and historic campsites may be entered into GIS or similar databases to build up a graphic collection of usage points. If sufficient data is collected for any predetermined period of time to begin to give a clustering effect on a land use map, this then may indicate an area or areas of differential intensity of harvest. This is not the same as getting a complete picture of use for any given period and methodological criteria would need to be established to determine what sources may or may not be used in the database to ensure that such sources be of a comparable nature. Nevertheless, such a database, given an exhaustive review of sources, might begin to give an indication of the differential intensity of use for some of the resources sought by the

Neets'ait Gwich'in. Maps showing the intensity of use for any given resource would augment data in land use and occupancy studies such as that done by Caulfield (1983) that only give an indication of areas of use.

#### Changes in Geographic Extent of Use Areas Through Time

Except for a comparison of the results of the ongoing USFWS survey with the land use maps presented in Caulfield (1983), a comparison of the archaeological surveys of Andrews (1977) and Warbelow et al. (1975), and a comparison of the timber usage maps in Hadleigh-West with existing maps or aerial photos showing the extent of forest in the Neets'ait Gwich'in area, there is insufficient data to create land use maps from which to compare changes in the geographic extent of resource use in the territory of the Neets'ait Gwich'in. Furthermore, these comparisons are fraught with problems that vary in each instance. The usage areas determined in Caulfield (1983) and by the USFWS (Sherrod pers. comm.) were and are collected in entirely different ways. The USFWS studies collect data on a per harvest basis, and as yet have little time depth to their findings. Caulfield's study measured areas where informants hunted, whether they harvested game or not (1983:8). Caulfield's map biographies also encompass areas where individuals hunted in their lifetimes and therefore involve considerable time depth. Because of these differences, the land use maps of the USFWS studies are likely to show smaller areas of use and fewer usage sites than can be seen from the results of Caulfield's study.

The archaeological surveys of Andrews (1977) and Warbelow et al. (1975) provide excellent evidence of land use in the Neets'ait Gwich'in territory, particularly for the pre- and early contact periods. The caribou fences recorded in both surveys

demonstrate the minimal extent of caribou harvesting patterns from these periods and can be seen to define an area of caribou harvesting activities. The dating of most of the sites in both surveys are limited by associating the period of use with the particular technology found at the site. Problems with the comparability of data should be noted when comparing the general area in which the caribou fences have been located with the aggregated land use polygon indicating caribou hunting given in Caulfield's land use map (1983:106-7). To compare the two areas as essentially equivalent would assume that all the caribou fences in the recent pre- and post-contact past had been located in the studies, and that the caribou fence was the only means by which the Neets'aii Gwich'in hunted caribou at that time. Both assumptions in this case are false. The comparison still may have a degree of value in demonstrating the difference between the collective caribou hunting era and the contemporary era where small groups or individuals hunt caribou.

As noted previously, Hadleigh-West (1963:65) identified timber usage sites on one map in his ecological study. Of the major types of resources the Neets'aii Gwich'in make use, timber is the only resource whose availability may be readily appraised by a visual inspection of the landscape. Although it is tempting to correlate Hadleigh-West's map of timber usage areas with topographic maps or aerial photographs from different periods showing the changes in forest extent in the area in order to determine the pattern of timber harvest over time, the problems of differentiating areas of timber harvest from burned or diseased areas of forest makes this sort of comparison difficult in practice. Little of value could be derived from such a comparison regarding changes in the pattern of Neets'aii Gwich'in land use.

## A PROSPECT FOR FUTURE RESEARCH

Throughout the preceding discussion of the feasibility of reconstructing the land use patterns of the Neets'aiti Gwich'in from historic sources, it becomes evident that what may be a more interesting question is why the sources reviewed often do not give the information desired for such a task. The presence or absence of quality information on land use in historic sources is as much as anything a commentary on the what previous observers of the Neets'aiti Gwich'in considered important. On a broad scale, commentary on issues concerning geographic land use and occupancy is a phenomenon of the latter twentieth century and has followed an increase in pressure on Alaska's land and resources from a variety of sources during this time period. Because it is clear that interest in Alaska Native land use has gradually increased in this century as well, it would be interesting to see a study which tracked the graphic depictions of the Neets'aiti Gwich'in territory over time (using depictions such as the maps by Carter and Marsh (Orth 1967), Schrader (1900), Mertie (1929), Fredson (Mckenzie 1985), Shimkin (1955), Hadleigh-West (1963), Warbelow et al. (1975), Caulfield (1983), and the USFWS (ongoing)) and correlated the changes in these depictions and their narrative sources with historic, social and political trends which have occurred in Alaska. Such a study could give profound insight into the development of interest in the problems and conflicts over Alaska Native land use and occupancy.

## CONCLUSION

If subsistence land use information on the Neets'aai Gwich'in is so readily available, the question remains why it is difficult or impossible to graphically depict land use from sources in the literature. An obvious answer is that the researcher can ask a participant in a land use study specific questions, whereas in historic documentation or pre-existing studies, the source either does or does not have the information desired in the appropriate form of data. The contemporary land use study provides a more interactive form of data gathering from which a proper context for gathering land use information can be established and follow up questions asked if needed on an *ad hoc* basis. Data on land use from most pre-existing sources, as is seen from the sources reviewed in this case study, are difficult to apply on a comparable basis to the reconstructions produced in informant based land use and occupancy studies.

This study has found that for the information available on the Neets'aai Gwich'in, suitable data for the graphic reconstruction of the extent of use, and the extent of territory may be found, although the data for either reconstruction should be seen as only partially complete. Mapping the differential of use of certain species over time may be useful if a more exhaustive review of sources is done, but the data reviewed in this thesis are insufficient to give useable information for intensity mapping. In several instances there is sufficient data to give an indication of the changing land use patterns over time for certain aspects of Neets'aai Gwich'in subsistence. However, in each instance, problems in the comparability of data severely limit the usefulness of the depiction of changes in geographic extent of use areas through time.

Because this has been a methodological critique for determining the feasibility of

graphically reconstructing Neets'ain Gwich'in land use, it did not include an exhaustive review of sources, although an attempt was made to cover all significant accounts or studies. The aim was to review a sufficient amount of material to determine the feasibility and limitations of undertaking such a project. Other possible sources which might shed additional light on Neets'ain Gwich'in land use include additional archival materials and oral histories recorded on audio cassette.

While this case study has sought to identify some of the problems and possibilities in developing an understanding of spatial land use patterns over time for a regional band of Northern Athabaskans, any conclusions made in this thesis applying to the Neets'ain Gwich'in should be applied with great caution to other Athabaskans. The Gwich'in people of the Chandalar region have a unique and evolving subsistence pattern and land use history. The issues raised in concerning the problem of reconstructing the land use for these people may have little relevance for other Northern Athabaskan groups. It is hoped, however, that the overall critique of the feasibility of historically reconstructing subsistence land use patterns will be useful to others considering this possibility.



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