

Health of the Land, Health of the People: A Case Study on Gwich'in Berry Harvesting in Northern Canada

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Abstract: Many Aboriginal groups, in northern Canada and elsewhere, recognize the strong relationship between the health and well-being of people and environment. Western science, including theory and literature related to forest ecosystem management, has been slow to recognize the complex and diverse values that Aboriginal people associate with their lands and resources. Through case study research on the berry-harvesting practices of Gwich'in women from the community of Fort McPherson, Northwest Territories, Canada, we investigated the values that Teetl'it Gwich'in women associate with the land or *nan kak*. Nine different values, as well as a set of detailed measures, were identified during the research, including individual preference and well-being, family well-being, social connectivity, cultural continuity, land and resource use, stewardship, self-government, and spirituality. The commercial value of berries was not identified as important to women. This interdisciplinary research has the potential to contribute to several bodies of literature including that on social-ecological systems.

Key words: health, ecosystem, Aboriginal, Dene, Gwich'in, nontimber forest products, berries

INTRODUCTION

The health and well-being of land-based societies are highly dependent on healthy ecosystems. In a basic sense, the natural environment is important for the provision of goods and services that people need to survive (MEA, 2003). In the case of many Aboriginal groups, this connection between people and environment is more than a matter of survival; the health of the land and the health of the community are one and the same. This is in part be-

cause the local environment is considered to be a part of social and cultural identity (e.g., Nelson, 1986; Brightman, 1993).

The concept of health is not an objective or static idea, and it varies across cultures. The usual Western construction of "health" as the absence of disease dominates research on Aboriginal health in Canada; it tends to focus on chronic and infectious diseases and related social problems. However, the concept of health among many indigenous peoples is very different from this notion. Health for the Cree of northeastern Canada, for example, has to do with the ability to live off the land, the nature of social relations and cultural identity, as well as the body. The Whapmagoostui Cree idea of "being healthy" translates as "being alive well" (Adelson, 2000). Among the Anishinaabe

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(Ojibwa), the land is described as Mother. People, like the rocks, animals, and trees are born from her. As one elder commented, “without her we would not live” (Wilson, 2000; Wilson and Rosenberg, 2002). Hence, for many indigenous groups, “land” may be considered as a metaphor for social-ecological health, where the term, social-ecological, refers to the integrated concept of humans-in-nature (Berkes et al., 2003). There are several ecosystem-like concepts in traditional groups, including those in the Americas, Australia and Pacific islands, and New Zealand (Roberts et al., 1995; Berkes et al., 2000). The terms used by these societies to describe their environment are often translated as “land,” but the meanings are often closer to an expanded notion of ecosystem. In many cases, these terms refer to geographically bound units in which abiotic components of the land, plants, animals, and humans are interlinked. Terms such as *ahupua'a* in Hawaii, *vanua* in Fiji, *aschii* or *aski* among the Cree and Ojibwa of north-eastern Canada, and *nde* or *nene* among some Dene groups of northwestern Canada are all ecosystem-like concepts. Among the Teetl'it Gwich'in Dene, the land is *nan* or *nan kak*, which refers to many aspects of people and the environment. Each of these concepts of land specifically includes humans and their ancestors, and human-animal-plant relations as part of the description of the ecosystem (Berkes et al., 1998). These concepts of land are indicative of a way of life and worldview in which human health and that of the environment are intrinsically interconnected. Drawing on the work of Berkes and others, we describe this complex and interrelated connection between the health of human beings and the environment as social-ecological health.

Although the “land” has significant value to the health and well-being of indigenous peoples, relatively little consideration has been given to this relationship in the academic literature. It has only been in recent years, for example, that research has begun to focus on the value of forest ecosystems and resources to the health and well-being of Aboriginal peoples in Canada (Main-Johnson, 2000; Marles et al., 2000; Davidson-Hunt et al., 2001). Only a small portion of this literature has focused on Aboriginal women (Howard, 2001). In this article, we focus on berry picking, as an entry point to understanding social-ecological health from the perspective of the Teetl'it Gwich'in women.

The next section gives an overview of the study area including details about the Teetl'it Gwich'in and community of Fort McPherson. The research methods are also

described, including the process used to document key themes and measures of social-ecological health—or the terms that Teetl'it Gwich'in women used to describe their relationship to the land. In the third section, we provide an overview of some conventional approaches to valuing of berries. Gwich'in perspectives on the value of berries and berry-harvesting practices are summarized in the fourth section; a table of key themes and measures or terms used by Gwich'in women for describing their relationship to the land is included in the fifth section. We conclude the article by highlighting some key findings and the contributions of the study to the social-ecological systems literature.

STUDY AREA, THE PEOPLE, AND RESEARCH METHODS

The results presented in this article emerged from a study on nontimber forest resources carried out in partnership with the Gwich'in Renewable Resources Board and the Teetl'it Gwich'in or the Gwich'in of Fort McPherson, Northwest Territories, Canada (Fig. 1). Local interest in a study on berry harvesting led to the selection of this community as a case study for research.

Fort McPherson is a community of over 950 people, located on the Peel River in the Northwest Territories (Fig. 1); 87% of the community are Gwich'in people. Another 4% are of Inuvialuit descent and 9% are non-Aboriginal. The Teetl'it Gwich'in, historically known as Loucheux, are one of 10 Gwich'in groups that live in current-day Alaska, Yukon, and the Northwest Territories. Since the 1950s, the Teetl'it Gwich'in have lived in a permanent settlement at Fort McPherson (Heime et al., 2001). Traditionally, they were known as the people of the upper Peel River watershed, and lived off the land hunting caribou and other large mammals, fishing, harvesting small mammals, birds, and berries. Rivers served as transportation corridors in earlier times; Fort McPherson is on the Dempster Highway, the major north-south road in the region. The land of the Teetl'it Gwich'in is part of a land claims treaty, the Gwich'in Comprehensive Land Claim Agreement of 1992, which gives them joint jurisdiction over their land and resources. The economy of Fort McPherson, like other small northern communities is reliant on wage employment and business opportunities as well as traditional economic activities such as hunting and fishing, and local wage employment.

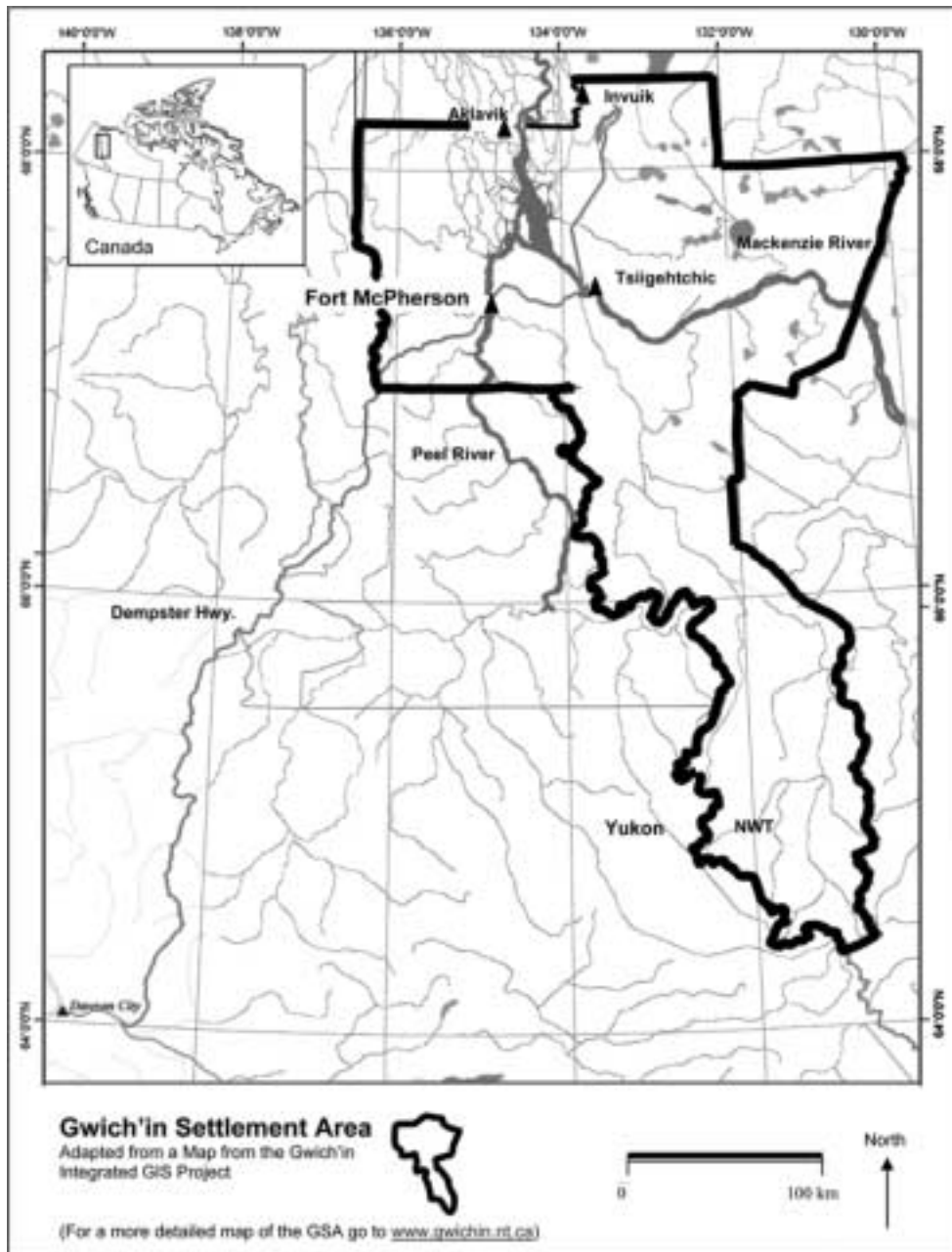


Figure 1. Gwich'in region.

A significant body of literature has developed about the Gwich'in, their social and economic activities, and close connection to the land (Slobodin, 1962; Nelson, 1986). Earlier anthropological work typically emphasized big game hunting and trapping, and perhaps underestimated women's pursuits such as berry harvesting [Kritsch, personal communication, 2002]. More recent research in the Gwich'in region suggests that plant resources are important to the community, including cranberry (*Vaccinium vitis-idaea*), blueberry (*Vaccinium uliginosum*), and cloudberry (*Rubus chamaemorus*) (Andre and Fehr, 2001). Women

from Fort McPherson are well-known for their extensive berry-harvesting activities, both in terms of the quantity and extent of berry-picking areas, and the importance of berry picking as a pursuit. There is no commercial harvesting; berries are gathered for home and community use, and in some years for intercommunity trade.

Berries are harvested in many different areas in the traditional territory of the Teet'it Gwich'in. The larger environment may be characterized as boreal forest–barren ground transition (Marles et al., 2000). The dynamics of the Peel River and Mackenzie River Delta and the close prox-

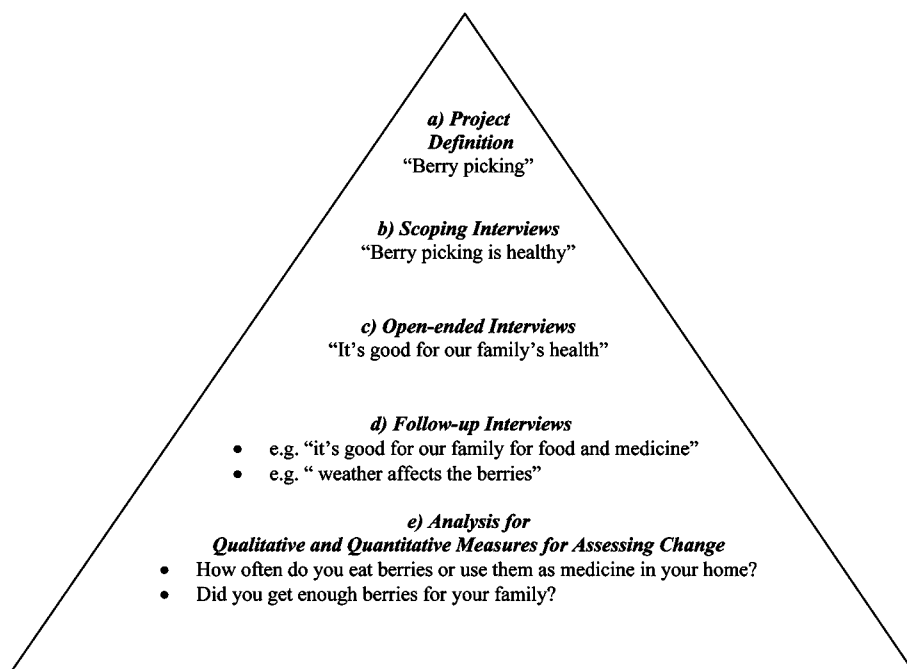


Figure 2. Process for developing indicators.

imity of the Richardson Mountains, significantly affect the abundance and distribution of vegetation in the region. Cloudberries are largely harvested in the open alpine areas of the Richardson Mountains. Popular blueberry-picking areas are located on the Dempster Highway between Tsiigehtchic and Fort McPherson, as well as around family camps up the Peel River, between Fort McPherson south to the Yukon border. Some people go cranberry picking around the community; many people also go picking cranberries around their camps on the Peel River north into the Mackenzie Delta. In 2003, the geographic span of the harvest area extended over a 40,000 km² area. Women picked berries along the Dempster highway as far south as Eagle Plains and as far north as Tsiigehtchic. On the Peel River, people also picked berries as far north as Rat River and as far south as the Yukon border (Fig. 1). In 2001 and 2002, poorer berry years than 2003, the harvest area was significantly larger, extending over a 100,000 km² area, as women traveled as far south on the Dempster Highway as Dawson City and as far north as Inuvik (Fig. 1).

The research project was designed and implemented in collaboration with the Gwich'in Renewable Resources Board, the Gwich'in Social and Cultural Institute, the Gwich'in Tribal Council, the Teetl'it Gwich'in Renewable Resources Council, and local berry harvesters from the community. The details of this collaboration were outlined in advance of the study in a detailed research agreement. We used a variety of participatory research methods

including open-ended interviews, workshops, and participatory mapping techniques. Local organizations and study participants provided guidance on study objectives, methods, and reporting of results. Local community members were hired as research assistants and research trainees. Results were reviewed and approved by the collaborators.

The approach to defining themes and measures was adapted from work previously carried out with Lutsel K'e Dene First Nation (Parlee, 1998). The process is outlined in Figure 2. The research context (Fig. 2a) was defined early in the project with the regional organization, the Renewable Resource Council, and a group of elders and berry harvesters in the community of Fort McPherson. As part of the research scoping (Fig. 2b), berry harvesters were asked the question: "Why is berry picking important to you?" A preliminary set of sociocultural values were then identified based on a series of open-ended interviews with berry harvesters from the community of Fort McPherson (Fig. 2c).

The women were selected by the community researcher on the basis of their interest and knowledge of berry picking. The methodology aimed at getting a composite picture of the value of berries and berry harvesting and their significance to the health of Teetl'it Gwich'in women. A total of 75 women participated in the interviews. Group meetings were open to all, including young women and men. We quote key informant experts by name where they have authorized us. During the open-ended interviews, as

well as in the follow-up interviews (Fig. 2d), general statements such as “I like berry picking” and “it’s good for my family’s health” were discussed in terms of their specific meaning to the interviewee. On that basis, the researchers identified quantitative and qualitative measures or questions that could be used to better understand the social-ecological interactions associated with berry harvesting. These themes were verified during follow-up directed interviews, questionnaires, and through participant observation during July–September 2003 and May 2004.

BACKGROUND ON THE VALUE OF BERRIES AND BERRY-HARVESTING ACTIVITIES

Many indigenous, land-based societies believe their relationship to the land to be sacred. For Teetl’it Gwich’in women, as with many Aboriginal people, at the core of this relationship is the belief that the environment and its resources are a gift from the Creator which must be respected. As described by elder Caroline Kay, berries and traditional medicine are recognized as among the Creator’s gifts.

All the plants and berries that grow on the land must be respected. It grows there for us to use; this is what they (our grandmothers) taught us... everything that we live on from the land—God put it there for us. We will never go hungry as long as we live. (Caroline Kay, June 2003)

Elders from the Gwich’in region describe berry harvesting as a tradition that has been passed on for many generations. “Our knowledge of berries and plants was passed on to us by our grandmothers” (Emma Kay, February 20, 2003). Oral histories about picking berries and storing them in birch bark baskets also suggests that this activity dates back a great many generations. According to elders, berry picking was not simply a casual or opportunistic activity; families made harvesting trips specifically for berries so they could pick and store enough to last them through the winter.

In the past we would all be given a kettle when we went for berries and we all had to fill it up. It was the same for all of us (agreement). I picked so many berries in the past that I was turned off doing it for a while. I did not ever want to go for berries. But I have gotten back into it. I like going for berries now. (Meeting notes—Elizabeth Collin, February 20, 2003)

In order to keep the berries fresh through the winters, “freezers” were built in the ground by digging down through the topsoil to the permafrost. According to one elder, this permafrost freezer is better, more reliable, than modern freezers.

People used to really look after their berries... blueberries and nakals [cloudberries]. They had those birch bark baskets and would put them under the ground in the moss and it would stay frozen like that... they put grease amongst it, too, so the grease freezes, too, and it will stay fresh like that. (Rebecca Francis, June 13, 2003)

In 2003, we made a quantitative estimate of the berry harvest of the Teetl’it Gwich’in based on calculations of the number of people harvesting berries; the average number of hours spent harvesting; and the harvest per effort. The estimates are based on a three-part data collection method that included (1) participant observations of berry harvesters, (2) interviews with harvesters, and (3) communications with and about harvesters who were not interviewed. We estimated that about 100 people or 10% of the community picked some blueberries, cloudberries, and/or cranberries during the 2003 season. About 130 people harvested cloudberries, 50 people harvested blueberries, and 60 people harvested cranberries. The average number of hours spent picking per visit was 3–4 hours; the average amount of berries harvested during this time period was 3–4 liters (one large “ziplock” plastic bag) of cloudberries, 2 liters (one medium ziplock) of blueberries, and 6 liters of cranberries (1.5 large ziplocks). Thus, we estimated that the community-wide harvest was over 5,000 liters during the 2003 season. This estimation of harvest yield is not constant; abundance and distribution of berries in the region varies significantly from year to year as a result of weather and other ecological factors.

Understanding the value of berries based solely on estimates of harvest yield is, however, problematic given that there are many ecological factors which affect the abundance and distribution of berries on the landscape. For example, just because Gwich’in women picked fewer berries in 2002 than 2003 does not mean that their value was considered less. In fact, berries have greater social value in the community when scarce.

When there were no berries around, the people used to look all over and check all the berry patches. They had to check all over until they would find it. It’s very hard on people up here when they don’t have berries for the

winter. It's not a very good sign when there are no berries around. (Elizabeth Colin, October 15, 2003)

Harvest calculations as a way of establishing value are also problematic since women do not conceptualize harvest yield in terms of quantities but think more in terms of "having enough" to use and share.

I don't know how many berries I pick because I give a lot away and I cook with it. It's good to have—at least 8 ziplocks of cloudberry and blueberries [24 liters] and maybe 1 egg box [20 liters] of cranberries. We stretch it out over the winter.... There is one person who has berries from 2 years ago but that is bad—to not give them out. Some people give out all their berries before the winter is out. (Elizabeth Colin, July 4, 2003)

Another approach to understanding the importance of berries involves assessing their nutritional value. For example, Kuhnlein and Turner (1991) suggested that even though berries may only represent around 5% of the overall traditional diet of Aboriginal people in northwestern Canada, they are one of the few carbohydrates that were available, and provided energy as well as key vitamins and minerals. Ethnobotanists have identified a diversity of medicinal properties associated with the berries and plants harvested by Aboriginal peoples, including the Teetl'it Gwich'in. They are recognized as important for dealing with a range of illnesses including influenza, headaches, and stomach ailments (Marles et al., 2000; Andre and Fehr, 2001). Gwich'in women themselves identify the berries in their region as having many nutritional and medicinal benefits. Unlike some earlier research that suggested that berries were a minor part of the diet, (Slobodin, 1962), elders suggest that berries were a main source of food and medicine.

It (berries) was our main source of food; our medicine too. We used cranberries for a lot of things. You would make a tea and it was good for bladder infections. The cranberries from the store are not the same. We made a tea from the store berries for someone with a bladder infection but it did not help. Only our berries from land will work for this. (Emma Kay, February 20, 2003)

Cranberries in particular are valued for their nutritional and medicinal properties, as described by Rebecca Francis:

Cranberries are good for your eyes; it has a lot of Vitamin C, too, in it. That is why I like having it around. I make juice out of it. It's good for your cold—for each of my family, I make about a gallon for each of them—each of my boys. I always do that. (Rebecca Francis, June 13, 2003)

Quantifying harvests and identifying nutritional values, while useful in biomedical terms, provides only a small and reductionist view of the value of berries to Gwich'in women. Some ethnobiologists and other scholars studying cultural landscapes take an integrated or ecosystem-based approach, recognizing that berries and berry-harvesting activities do not take place in isolation but are integrated with other resource-harvesting activities (Main-Johnson, 2000; Davidson-Hunt and Berkes, 2003). In the case of Teetl'it Gwich'in, berry-harvesting activities are integrated with other kinds of harvesting, especially fishing. Harvest of cranberries in the Rat River area, for example, is associated with fishing for Dhik'ii or dolly varden charr (*Salvelinus malma*). In other areas along the Peel River, it is associated with the harvest of burbot or loche (*Lota lota*). The combination of loche liver and cranberries is a traditional delicacy (Rebecca Francis, June 13, 2003).

ELICITING VALUES: WHY BERRY PICKING IS IMPORTANT TO THE TEETL'IT GWICH'IN

For Teetl'it Gwich'in women, berry harvesting is a process that connects them to their mental, emotional, physical, and spiritual selves, to each other and the land. This section describes the answers and detailed follow-up to the research question, "Why is berry picking important to you?" Clusters of values elicited by the question include individual preference; individual well-being; family well-being; cultural continuity; social connections; land and resource use; stewardship; self-governance; and spirituality, as summarized in Figure 3. We deal with each, in turn.

Some of the women spoke about their participation in berry-picking activities mainly in terms of their individual interest. The statement, "I like berry picking," speaks to importance of self and individual goal-seeking behavior in harvesting. However, it was clear from the interview results that not everyone likes berry picking to the same extent. Some people said they would go out every day to pick berries if they could; others simply said they needed a few ziplock bags of cranberries to be satisfied. That being the



Figure 3. A perspective on social-ecological health: social-cultural values associated with Teet'it Gwich'in berry harvesting.

case, the number of days and number of liters of berries collected were considered useful measures of the value of berries for these women.

Emotional, mental, and spiritual well-being at the individual level is also an important dimension of berry harvesting. Some statements made by interviewees, such as "it feels good to be out there" would suggest that the process of harvesting, in particular, the sense of emotional, mental, and spiritual well-being achieved from being out on the land close to nature and away from the worries of town life is as important, and in some cases more important, than the actual yield of harvest. As one woman described, "Even if I knew there were no berries there, I would still go visit those places."

Interviewees also responded to the question with references to the physical well-being of their families. Older women described berries as an important part of the traditional Gwich'in diet; "We never went without berries in the past," according to Caroline Kay. Some younger women said they like berry picking because the berries from the land are an economical and better quality alternative to the fruit available in the local stores. Women also described berries, in particular cranberries, as preventative medicine against colds, bladder infections, and intestinal problems. Other plants such as spruce gum, tamarack, and red willow were also described as important for traditional medicine.

Berry-harvesting activities can also be interpreted in the context of cultural continuity. Many of the berry patches, particularly cranberry patches, have been passed on from generation to generation. Women go to berry patches year after year to remember and respect their mothers and grandmothers who were there before them. The women who were interviewed expressed hope that their children and children's children will continue to go to these places and remember them there also. The skills and knowledge associated with traveling to these places and finding good patches

of berries is part of their legacy. As described by Bertha Francis, "You have to know where to go to find the berries."

Social connections are important in traditional societies and the opportunity to socialize is an important factor in going berry picking. Interviewees talked about the benefits of going out on the land with family and friends and working together. In some cases, working together means sharing the cost of transportation, sharing of information about where to find the berry patches, as well as sharing the berries themselves. Socializing, however, is also about having fun. Women said they have good memories of telling stories, laughing, sharing food and tea, helping one another to find and pick berries. Memories sparked by the interviews often sent interviewees into peals of laughter.

Using the land and resources, and "being out on the land" and away from town is an important factor in why women go berry picking. Among some berry pickers, being out on the land does not simply mean driving 5 km up the Dempster Highway. They prefer to go picking berries in relatively isolated areas on the Peel River near traditional cabin sites. Although it is generally accepted that many people will pick berries near the road, some women expressed concern about the decrease in the extent of Gwich'in land use. Concern was also expressed that women were not harvesting as many different kinds of berries and other plants as in the past.

Part of the interest in being out on the land and engaged in the practice of berry harvesting relates to stewardship of the land. Some women described the importance of looking after the land including maintaining cabin sites and trails to specific berry patches. The interest is in part related to a concern that unless people continue to go to visit the berry patches each year, the trails as well as the patches themselves will become grown over by invasive species such as willows. As described by Alice Vittrekwa, "If we don't continue to use these places, the willows will take over."

Pride of ownership and governance of the land is a major factor. A few women suggested that their berry patches should be protected under the Gwich'in land use plan or other Gwich'in laws to ensure that their children and future generations would be able to harvest berries in those places. Most women expressed little concern about the loss of berry patches to resource-development activities, forestry, forest fires, or other land use activities regulated by the Gwich'in Comprehensive Land Claim Agreement. Perhaps the greatest concern was over the impact of climate change, particularly extreme weather events, on the abundance and distribution of berry patches.

Gwich'in spiritual beliefs, including the idea that the Creator will take care of the community and the land, are an aspect of berry harvesting. It is a multifaceted value that is difficult to discuss in academic terms and to define in terms of themes or measures. Nonetheless, the relationship of women to their Creator, and their feelings of being close to and cared for by the Creator, are fundamental to their relationship to the land and sense of health and well-being.

THEMES AND MEASURES OF SOCIAL-ECOLOGICAL HEALTH

The results of this study on berry harvesting in the Gwich'in region provides insight to the connection that Gwich'in women have to the land and a valued resource—berries; over nine different themes were identified (Table 1). Women talked about berry harvesting as important because of the physical health benefits, for themselves and their family. That being on the land engaged in berry harvesting has strong spiritual value is also consistent with previous research in the region (Nelson, 1986). Their emphasis on the social connections—sharing work and having fun together is also not surprising. However, the themes of cultural continuity, self-governance over the land and resources, stewardship, and spiritual connectedness are aspects of berry harvesting which may be unique to the Gwich'in and other Aboriginal communities who have lived and depended upon the forest and its resources for many generations.

Considering these themes as an integrated whole, there is also an important balance between benefits, viewed as gifts from the Creator, and the obligations or responsibilities of respecting and looking after the land and the re-

sources. This combined perspective of benefits and obligations suggests a reciprocal relationship to the resource—a perspective held by many other indigenous peoples in Canada and elsewhere (Berkes, 1999).

Conspicuously absent in the values identified by women as important is the commercial economic value of berries. Although women value berries as the preferred alternative to store-bought fruit and will share and trade berries for other subsistence resources such as caribou, fish, and fresh water, they say they would “never” sell their berries for money. This disinterest in berries as a commercial resource suggests that the relationship between the health of the land and the health of the people in the Gwich'in region has little or nothing to do with market economics, a reality which runs contrary to much of the previous socioeconomic literature on forest ecosystems in Canada (Beckley and Burkosky, 1999).

Although Table 1 attempts to identify specific measures for each of the values identified in Figure 3, these are not the kinds of measures that are part of the standard set of criteria and indicators used in forest ecosystem research (Natcher and Hickey, 2002). These themes are measures which provide a much broader picture of the social and cultural values that Aboriginal women attribute to their land and resource management. The potential use of these kinds of measures in resource management, including forest ecosystem management, may be limited. The measures identified in Table 1 are a poor match with the standard set. Also, the process of defining indicators is inherently reductionist, which sets up the potential for miscategorization or misinterpretation of values and experiences that are holistic in nature, as in the present study.

The themes and measures identified in this research do not paint a complete picture of the Gwich'in way of life. Rather, they are intended to be tools or windows through which Aboriginal and non-Aboriginal people might begin to learn and communicate with one another. As such, these measures are framed as questions rather than statements, signifying the importance of learning and communicating (Table 1). Their usefulness as measures that can be monitored over time is limited by the fact that there are virtually no data available on any of the measures, nor can they be readily or easily integrated into large-scale, centralized monitoring initiatives. Instead, their value as measures for monitoring depends upon the interest of the community itself in defining and developing their own community-based monitoring (Parlee, 1998; Parlee et al., 2005a,b).

Table 1. Themes and Measures for Social-Cultural Values Associated with Berry Harvesting

Gwich'in statement of value	Indicator/measure
"I like picking berries."	<ul style="list-style-type: none"> • How many hours/days would you like to go berry picking? How many hours/days did you go berry picking? • Did you feel you had enough time and support to help you get out on the land? • How many liters (ziplocks) of berries did you pick? • How many places did you visit to find these berries?
"It feels good to be out there."	<ul style="list-style-type: none"> • How do you feel when you are out on the land picking berries? (feelings of emotional, mental, spiritual well-being expressed by individuals) • Do you see/hear others expressing feelings of well-being in respect to berry picking?
"It's good for our family." (food and medicine)	<ul style="list-style-type: none"> • How many days/hours have you spent with family and friends on the land? • Did you get enough berries for you and your family this year? • How often does your family eat berries during summer/fall/winter/spring? • Do you use the berries as traditional medicine? • Does your family have any illnesses such as diabetes?
"It is part of our way of life."	<ul style="list-style-type: none"> • How many seasons/days have you spent with a youth/elder on the land? • Do you know the Gwich'in place names for the areas where you pick berries? • Do you feel you have the knowledge/skills to find good berry-picking areas? • Do you share information about where/when to find berries with family/friends or others?
"It's good for our family and the whole community to be sharing and working together."	<ul style="list-style-type: none"> • Do you share berries with family/friends or others in the community or region? • Do you respect the berry patches of other people? Do you feel your berry-picking areas are respected by others? • What kind of berries and plants do you harvest?
"It's important to be out there using the land and resources."	<ul style="list-style-type: none"> • Where do you go to find these berries and plants? • How much time do you spend taking care of the land and resources (e.g., maintaining trails)?
"We need to take care of our land and resources." "It's our land."	<ul style="list-style-type: none"> • How many years have you and your family been picking berries in these areas? • Is the area where you pick berries Gwich'in land? Is it protected under the Gwich'in Land Use Plan or by other laws? • Are there any problems (natural or human disturbances) in the area where you pick berries? • Do you feel confident that the local Renewable Resource Council or other Gwich'in organization will make good decisions about development on Gwich'in land? • Are you confident that these areas will be available for future generations?
"The Creator made this land for us."	<ul style="list-style-type: none"> • Do you feel closer to the Creator while you are on the land/berry picking? • Do you feel that the Creator is taking care of you, your family, and the land?

CONCLUSIONS

Health professionals focus on individual-level phenomena, but the concept of “ecohealth” expands the horizons of “health” to include social-ecological relations and social relations within the community. Some of the reasons for the failure to achieve an understanding of health in this broader context lie in the limitations of disciplinary thinking (McMichael et al., 2003). For the Gwich’in people of Fort McPherson, ecohealth includes a diversity of values that challenge disciplinary thinking: the ability to harvest food from the land, stewardship, self-governance, and spiritual relations, as well as individual and family well-being. These values that women have for land are not fixed in time and space; they are fragile in so far as they depend on a healthy land-base. Without the security of a healthy resource, in this case berries, the health and well-being of Gwich’in women, their families, and communities would be diminished.

These results are consistent with the findings of Adelson (2000) for the Cree, and Wilson (2000) for the Ojibwa in showing that “land” and the resources on that land are central to individual and social well-being. However, our study differs from the other two in its focus on one kind of resource (berries) to elucidate the values in understanding the relationship between human well-being and the health of the land.

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