

IS COMMUNITY ECONOMIC DEVELOPMENT PUTTING HEALTHY FOOD ON THE TABLE?

Food Sovereignty in Northern Manitoba's Aboriginal Communities

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ABSTRACT

Food-related community economic development (CED) is making a difference in northern communities where food insecurity rates are very high at 75% (n=534). People in northern Manitoba reported in interviews that hunting, fishing, berry-picking and gardening made them self-sufficient, in the recent past (25 to 50 years ago), but now many children and adults cannot afford to eat healthy. Presently many financial and regulatory barriers to country foods exist, which severely curtails food sovereignty and sustainable livelihood, while increasing food insecurity. The Nelson House Country Foods Program, which employs people to hunt and fish to feed the community, is related to better food security rates ($p < 0.001$). The Northern Healthy Food Initiative's (NHFI) application of a CED approach is having an impact on community building according to observations which found 33 new gardens in 2009 alone, as well as 7 new greenhouses and hundreds of new freezers in the 14 communities studied. Northern Aboriginal communities were found to have unique food access issues that resulted in a new Aboriginal food access model to show the factors, including CED, that impact food access and food sovereignty. As well, Aboriginal food sovereignty and sustainable livelihoods model was developed to show how the vulnerability context created by colonial government and climate change has impacted community assets and food security, requiring CED to reestablish sustainable livelihoods and food sovereignty.

INTRODUCTION

Could food based community economic development (CED) help feed families in northern Manitoba where many families lack economic access to nutritious foods? Problems associated with food access in remote communities include limited selection of perishable foods, expensive food prices, escalating transport costs, uncertainty of travel with winter roads not freezing over, high poverty rates, and a decline in use of country foods (NFPSC, 2003). Many people have stated that to live a healthy life in a northern Manitoba community, individuals need to practice sustainable local food cultivation and harvesting practices. Community members recognize the need to improve food access and have requested the re-invigoration of local food production as a first priority (NFPSC, 2003). This request is a call for food related community economic development (CED) towards food sovereignty. This paper explores eight remote or semi-remote First Nation communities and six Aboriginal and Northern Affairs (ANA) communities considering the impact of CED and community level factors on food sovereignty. For CED, specifically country foods programming, food buying clubs and the Northern Healthy Food Initiative (NHFI) and other government programming is considered. Following from the Northern Food Prices Report in 2003, the government of Manitoba created the NHFI, a pilot project, to implement priority recommendations made by the Northern Food Prices Report (2003) in 2005. The NHFI is coordinated by a multi-department government team led by Aboriginal & Northern Affairs and programs are implemented through a funding partnership with three northern regional non-government organizations (NGOs), a school division and a province-wide food security organization.

Food related CED is different than sustainable agriculture or anti-hunger campaigns (Winne, Joseph & Fisher, 1998), seeking local capacity building and empowerment to resolve issues of poverty, hunger and inequality (Shragge, 1997; 2003). Food-related CED decommodifies a portion of food production and/or distribution withdrawing it from the capitalist market. This reclaims food access by the community as a necessity and a right (Riches, 1999), rather than a privilege. Local food networks include food co-operatives, buying clubs, country food programs,

community supported agriculture (CSA), farmer's markets, community gardens, etc. Community-based food programming is one policy response to tackle food insecurity; to complement food, health and social policies (Power & Tarasuk, 2006; Power, 1999). Manitoba's "CED lens" (Loxley & Simpson, 2007) incorporates CED principles into the government's policy-making practice. However, CED has been criticized as gap filling, providing limited government funding, for areas of social policy and welfare that governments have vacated (Sheldrick, 2007). Community food security initiatives depends on the ability of not for profit organizations to organize, command resources and generate support for measures that will improve local food access and nutrition for citizens, especially underprivileged ones. Unlike the standardization of universal social programs or food market chains these initiatives vary greatly from community to community. However, community organizations usually lack the resources and the authority to make significant changes in existing food regimes.

Food based CED offers a local solution to the prevailing corporate food regime (aka agrifood) (Sonnino & Marsden, 2006). Agrifood operates in a marketplace system that excludes access and control to the poor and underprivileged while creating a cycle of dependency, rather than self-sufficiency. Under corporate agrifood systems, consumers are separated from producers in terms of both distance (food can travel vast distances to places of consumption) and relationships (producers are separated by a chain of processors, shippers and retailers from consumers) (Shragge, 2003). Conversely, local food networks focus on establishing a direct relationship between producers and consumers with a positive social relationship that emerges from a sense of place (Selfa & Oazi, 2005). Also local food systems are explained with respect to geographic space: "local food systems are rooted in particular place ... use ecologically sound production and distribution practices, and enhance social equity and democracy for all members of the community" (Feenstra, 1997).

According to Winona LaDuke economic development in Aboriginal communities should be based on the Indigenous concept of *Mino-bimaatisiwin* or the "good life". Winona LaDuke (2002: 79) explains how the alternative definition of this term is "continuous rebirth": "this is how

we traditionally understand the world and how indigenous societies have come to live within natural law.” This good life requires cyclical thinking, reciprocal relations and responsibilities to the earth and creation. Continuous inhabitation of place with an intimate understanding of the relationship between humans and the ecosystem and importance to maintain this balance are central tenets. According to LaDuke (2002), economic development based on indigenous values must be decentralized, self-reliant and considerate of the carrying capacity of that ecosystem. Winona LaDuke states: “the nature of northern indigenous economies has been a diversified mix of hunting, harvesting and gardening, all utilizing a balance of human intervention or care, in accordance with these religious and cultural systems’ reliance upon the wealth and generosity of nature” (LaDuke, 2002: 80). The resource management system for sustainable yield used techniques for domestic production and production for exchange or export: “Whether the resource is wild rice or white fish, the extended family as a production unit harvests within a social and resource management code that ensured sustainable yield” (LaDuke, 2002: 82).

Indigenous peoples around the world face challenges to traditional practice and food sovereignty. Kuhlein et al. (2006) list many Indigenous peoples’ successful food system interventions from different case studies around the world, categorizing them into four areas. One priority area for CED identified is traditional food harvesting of wild/animal plants. Another CED activity is agricultural activities, such as, stimulating home or community gardens and local food production including livestock and fish harvesting. Also, education on traditional and other food production and nutrition in community and schools is deemed important. Finally, the need for a local steering committee of leaders to make linkages with business, health department, education, government and NGOs and to ensure activities lead to positive outcomes is noted.

BACKGROUND ON ECONOMIES IN NORTHERN ABORIGINAL COMMUNITIES

Manitoba’s northern Aboriginal communities are widely recognized as having mixed, subsistence-

based economies in which the harvesting of country food for primarily domestic consumption plays a significant role in their food security and culture (Usher, Duhaime & Searles, 2003). The term “country food” or “traditional food” refers to the mammals, fish, plants, berries and waterfowl/seabirds harvested from local stocks. Until recently, northern Manitoba Aboriginal communities relied almost entirely on country foods for sustenance and health.

Food self-sufficiency is acknowledged to have existed in the recent past by government. A government document reports: “As late as the 1950s, northern communities were relatively self-sufficient, except for flour, sugar and similar products. It was not uncommon to have had market gardens, canning and other locally produced foods” (NFP, 2003: 19). This included wild game from hunting and trapping, fish, berries and gardening. Subsistence economies of northern Manitoba have been undermined and undervalued in terms of their provisioning of food security (Churchill, 1999). LaDuke (2002) describes how colonialism through Christianity, western science, eurocentrism, socioeconomic practice of capitalism and military-political practice of colonialism has resulted in indigenous economies characterized by dependency and underdevelopment. The appropriation of land and resources from Indigenous economies has created a situation in which most Indigenous nations are forced to live in circumstances of material poverty (LaDuke, 2002). Although Canadian laws restrict and allocate resources and land on reserves, the indigenous practice of “usufruct rights” is often still maintained and, with it, traditional economic and regulatory institutions like the trap line and family hunting, grazing or harvesting territories. However, environmentally destructive development programs often foreclose the opportunity to continue low-scale, intergenerational economic practices that have been underway in the native community (LaDuke, 2002). The decline of hunting for food has increased the reliance on store-bought food and adoption of characteristic southern dietary habits (Thompson, 2005) associated with obesity, dental caries, anemia, lowered resistance to infection and diabetes (Szathmary et al., 1987; Thouez et al., 1989).

There are jurisdictions in Canada that have worked to remove existing barriers to the access

and use of country foods in their communities. In the Yukon, licensing changes have improved conditions for the local use of food from trapping, hunting, and fishing, including provisions to ensure that local food can be served in a hospital setting (NHFP, 2003). Nunavut has assisted hunters through co-ops and through an income assistance program. Traditional food practices are proven practice in contrast to public health, which is science based. To address the safety of traditional food preparation has been processed in an approved facility for a head start program in BC and Kivaliq Arctic Foods Ltd which distributes traditional food using retail, whole sale and online stores. In Manitoba, the Nisichawayasihk Cree Nation (NCN also known as Nelson House) made a very practical and culture-friendly plan to provide greater access to healthy and traditional wild food to community members. The importance of supporting traditional and wild food programs is mentioned in the Northern Food Price Report (2003): "Sustainable use of fish supplies and wild game ... [should] focus on providing food to local citizens."

First Nation reserves are typically Canada's most remote and poorest communities. Many of the communities without road access are reserves with 4% of the 491,000 FN people in Canada lacking road access. First Nation communities are economically marginalized lacking adequate infrastructure for food processing, food production, federal wharfs, road network and safe drinking water, all of which are factors that make these communities vulnerable to food insecurity. First Nations' peoples quality of life ranked 63rd, or among Third World conditions, according to an Indian and Northern Affairs Canada²⁹ study that applied FN-specific statistics to the Human Development Index created by the United Nations. Figure 1 provides a map of northern Manitoba that shows the remote nature of many northern Manitoba communities. In Manitoba, four FN communities are not connected to the power grid and dozens of communities do not have all-weather roads. Archibald and Grey (2000) point to the underlying shortages of affordable, nutritious food, as well as infrastructure, and the lack of employment as the cause of the health 'crisis' among Aboriginal peoples: "Provide people with proper housing, water, sewage, jobs and the means to provide

adequate food and health statistics would improve" (Quoted in Kinnon, 2002: 12). Health is largely determined by social, economic, political, and environmental circumstances: "The social conditions in which people live powerfully influence their chances to be healthy. Indeed, factors such as poverty, food insecurity, social exclusion and discrimination, poor housing, unhealthy early childhood conditions and low occupational status are important determinants of most of disease, death and health inequalities between and within countries" (WHO, 2004: 1).

FOOD SOVEREIGNTY EQUALS SUSTAINABLE LIVELIHOODS AND FOOD SECURITY

At the Forum for Food Sovereignty in Mali in 2007, 500 delegates from more than 80 countries adopted the Declaration of Nyéléni, which says in part: "Food sovereignty is the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems." The food sovereignty movement was initiated by peasant and Indigenous organizations (Altieri, 2009; Holt-Giménez, 2009). Actors in the food sovereignty movement consider the redistribution of land and protection of territory to be key (Torrez, 2009).

Food sovereignty considers that people have to both make a living and eat and links the two in sustainable livelihoods. A sustainable livelihood is defined as "the assets (natural, physical, human, financial and social capitals), the activities, and the access to these (mediated by institutions and social relations) that together determine the living gained by an individual or household" (Ellis, 2000: 10). The five capital assets include: (i) Human capital (the skills, health and education of individuals that contribute to the productivity of labour and capacity to manage land); (ii) Social capital (the close social bonds that facilitate cooperative action, social bridging and linking to share and access ideas and resources); (iii) Natural capital (the productivity of land, and actions to sustain productivity, as well as the water and biological resources from which rural livelihoods are derived); (iv) Physical capital (items produced by economic activity including equipment and infrastructure);

(v) Financial capital (the level, variability and diversity of income sources, and access to other financial resources (credit and savings) that together contribute to wealth) (Woolcock, 1998). Natural capital, for example, can be transformed into physical and financial capital via economic activity, while financial, social and physical capital can be transformed into human capital by increasing access to education (Khan et al., 2009). Asset use, control and access of resources are influenced by institutional structures, processes, policy and programs. People choose livelihood strategies to provide the best livelihood outcomes in an external environment over which they often have little control. Structures (e.g., rules, customs and land tenure) and processes (e.g., laws, policies, societal norms and incentives) operate at multiple levels (individual, household, community, regional, government, powerful, private enterprise) (Scones, 1998; Carney, 1998; Ellis, 2000).

The paradigm of food sovereignty claims to represent authentic food security (Patel, 2009; Wittman, 2009). Food security occurs when people have consistent access to healthy, culturally appropriate food, according to the World Food Summit definition: "Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (FAO, 1996). Another component of food security is recognized as important to Indigenous peoples, namely the ability to harvest, share and consume "country foods" (Power, 2008). However the quantitative method of Health Canada, considered the standard and applied in this paper, limits food security to physical and economic access and does not consider country foods access.

FOOD INSECURITY

Food insecurity is a consequence of inadequate or uncertain access to healthy food in terms of quantity or quality, and is typically associated with limited financial resources (Tarasuk, 2009). According to Health Canada (2007), compromises in quality and/or quantity or food intake indicate moderate food insecurity (MOFI) and reduced food intake and disruption in eating patterns indicate severe food insecurity (SEFI). Extensive compromises in food selection and

total food intake have been documented in conjunction with severe levels of food insecurity (Li et al., 2009) and poverty (Health Canada, 2007; Tarasuk, 2009). Food insecurity is reflected in unhealthy dietary patterns such as low intake of fruits and vegetables (Chen & Chen, 2001; Schier, 2005).

Recognized as an important public health issue in Canada, household food insecurity is associated with a range of poor physical and mental health outcomes. Food insecurity is linked with broader food-related health problems, such as obesity and multiple chronic conditions, including heart disease, diabetes, high blood pressure, distress, depression, low immunity levels, dental caries and anemia (Ford & Mokdad, 2008; Ledrou & Gervais, 2005; Kirkpatrick & Tarasuk, 2008; Vozoris & Tarasuk, 2003). Food insecurity may explain why Manitoba has the highest rate of pediatric diabetes in North America (Amed et al., 2010), particularly in the four Oji-Cree Island Lake First Nation communities surveyed, when diabetes was unheard of in these communities forty years ago.

Health Canada's national food security survey in 2004 (CCHS 2.2) excluded First Nation communities, which leaves a knowledge void. However, food security rates for a few FN communities across Canada (Rainville & Brink, 2001; Lawn & Harvey, 2003; Lawn & Harvey, 2004; Lawn & Harvey, 2004) reveal very high rates of household food insecurity that greatly surpass the Canadian average of 9.2% household food insecurity rates and those of sub-population groups such as the lowest income adequacy quintile (55%), social assistance recipients (62%) and off-reserve Aboriginals (33%) measured by the Canadian Community Health Survey 2.2; Nutrition Focus Study (CCHS 2.2) (Health Canada, 2007; Shields, 2005).

The food costs and poverty in northern Manitoba First Nations and Aboriginal communities are considered high. A 12 month inquiry was sparked at the Manitoba legislature by the question: "Why is alcohol priced the same at Churchill as in Winnipeg but milk is much more expensive?", which as milk is only a small part of food costs in the north, changed to "Why are healthy foods very expensive in the North?". This report acknowledged that (i) "there is an appreciable level of food insecurity in many northern Manitoba communities";

(ii) “a broad range of strategic options are needed to address the problem of high costs and improve nutritional health in northern Manitoba”; and (iii) “community capacity building and holistic solutions are essential to the success of any strategic option” (NHFP, 2003: 25), among other things.

COMMUNITY LEVEL FACTORS IMPACTING FOOD SECURITY

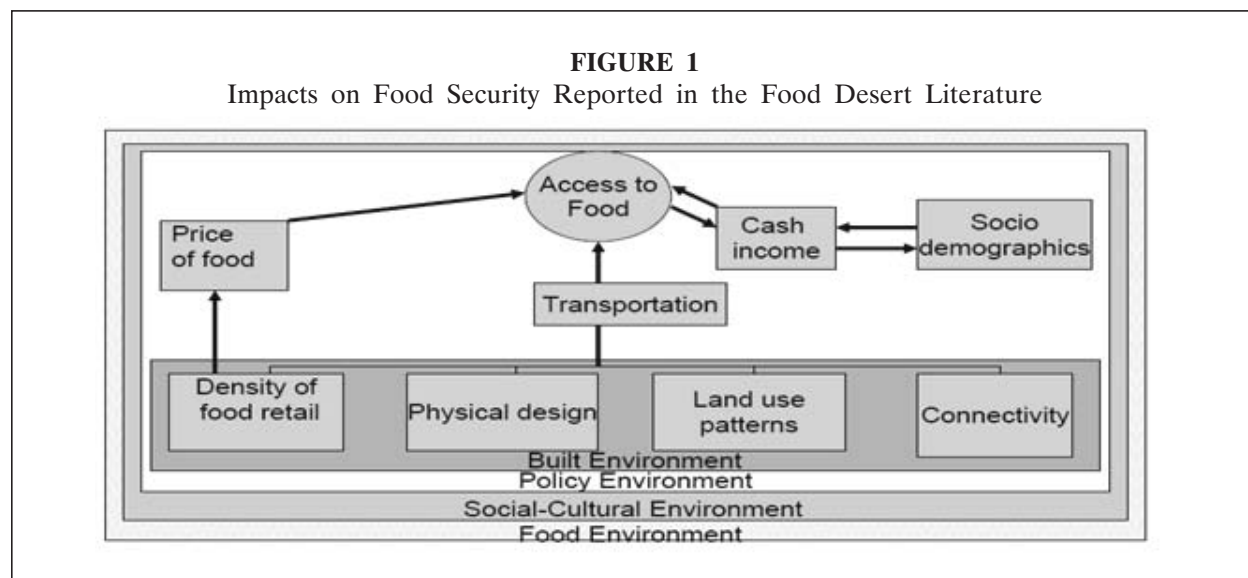
What food is on the table at home is the result of complex interactions between multiple factors operating at various levels of social organization including at the community level. While much of traditional nutritional health promotion focuses on individual eaters, decisions are made in socio-cultural and geo-economic contexts that have a profound influence on what food is actually available for people to choose from (Fieldhouse, 1995; 2003). Evidence in North America indicates that characteristics of the food environment may help explain racial and socio-economic inequalities in health and nutritional outcomes (Morland, Wing & Diez-Roux, 2002; Zenck et al., 2005). Living in a low-income or deprived area is independently associated with a poor food environment, the prevalence of obesity and the consumption of a poor diet. Exposure to poor quality food environments, coined as “food deserts”, amplifies individual risk factors

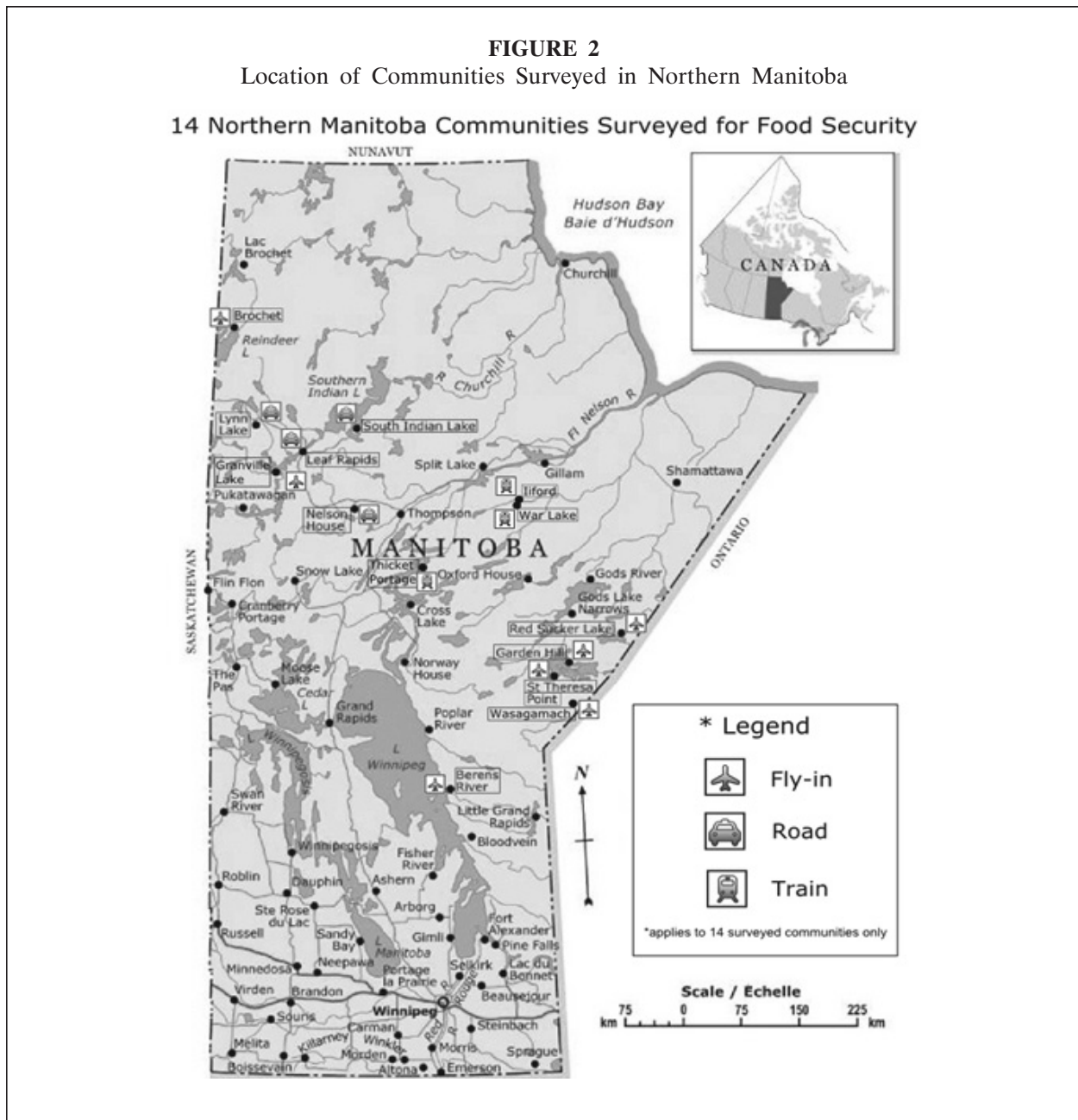
for obesity such as low income, absence of transportation, and poor cooking skills or knowledge (Cummins & Macintyre, 2005). The presence of supermarkets in a neighbourhood has been associated with a lower prevalence of obesity (Morland, Diez-Roux & Wing, 2002). This research finding regarding the impact of “food deserts” on health and food security is consistent across urban settings in the U.K. (Ellaway, Anderson & Macintyre, 1997; Shohaimi et al., 2004), the Netherlands (van Lenthe & Mackenbach, 2002), Sweden (Sundquist, Malmstrom & Johansson, 1999), Australia (Dollman & Pilgrim, 2005), the U.S. (Kahn et al., 1998) and Canada (Moffat, Galloway & Latham, 2005). The factors identified in the food desert literature that impact food security/access include income, price of food, transportation, food competitive market and physical design. Factors from the food desert literature as impacting food security are shown in Figure 1. What factors impact food access/food security in isolated Aboriginal communities is unknown and will be explored in this study.

LOCATIONS FOR STUDY

Fourteen priority communities in northern Manitoba were selected by four nongovernment organizations active in the north on food security to represent a mix of northern Manitoba rural com-

FIGURE 1
Impacts on Food Security Reported in the Food Desert Literature





communities. Figure 2 shows that ten of the 14 communities surveyed do not have access to an all-weather road network, with seven having plane access only, namely Berens River FN, Brochet FN, Garden Hill FN, Granville Lake, Red Sucker Lake (RSL) FN, St Theresa Point (STP) FN and Wasagamack FN, and three having train access only.

METHOD

A number of research techniques were used to analyze CED and food sovereignty in the 14 communities, as summarized below:

1. Focus group with 25 people with community members from 15 communities but also NGOs, and government representatives.

2. In-depth interviews with more than 50 community members from 14 communities.
3. Community Food Assessment [CFA] was initiated with communities with meetings with South Indian Lake, Berens River, Leaf Rapids and St. Theresa, as well as with Four Arrows Regional Health Authority's (FARHA) and Frontier School Division teachers and students. With FARHA we had three different two day workshops with eight Aboriginal Diabetes Initiative workers and students.
4. National Nutritious Food Basket (NNFB) survey was undertaken in the stores in 14 NHFI communities in 2008/2009, as well as other northern and southern Manitoba communities for comparison.
5. Household food security survey was carried out with 534 people in 14 communities. This 18-item food security module of the CCHS 2.2 uses a simple and scientifically grounded measurement tool that was modified from the US Food Security Survey Module (Bickell, Nord, Price et al., 2000) by Health Canada (2007: 45–49). Data analysis was through descriptive and inferential statistics by SPSS version 17. The following factors were assigned yes/no status for analysis by chi-square and Pearson's correlation: road-access, plane-access, train-access, country food program, food security, MOFI and SEFI. An overall household measure of food insecurity was obtained as well as separate adult and child measures. For both adults and children, two or more affirmative responses indicated food insecurity, which was considered to be moderate (MOFI) unless it was above five affirmative responses for children and six affirmative responses for adults than it was considered to be severe (SEFI). If the household was food insecure for either adults or children the household was considered to be food insecure.
6. Participatory video recorded community peoples' stories in communities and produced an educational video based on repeated showings in community gatherings and revisions based on feedback. The quotes provided in this text are those

identified as important themes by people during community showings.

7. Observation and tours with community members of food activities. Detailed descriptions of these are available in Thompson et al. (2010).

FINDINGS

The findings are organized into four sections to reflect the key areas that arose from the research: (i) the importance of country foods to food sovereignty; (ii) factors impacting food sovereignty; (iii) food security rates in northern Manitoba; and (iv) CED and food sovereignty.

1. The Importance of Country Foods to Food Sovereignty in Northern Manitoba

Fishing, hunting, gathering and gardening in Aboriginal communities were the traditional sources of food. A female Elder reported how self-sufficient and healthy they were in the past:

Growing up as a child, my father and mother did a lot of gardening, and so did my grandparents ... that's what we grew up on, and we were healthy! ... Dad did a lot of fishing and trapping and hunting, it was the way to feed the family ... muskrat, beaver, ducks, chickens, moose, whatever he could get, and that's what we grew up on, and we were healthy!

When a family gathered local food everyone in the focus group stated that the whole family played a part: "We would have the involvement of children being taught how to cut the meat to prepare the fish. It was a total family involvement." Not only Elders lived a subsistence diet but many middle age people did as children. One male of forty years old told us his story of growing up on the trap line:

I lived most of the time on the trap line — six months out of the year we were taken to the trap line. My mother and father had their garden on the trap line. Majority of the time [we] didn't buy anything from the store, just flour and salt and little odd items that she [my mother] needed.... Most of the things she grew on her own, in our garden. We ate muskrat, we ate beaver, we ate moose meat and

fish. At lunch and at dinner—it varied from one wild produce to another.

Almost every community person from Brochet in the high north to the most southern community studied, Berens River First Nation, remarked that people were self-sufficient from gardening, fishing, gathering and/or hunting. According to in depth interviews, the door-to-door survey and a focus group of 25 community people from 14 communities, roughly 20% to 80% of the families in communities fish and/or hunt, depending on the community. Gardening was not as widespread, about 5 to 10%, although most people said their grandparents gardened most said they personally did not or had only started recently within the last few years.

As part of the focus group, seasonal calendars of food procurement were carried out by 25 people from 14 communities in five groups. These calendars showed that many local foods are still harvested. See Figures 3 and 4. The five seasonal calendars all had moose, ducks, geese, ice-fishing, muskrats, raspberries, blueberries, strawberries, sturgeon and other diverse fishes, and rabbits. More than one calendar listed collecting medicinal herbs, caribou, bear and cranberries. Garden foods harvested included: potatoes, corn, pumpkins, cucumber, and squash. Although nobody reported harvesting wild rice in their community, as it was not native to northern Manitoba or Saskatchewan, participants were aware that First Nations in northern Saskatchewan make millions from planting and harvesting it. The seasonal calendar done by four community people from Red Sucker Lake First Nation (Figure 3) included when the winter road opened in February with mention of Kentucky Fried Chicken, pizza and shopping in Thompson and Norway House.

Many people lamented that young people were no longer hunting, fishing, and doing traditional activities to the same extent. A woman from South Indian Lake (SIL) stated: “My big wish would be to see our young people doing the traditional ways of preparing meat and hunting, gardening and berry picking—everything to do with our food chain in the north.” As part of the participatory video, past Grand Chief of the Assembly of Manitoba Chiefs and present day chief of Grand Rapids Ovide Mercredi was interviewed. He described how the treaty rights stipu-

FIGURE 3
Seasonal Calendar of Community Members from Red Sucker Lake First Nation, a Plane Access Community, with Timing of Winter Road Opening Impacted by Climated Change

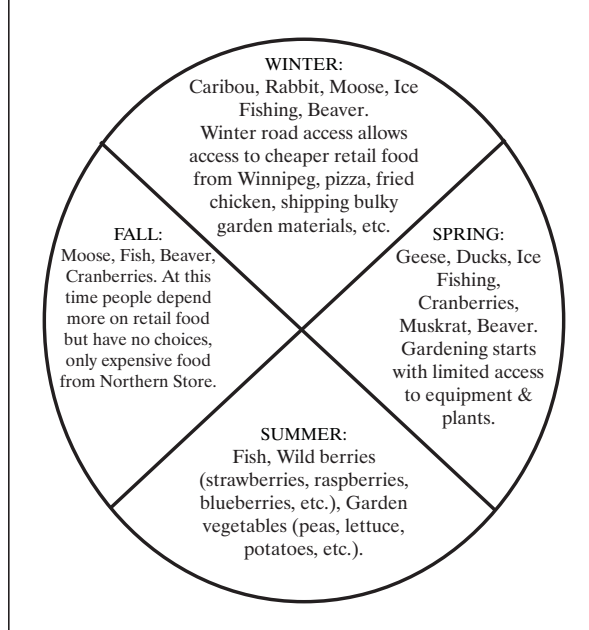
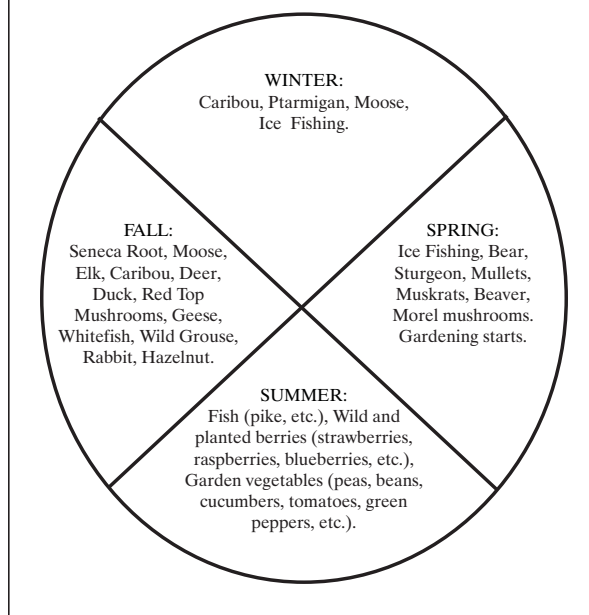


FIGURE 4
Seasonal Calendar of Community Members from Thicket-Portage and Leaf Rapids



late food sovereignty with agriculture and hunting and fishing clauses that outline funding supports for sustainable livelihoods and food security:

Part of the problem with the treaty rights is that the federal government has abandoned its obligations. They have been hoping for the past century that we have forgotten about them. But we have not forgotten about them. Including the responsibility of the crown to get us involved in agriculture. We have a treaty right to agriculture.

When it comes to the idea of food sovereignty we do have that as treaty people. What is an obstacle is the perception that the treaty rights cannot be used for commercial purposes. These are the old ideas that we have to break down and destroy. These are not only curtailing our treaty rights but also restricting the sharing of that food with other communities.

These treaties were meant to ensure access to sustainable livelihoods and country foods but a number of factors were identified in interviews as undermining this food sovereignty.

2. Factors Undermining Food Sovereignty

The ability of northern people to live off the land and be self-sufficient was compromised by development, according to many interviews, including one government representative:

Historically people lived off the land but with development, the ability of land to support a livelihood has been altered. For example, commercial fishing is less economically viable than it used to be. People are looking at ways to protect their natural food sources.

Many people in SIL First Nation (FN) and other communities discussed how fluctuating water levels, particularly the levels during spawning season, decimated fish populations. Fishermen and their wives from SIL told how forty nets were now needed to get the same amount of fish as with four net, prior to the Manitoba Hydro damming. The Nelson River flows faster and the opposite way due to damming, with unnatural fluctuations based on a Manitoba Hydro regulated control structure. After the relocation of SIL due to the flood, the quantity and

quality of SIL fish fell and were no longer considered the highest grade for the best price. A SIL woman explains how the relocation and environmental changes from damming impacted their food security and livelihoods

The flooding of the lake really affected us. It affects our food chain and everything that we get off the land. It really damaged a lot of our hunting areas and our fishing areas and even our berry picking areas. It's a terrible thing to live with on a day-to-day basis.

Many northern communities are impacted by water level regulation. Other impacts of development include logging and mining. A fisherman from Berens River complained about logging ruining fish spawning grounds: he connected the lack of habitat protection programs and development with the demise of many fisheries:

We used to have jumbos that big [three feet long]. We don't have northern pike anymore in Lake Winnipeg. We don't have the white fish anymore. There are no habitat programs. Nothing at all in the north. You have some at the south end of Lake Winnipeg, but nothing in the north. It's like they forgot about us people in the north."

Not only is the water flow impacted and regulated by hydro damming, the fish market is regulated and controlled by the Freshwater Fish Marketing Corporation (FFMC). Fisherman from SIL, Brochet, the four Island Lake communities blamed this FFMC monopoly, which sets prices too low for northern fisherman to make a living with the high cost of gas for boats and high freight costs there. To make an income most fishermen reported that they had to dump three quarters of the fish that come up in the net, which are non pickerel, as otherwise the fuel costs would be too high to haul this amount of fish that has no market value. Fishermen often live hand to mouth and can often not afford the money to put gas in their boat to fish and young fishermen cannot buy the nets, motor and boat required to fish. Without a vendor's license in these communities, commercial fishermen must export their fish south, typically to the FFCM's Transcona fish processing plant, near Winnipeg, to be processed and graded. In the mid 1970s with the opening of the large FFCM processing

plant, the local fish processing plants in most communities closed, which took jobs out of the communities and increased freight costs as the more weighty whole fish on ice was shipped.

The day-to-day government regulation's impact on country foods extends to their use for sustenance. For example, after videotaping an ice fishing net being put in place by a community member for local sustenance in Garden Hill it was pulled up later that same day and confiscated by Manitoba Conservation. Manitoba Conservation has jurisdiction of all waterways in Manitoba including those adjacent to First Nation reserves. Country foods use is also highly regulated. During a feast in the school, the cooks explained that public health officers would not allow them to cook wild foods for any feast or for school lunches. Stories were shared about how the public health inspector visits several times a month and how he threatens to shut the school kitchen down if he does not find boxes to show meat and fish were inspected and provided by the market. With so many youth with diabetes needing their lunch, the cooks felt they could not risk being shut down and fined. They explained how they would have preferred to serve moose stew or other wild game and fish to extend their limited budget and maintain culture but they were not allowed to. The cooks felt that the school lunch programs and feasts suffer from their limited budget: students and teachers mentioned being served a lot of high carbohydrate foods, like macaroni and spaghetti.

A further regulatory aspect of wild meat is it cannot be sold to recover costs of hunting and trapping. Community people complained about the high cost of getting country foods, for buying gas and boats or getting to trap lines are so far away from their residence that they require air transportation. These costs cannot be recovered, as wild game cannot be sold and the fur trade has been decimated by animal right campaigns. A woman explained that she was lucky that she could afford a plane to visit her trap line as she and her husband are employed, otherwise she could not. It costs her more than a thousand dollars to get to her trap line and back with game. Many Island Lake trap lines are in Ontario, hundreds of miles away from home. A community health worker stated: "High unemployment and corresponding rates of poverty not only make it more difficult to purchase nutritious

foods, it also makes it much more difficult to get out on the land to harvest wild foods." Therefore both regulation and development are having a large impact on the availability and use of country foods as well as food security.

3. Food Security in Northern Manitoba's Aboriginal Communities

The survey (n=534) found that three out of four homes (75%) in northern Manitoba were food insecure, with either an adult and/or child experiencing food insecurity in each of these households. Only one-quarter (25%) of homes were food secure for both children and adults in northern Manitoba. Figure 5 shows that one-third of homes (33%) experienced SEFI while more than two in every five households (42%) experienced MOFI. Compared to overall household rates, the children's household food security rate is slightly better at 42% with 34% SEFI and 24% MOFI food insecure for a total of 58%.

Household food security rates vary dramatically across the 14 northern Manitoba communities. Household food insecurity (severe and moderate) rates were lowest in Nelson House FN (47%), which community members attributed to their country food program, and highest in SIL FN (100%) as shown in Figure 6. The

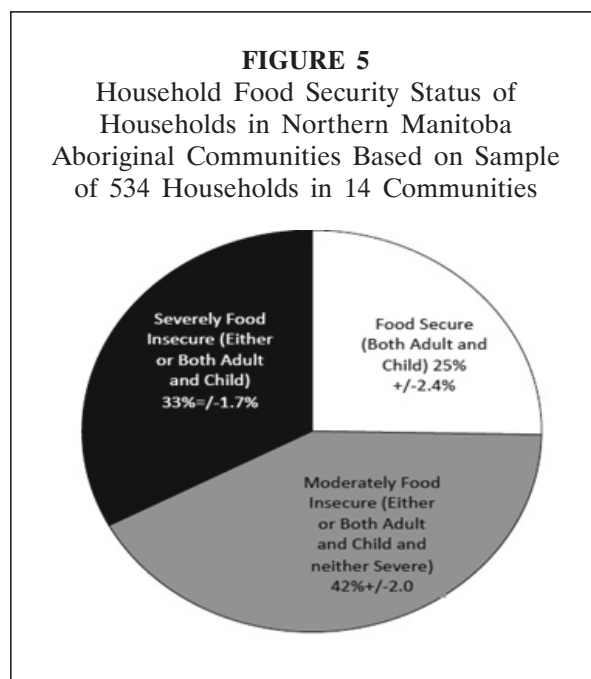
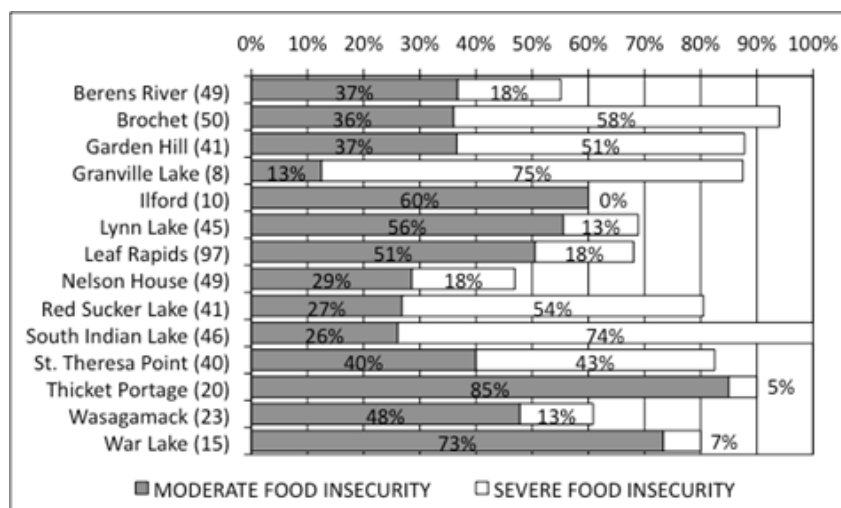


FIGURE 6
Rate of Household Food Insecurity in 14 Northern Manitoba Communities¹



¹ Numbers in brackets represent the sample size of households interviewed (Community's Access to Urban Centres and Food Insecurity Rates)

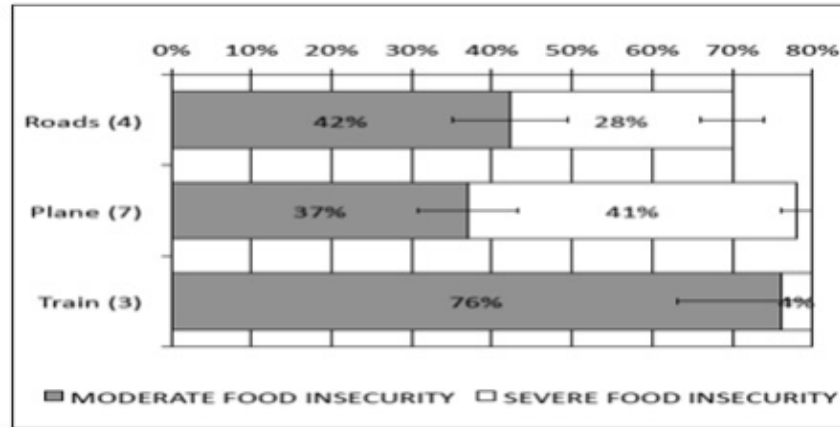
country food program was significantly related to improved food security ($\chi^2 = 28.593$, d.f. 2, $p < 0.001$). The highest rates of food insecurity were typically, with the exception of SIL, in plane access communities with overall household insecurity rate in Brochet at 94%, Garden Hill at 88%, Granville Lake at 88%, RSL at 81% and STP at 83%. All of these communities had SEFI rates above 50%, except STP. Small sample sizes in Granville Lake, Ilford, Thicket Portage and War Lake FN warrant caution in interpreting results but reflect the small number of households in these communities, with a census survey being obtained in some of these communities.

The overall household food insecurity rate of communities accessible by train and plane are similar, with slightly higher rates for communities accessible by train, however, the degree of food security is very different. Only 4% of those in train access communities are SEFI whereas it is roughly ten times that rate (41%) for those in plane access communities, as shown in Figure 7. Households in communities without road access had ten percent higher food insecurity (79%), than those with road access (69%)

for adults. Children's household food insecurity rates increased to 66% in communities without roads, which is 20% higher than communities with roads (46%).

Access (train, road or plane) was significantly related to food security rates (secure, MOFI or SEFI) ($\chi^2(4) = 38.919$, $p < 0.001$). Food security rates for households in communities with road access were 30.4% compared to 21.9% for plane access only and 20.0% for train access only. Overall MOFI household rates for communities were 41.8% for road access compared to 35.5% for plane access only and 75.6% for train access only. Severely food insecure households accounted for 42.6% of the households in plane access communities compared to 27.8% for road access and 4.4% for train access only. The likelihood of household members experiencing SEFI increased when the only access to communities is plane ($r = 0.155$, $p < 0.001$, 2-tailed). Households having train access were more likely to be MOFI ($\chi^2(1) = 23.077$, $p < 0.000$) but less likely to be SEFI ($\chi^2(1) = 18.083$, $p < 0.000$) and food security status was not significantly different than that of other com-

FIGURE 7
Comparing Community Food Security Rates for Households (Children and Adults)
by Their Access to Roads, Train or Plane



munities. The need for CED programming is large with the “food access crisis” finding of a 75% food insecurity rate across Northern Manitoba and even higher rates in communities without road access. Could CED meet this challenge to reduce food insecurity?

4. Food-related Community Economic Development Programs

A focus group of people from the 14 communities undertook an exercise to prioritize community food CED projects. This exercise showed that the highest priorities for food CED were: (i) helping people get access to boats/motors, skidoos or gas to support trapping and hunting; (ii) starting community gardens; (iii) increasing access to the healthy and affordable food in stores; (iv) holding traditional foods preparation classes that included hands-on teachings of cultural food harvesting; (v) getting policy makers and community members to see food security as an overall well-being issue; (vi) having community buying or shopping excursions; and (vii) training on chicken and livestock production. The priorities considered the easiest to accomplish were cooking classes and gardening with schools, which are occurring in many communities. The items considered the most difficult

to accomplish were changing healthy food access at the store, getting support for hunting, fishing, trapping as well as chicken and livestock production for local sustenance.

The CED programs identified by community visits and interviews include many of the priorities identified in the list above. Three programs are divided into the following sections: (i) the importance of food buying clubs in northern Manitoba; (ii) the Nelson House Country Foods Program; and (iii) the Northern Healthy Food Initiative.

The Importance of Food Buying Clubs in Northern Manitoba

Food buying clubs and individual food mail provide an alternative to the corporate monopoly in northern communities, allowing the buying of food in bulk at reduced prices. Food buying clubs exist in many fly-in communities and often use a federal program, which helps subsidize the hefty freight charges to fly food into fly-in communities. In fly-in communities all retail goods must be flown in, except for the few weeks when the winter-roads allow trucks and cars to travel on the frozen lakes at the very reduced speed of 15 km/h. With climate change, the duration of the winter road is increasingly uncertain and of shorter duration. A federal government program

previously called the "Food Mail Program" and now called "Nutrition North Canada" (effective April 1, 2011) subsidizes freight of food flown into commercial stores and to individuals in plane access communities.

Bulk food packages are ordered from Winnipeg stores by social assistance workers in the four Island Lake First Nation communities, to ensure healthier foods and better prices for their clients. For example, in St. Theresa Point First Nation the social assistance worker reported ordering about \$60,000/month of mainly meat packs, which comes off as a deduction from the client's next social assistance cheque. This effort is necessary to stretch the small food budget welfare recipients receive. The social assistance office takes a financial risk as if the client has been cut off social assistance they cannot recoup the cost.

Also many schools serve a lunch or snack program to ensure children have something to eat and buy in bulk to ensure better pricing. For example, the principal of the school at Garden Hill orders in bulk (\$1200/month) from Winnipeg stores to provide a healthy lunch and snack program that the students each pay \$15.00 per month for. Other school lunch programs shop at the local store rather than using Food Mail. For example, the cooks at the high school in St. Theresa report that typically they do not have funding far enough in advance to order from Winnipeg as it takes time to get the food and so have to shop at the Northern Store there.

Northern Stores are not local co-operatives or locally owned but are the latest reincarnation of the Hudson Bay Corporation. A typical store is 7,500 square feet in size and offers food, family apparel, housewares, appliances, outdoor products and special services like cheque cashing, catalogue ordering, money transfers and fast food outlets but the cost and quality of food is often inadequate to support healthy dietary choices. Thirteen of the 14 communities studied have one store which stocks mainly high-calorie, high-fat, low-nutrient food, supplying little in the way of fruits and vegetables or no store. Berens River FN is the only fly-in community that has not one but three grocery stores, as this more southern community has a ferryboat to ship food at low cost. Although stores in many fly-in communities in northern Manitoba benefit from this government subsidy they do not have to pass it

along to the consumer and often do not, according to our price survey. A review of the price transfer to consumer was recognized as needed for the new program, which may result in better pricing. Although food mail subsidizes freight of food to commercial stores in fly-in communities, food prices remain high. A food costing survey of 18 stores in northern Manitoba found that fruit and vegetables were two and three times higher in the northern communities as in southern communities and much higher in fly-in communities than even the other northern communities. According to one community member, the quality and selection of food items in the Island Lake region stores is inadequate: "The existing Northern Stores selection is very limited and costly. After shipping, the produce is often damaged".

To add to the high cost of buying food—the food store is often located in a hard to reach location. For example both at Garden Hill First Nation and Wasagamack, the Northern Store is on an island that requires you use multiple modes of transportation to get there: a boat in the summer, car or skidoo during winter road and skidoo or helicopter in spring and fall during ice break-up. A large part of people's food budget either goes to taxi fees to get across by boat, skidoo or car or if they have a car or skidoo, to gas, which is about \$0.50 higher per litre in these communities, to reach the store.

A number of communities, including Thicket-Portage, Ilford and War Lake FN, along the Bayline Railroad have no grocery store or all-weather roads. They also lack a commuter train travel to Thompson to get groceries takes several days. Travel for hotels and travel for these trips costs about \$250. Community members discussed how the conductor used to sell vegetables from market gardens in Cormorant, Thicket-Portage and other places along the railroad—all the way to Churchill. Community members would like to see a boxcar store again. Granville Lake is not on the Bayline Railroad but faces the same problem of having no store and no road. People from Granville Lake must use winter roads or a boat to reach a food store that is more than an hour boat ride away. To help residents of Granville Lake get healthy food boxes, members of the Leaf Rapids Co-op are recommending that their store sell healthy food boxes to Granville Lake, and to other communi-

ties with unaffordable food prices such as South Indian Lake. Prices at Leaf Rapids and Lynn Lake Co-op are slightly lower than South Indian Lake for many healthy foods.

Nelson House Country Food Program

With financial support from the Nelson House Trust Office through the Northern Flood Implementation Agreement, a wild food distribution program was started on the NCN reserve called the "Nelson House Country Food Program". The Nelson House Country Food Program is an innovative project that provides community members with access to healthy foods, while creating jobs and building community. The program employs seven local people including a program coordinator, a technician, and five workers who hunt and fish year-round. The food brought in by the workers is distributed for free among community members. The food program prioritizes sharing the food with elders, the sick, and low-income, single-parent families. Ron Spence, a councilor for NCN, that was interviewed for the participatory video described the program. "Country foods is a program that is created by the community. Every community, northern community, Aboriginal community does what we do. Our culture is sharing, giving...." Charlie Hart, the past Program Coordinator for the Nelson House Country foods program describes what a great success the country foods program is: "We are providing food to 1500 people out of 2500 [people in the community] and all of them are happy getting fresh meat and fish. It's a good way to maintain traditional culture in a healthy manner and others should try to implement that too." This program deeply connects traditional with the school and other organizations. This program, according to a community member: "Applying the culture and traditional aspect, like the smoking of fish and meat... We promote the teaching of cultural values and traditional skills."

As a past Manitoba Conservation officer, Ron Spence was very aware of the need for wildlife conservation, he stated: "With the growing human population and industry we have to protect our own resources. By doing that we can regulate and govern ourselves internally and locally and still work with [Manitoba] Conservation. They are a part of setting up the policies." As part of this food program, NCN recently re-

established caribou near their reserve to enhance conservation. He goes further to say; "If we were government funded then we'd be regulated. There would be a lot of things we couldn't do. That is why we are keeping this internally and locally operated."

NCN has a country food processing centre, to cut the meat and freezers to store it in. The workers keep track of the foods and weigh them to ensure all reporting requirements are observed.

Although country food harvesting and sharing occurs in every northern Aboriginal community, no other community visited has infrastructure or funding to support an organized distribution system for hunting or fishing or support hunters or fisher outfitting. However, some Island Lake communities lend out ice fishing nets to community members. An ice fishing net can each feed 20 families or about 150 to 200 people. The nets were purchased through the health centre from Manitoba's Chronic Disease Prevention Initiative (CDPI) in Garden Hill for families but also to engage the school in teaching about country foods. The Chronic Disease Prevention Initiative (CDPI) provides \$2 per person in the community if the health centre submits a community CDPI action plan to prevent chronic disease through healthy activities and eating. CDPI supports gardening initiatives and nutrition education. The funding often goes towards country feasts, which basically funds a hunter or fisher to provide for the community, as that is what the community identifies as important in their action plan. CDPI will provide support for country foods as it meets healthy, active living objectives and nutrition objectives, however, the Northern Healthy Food Initiative (NHFI) does not provide any support for wild foods, other than freezer loans for food storage.

Northern Healthy Food Initiative

The Northern Healthy Food Initiative (NHFI), a provincial program to increase food self-sufficiency, has achieved some notable successes in its gardening, greenhouse, poultry and freezer loan projects. NHFI provides funding to NGOs to run workshops on gardening and cooking and to buy materials for community to share, including, seeds, soil amendments, rototiller and shovels for the community to share. People commented on how important it was for seeds and

plants to be provided in these communities as no nearby stores provide this material: “Definitely these folks for transportation reasons can’t go to town to a plant or grocery store because of economics.” Perennials were the focus of much of the outreach by NGOs in some communities: “Going to receive \$1,000 worth of fruit trees through NHFI to give away. Workshops will be given on how to care for them and will encourage people to share produce.” The timing of these provisions can be critical: “The gardening materials arrived last year too late, which limited the success of gardening”. Some communities only recently began to benefit. Leaf Rapids, Granville Lake and Lynn Lake, for example, did not receive a rototiller or seeds until 2009 when Frontier School Division hired a gardening co-

ordinator to work out of Leaf Rapids to replace a less effective NGO.

At the community level, local capacity building varies as communities receive very different quality and quantity of programs based on what NGO they are assigned to, as shown in Table 1 with some offering only gardening and others a lot more. The most successful NGOs offered local part-time employment and built community capacity through training programs in schools or community health centres. For example, a train the trainer program was developed by the Bayline Regional Roundtable (BRRT), which provided each of their seven communities with a paid part-time agriculture technician advisor. Other NGOs did not offer this train-the-trainer model, which limits any NGO activity in their community to one or two days a year due to

TABLE 1
Programming and Materials Provided by Non-government Organizations (NGOs) in 2008 and 2009

<i>Non-government organizations (NGOs) Northern Programming</i>	<i>Bayline Regional Roundtable (BRRT)</i>	<i>Northern Association of Community Council (NACC)</i>	<i>Frontier School Division (FSD)</i>	<i>Four Arrows Regional Health Authority (FARHA)</i>	<i>Food Matters Manitoba</i>
Gardening Programs for Youth			+		
Supportive Programs for Hunting					
Train the Trainer Workshop for Agriculture Technician Advisors	+				
Newsletters		+	+		+
Conference Presentations	+	+	+	+	+
Walk-In Community Refrigerator				+	
Poultry Production Kits	+				
Paid Local Agriculture Technician	+				
Provide Plastic for Greenhouse	+				
Strong network in their northern communities around food	+		+	+	
Organize Northern Harvest Forum	+				
Freezer Loans	+			+	
Provide Gardening Materials	+	+	+	+	
Gardening or canning workshops	+	+	+	+	
Provide Ready-Made Community Greenhouse to each community	+	+	+	+	
Seeds & greenhouse design research			+		
Build Northern Greenhouses with local northern labour	+		+	+	

+ Provide materials or expertise, assistance in this area.

TABLE 2
Gardens and Greenhouses in the Northern Manitoba Communities Studied

Community Name	Number of Gardens and Greenhouses in 2008			Number of Gardens and Greenhouses in 2009			Supportive NGOs
	Home Gardens	Community Gardens	Greenhouse	Home Gardens	Community Gardens	Greenhouse	
Barren land & Brochet	5	1	1 C	25	1	1	NACC, FSD
Garden Hill	54	0	1 (P)	30	0	1 (P)	FARHA,
Granville Lake	0	0	0	5	1	0	NACC, FSD
Lynn Lake	15	1	4	17	0	5 (4P+1C)	FSD
Leaf Rapids	15	1	3 (2P+1C)	25	1	4 (2P+2C)	NACC, FSD
Nelson House	8	0	0	3	0	0	BRRT
Red Sucker Lake	0	0	0	10	0	1 (C)	FARHA
St. Theresa Point	10	1 (C)	1 (C)	12	1 (C)	1 (C)	FARHA
South Indian Lake	5	0	0	5	0	1 (P)	FSD, NACC
Wasagamack	10	0	0	15	1 (C)	0	FARHA
Berens River	9	1	0	14	1	0	NACC
Cormorant	10	0	0	15	0	1 (P)	NACC
Iford	0	0	0	0	0	0	BRRT
Thicket Portage	5	0	0	5	0	0	BRRT
War Lake	0	0	1 (P)	0	0	1 (P)	BRRT
TOTAL	146	5	10	181	6	16	

Note: These numbers were gleaned by touring communities and discussions with community members and NGOs in 2009.

Legend: P=personally owned, C=run by school or nursing station or other community institution

difficult logistics, limited funding and lack of experience with outreach and agriculture in the north. The least effective NGOs were based in Winnipeg without a good network in the north and only \$30,000/year funding for both staff and travel, which severely limited the hands-on activities of these NGOs. This may explain why in a number of communities the local people see the NGOs as distant government rather than their community representatives, due to a lack of NGO involvement at the community level. For example, some community members called NGOs “paper shufflers in Winnipeg who come to the north for photo opportunities rather than to help, and leave the same day”.

With no greenhouses, freezers or gardening tools in most communities prior to NHFI, the NHFI gardening inputs have resulted in noticeable changes and enthusiasm at the community level. Due to NHFI inputs, an increasing number of gardens are being cultivated and greenhouses built with the plastic provided. Table 2 enumerates the garden and greenhouse projects in each community studied. Although some of the 181 gardens were in existence pre-NHFI most were precipitated by NHFI provisions, with 33 started in 2009 alone. Initially only a few people were interested in gardening but then after a couple of years of NHFI, people who had never gardened started gardening: “This program has been

going on for four years, at the beginning there were a few people doing it [gardening] but because of this funding and really encouraging the idea of gardening it has skyrocketed." Not only gardens were being grown but the expertise of gardeners: "NHFI has been operating for four years and we now have a couple of local experts in gardening.... I can see progress."

In most communities, gardening programs were taken up by the school or health centre and gardens through the homes of employees, students, relatives and friends. A Frontier School Division conference, funded by NHFI, has promoted gardening to teachers and youth since 2007. Teachers expressed their support for gardening at school and in the community but would like more assistance, as gardening work was very time and resource intensive. In many communities, gardening was promoted by the health center with competitions, community gardens or workshops providing an opportunity to distribute gardening supplies. For example, the health centre at St. Theresa Point had a competition between staff for the best row in their community garden to get all employees involved.

As well as being popular, gardening was reported to be increasing community cohesiveness, community capacity and healing. One community member described its popularity: "The program is really popular in the communities.... I think that it brings a lot of community development." The process of gardening is also described as healing and motivating community economic development: "Doing gardening is very healing for the community ... it gets people motivated and working together" A health worker describes the impact of Island Lake training program where Elders taught youth about gardening: "One of our communities invested employment dollars to help young people, youth to learn how to do gardens ... taught by the Elders ... to have the youth and the Elders interact. Because we're always being told that our teachings come from the Elders." Educating youth about gardening was reported to have three benefits: bonding between youth and elders, promotion of healthy living, and giving youth a constructive pastime.

NHFI funding also assisted the freezer distribution and food-preservation training, recognizing that food preservation is an important element in the food system. The freezer program

allowed the preservation of seasonally produced and harvested vegetables, berries, wild meat and fish. This program increased the ability of community members to store country foods, according to many community members including one person who stated, "In the freezer loan program, families were taught how to keep food for winter that they caught in summer". In the beginning the freezer loan program received seed funding of about \$700,000 from Science Technology Energy and Mines (STEM). This freezer loan program is set up as a revolving, self-financing fund within each community: after receiving a freezer, participants in the program make small monthly payments to replenish the fund, which allows for additional community members to participate in the program. A social assistant recipient would pay \$250 with the other \$250 covered by the special needs social assistance fund. This program has served a number of remote communities (e.g., Oxford House, Brochet, St. Theresa Point, SayisiDene, Northlands FN, Shamattawa and Wasagamack) where concerns for food security are great. There remain a number of remote communities that have not benefited from loans. BRRT writes "This March 2008 we purchased 56 more for purchase by families in BRRT road accessible communities. We also purchased the financial program from our bank to allow us to make collections directly through a pre-authorized debiting process, which should improve both the ease and success of repayments" (BRRT, 2009: 4).

The NHFI team has accomplished a lot with a little funding according to most interviews with the NHFI government team. Almost all NHFI team members in interviews and focus groups commented on the initial "small" or "shoe-string" NHFI budget and its steady growth year to year with comments that included: "Despite its small size, NHFI has been effective at making change. Its budget is pretty modest at \$750,000, which is small in government terms. Proud of the difference it is making. We took this \$750,000 and multiplied it with in-kind investment. Even at \$750,000 per annum budget the NHFI budget is considered modest but effective."

However, lack of multi-year and shoe-string funding is not seen as sustainable by others. NGOs were critical about the ad hoc funding that was spread unsustainably thin:

Sprinkling small grants perhaps \$5,000 to \$10,000 across many communities does not work well in First Nations for two reasons. One — continuity of funding is essential to slowly implement change. And two — insufficiency of funding considering the high prices.

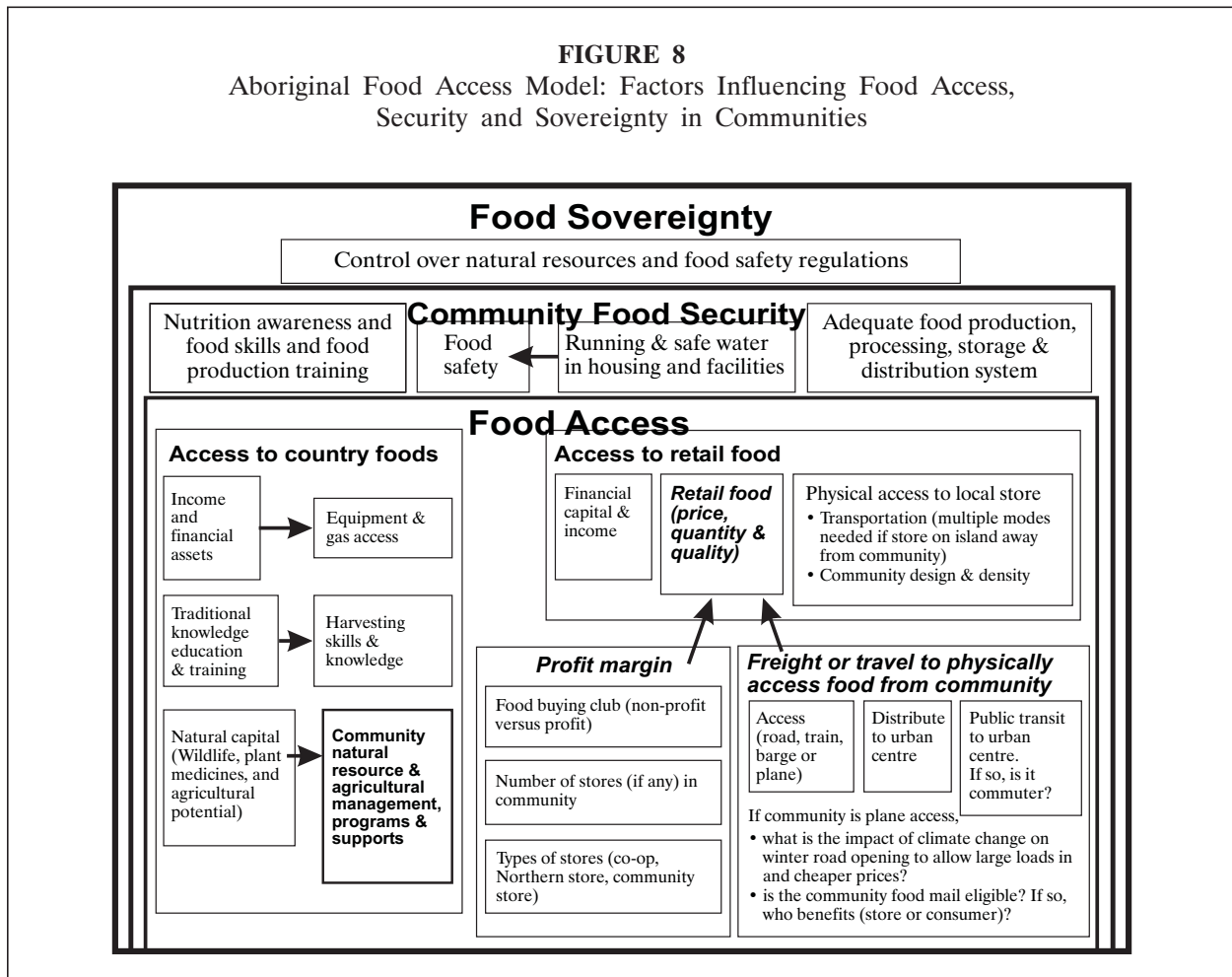
Another NGO member commented about the lack of multi-year funding creating uncertainty: “Sustainability is a concern at the community level... NGOs don’t know how long the funding will continue.” Sustainability of funding is essential to retain NGO staff, which is needed to build expertise and trust in communities. In the words of another NGO representative: “Unstable funding, a lack of continuity, etc. has led to a great deal of turnover of good staff at the regional project level.” Ensuring continuity of

funding for NGOs or alternatively a community based organizations is required for sustainability.

DISCUSSION

There are many factors that impact food security that were identified, which are shown in Figure 8. A statistically significant relationship was found between the following factors: access route (e.g., by road, rail or plane) and food based CED, specifically country food programs. Qualitative research provided further findings. Many food access factors differ from those identified in the urban food deserts literature, considering the large role of country foods in Aboriginal and transportation issues that is not limited to distance by road network to the retail store. Factors impacting retail food access in remote com-

FIGURE 8
Aboriginal Food Access Model: Factors Influencing Food Access, Security and Sovereignty in Communities



munities also include getting the food to the community, which incurs large freight costs for long distance travel over gravel roads, winter roads or no roads, the phenomenon of the island store reachable only by boat or skidoo, freight subsidies for retail food but not country foods, availability of public transit to the community, and climate change reducing winter road access. Factors impacting country foods was related to food sovereignty including external regulatory regimes, outside development destroying habitat, policies and ecosystems, as well as climate change making the winter roads unreliable.

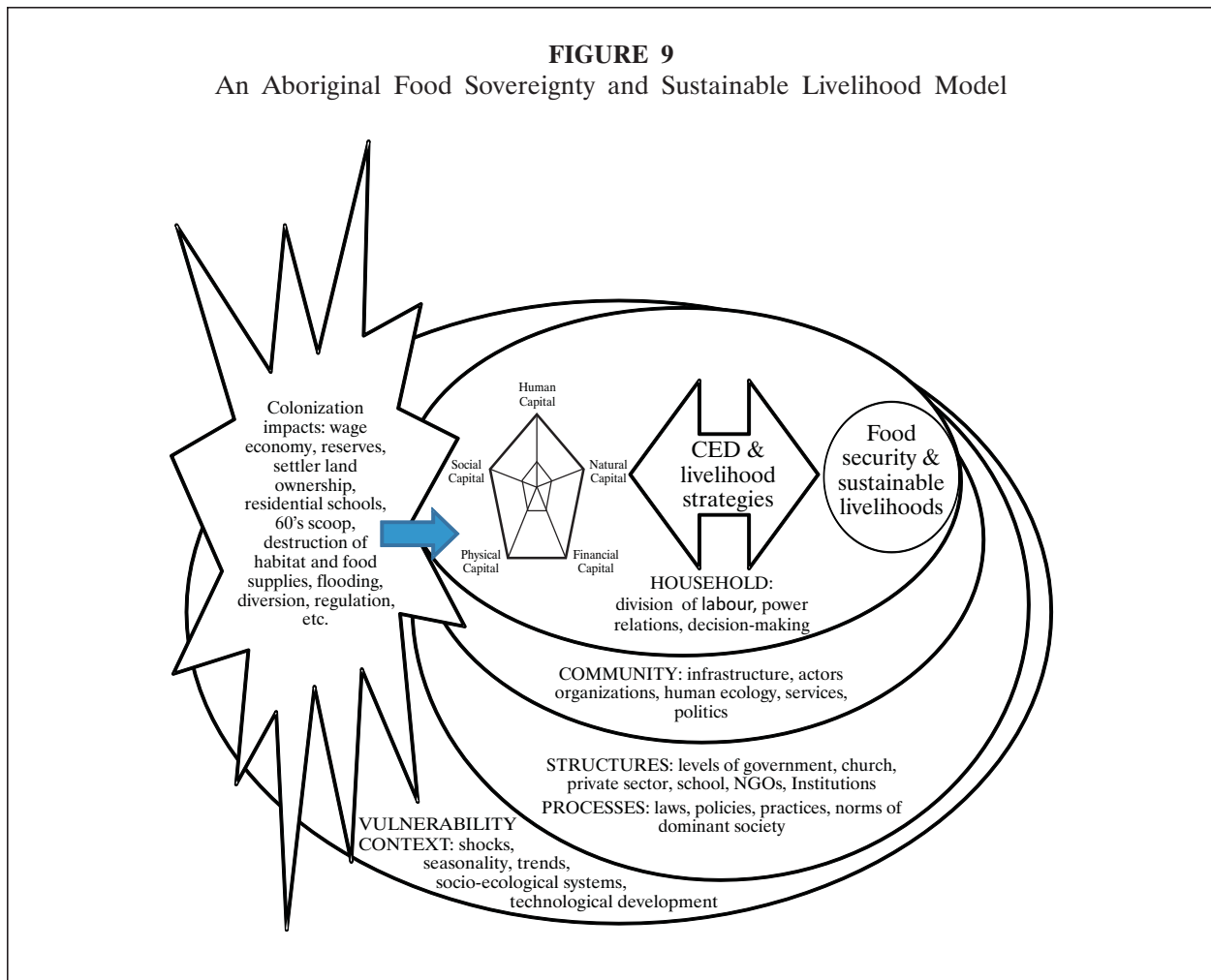
Country foods, including caribou, moose meat, berries and fish, are an important component of food security in Aboriginal and northern communities. These country foods contribute to a healthy diet and can be supplied independent of southern production, distribution and economic systems. Community people see the revival of hunting, trapping, fishing and gathering activities as greatly needed to improve the food security status of northern communities and to foster cultural pride and food sovereignty. The Nelson House Country Foods Program is related to statistically significant better household food security and provides a model that could be replicated in other communities but funding is needed as most communities cannot afford to employ workers or to buy community freezers. While the NHFI freezer loan provides some household storage ability, access to country foods requires further support to outfit hunters and fisher people with boats or skidoos and other necessary equipment and gas, as many people cannot afford the gas to go out on the land. Farmers but not fisher s or hunters receive a subsidy for gas shows a bias towards agrarian societies. The larger issue that restrict country foods are the policy and regulatory barriers including public health restrictions that do not allow wild fish or meat to be sold in local restaurants or stores or even provided free to public facilities (i.e., hospital, health centre, schools, band) for institutional or public use as it has not been processed in a federal food facility, as no federal food facility exists in northern Manitoba. Also, regulations curtailing any sale of wild meat or fish without a vendors' license means that few people can afford to go hunting and fishing.

Food buying clubs and NHFI are also improving food access. Bulk food buying ensures

school children have food to eat and extends people's incomes. By promoting gardening activities, NHFI is improving access to healthy, fresh and affordable food. Increased food security from gardening in the north will take time and increased inputs and is not the only benefit of the gardening programs. Contributing to the popularity of gardening projects is their community-building and active living aspects.

The qualitative data collected with communities allowed for the determination of a sustainable livelihoods framework and food sovereignty model for Aboriginal communities in north Manitoba based on the livelihoods framework developed by DFID (2008), which considers assets, vulnerability context, structures, processes and livelihoods. Assets for northern Aboriginal Manitoba communities were limited in most categories. Human capital is poor as most community members have low education levels, limited technological abilities, higher rates of chronic diseases, while at the same time having rich traditional teachings held by Elders. Social capital has many positives in the bonding category with strong links with family and friends and traditions of reciprocal exchange but these have been eroded by residential school, reserve settlements and non-Aboriginal education and political systems. As well, few bridging aspects exist to influence Canadian society. Financial capital is very low as the great majority of northern Manitoba people do not have jobs, with high chronic structural unemployment but high costs for food and fuel. On First Nation reserve, community members do not own the land, which is the property of the crown, or owns the government housing they reside in. Without this collateral, First Nation's people have limited credit ratings. Physical capital is very low with most communities having gravel roads, no hospitals, and no food production facilities. However, infrastructure in Aboriginal and Northern Affairs (ANA) communities is slightly better as they have paved roads, infrastructure for wharfs, greenhouses and transportation access. For example, public Greyhound buses run to ANA communities but bypass First Nation communities, dropping Nelson House community member off on the highway intersection for their community 20 km away from their reserve. Although natural assets are high with many communities having abundant fisheries, forests and non-timber products, communi-

FIGURE 9
An Aboriginal Food Sovereignty and Sustainable Livelihood Model



ties in remote areas have no markets and have no regulatory role to govern the resources in their territory. This review found an overwhelming impact of Canadian government policy on Aboriginal communities despite their remote physical locality.

The Food sovereignty and sustainable livelihoods model in Figure 9 shows the large impact of government on food security and sustainable livelihoods in Aboriginal communities. The government's colonial social and environmental policies have created a large vulnerability context that is made larger by climate change. Today's structures (government, business, church, educational system, etc) and processes (policies, laws, practices, etc) act counter to remote communities' food sovereignty to reinforce colonialism

and vulnerability. For example, the barriers to country foods providing food security in northern Manitoba are many and include: regulations related to the sale of wild foods; lack of infrastructure for the processing of wild foods for local and non-local markets; lack of programs to support the preservation of fish spawning grounds and moose and caribou calving or other wildlife habitat; lack of wharfs for commercial fishers in northern Manitoba; the high cost of gas in northern Manitoba due to freight costs, which is unsubsidized unlike for agricultural producers; high cost of equipment (boat, skidoo, rifle, nets, traps); and, the lack of training in public education programs on hunting, fishing, berry picking and medicines or even Aboriginal culture.

CONCLUSION

Community economic development is putting some food on the table in northern Manitoba where it is needed most due to high food prices and low incomes. But much more is needed. Remote communities are “food deserts”, as they lack a supermarket offering fruits and vegetables at affordable prices. Regulation of country foods and the outfitting costs to obtain them make these inaccessible. As poor quality food environments amplify individual risk factors for diabetes and obesity the literature on food deserts help explain many inequalities in health and nutritional outcomes in northern Aboriginal communities. However, remote food deserts have many factors limiting food access not found in the food deserts literature, including difficult logistics to get food to communities [e.g. foods to plane access communities are subject to air freight charges or uncertain travel on winter roads that operate for only a few weeks or not at all with climate change] and the large role of country foods, despite environmental impacts and regulatory regimes that restrict their use. This Aboriginal food access model was useful to show the complex nature of accessing food in remote communities, as well as to show that both country foods and retail food access can be impacted by CED to improve food access at a variety of points.

By all accounts, food sovereignty existed in the recent past in northern Manitoba. Northern communities were self-sufficient a generation ago but are no longer due to colonial factors including environmental change, school system and market forces impacting sustainable livelihoods, assets and food security. As food sovereignty is a treaty right, high rates of food insecurity at 75% average and 100% in one community contravene these treaty rights. Government policy is counter to remote communities' food sovereignty thereby reinforcing colonialism, food insecurity and vulnerability. The barriers to country foods providing food security in northern Manitoba must be dismantled and CED supports put in place. Currently, for food to be either given to public, through a feast, school or hospital, or sold locally, meat and fish must be inspected in a federal food facility according to the Manitoba Public Health Act's Food and Food Handling Establishment Regulations, which

is unavailable in northern Manitoba. Schools presently are restricted from serving local fish or meat in their lunch or breakfast programs, but are trying through school lunches and bulk buying to provide a healthy, balanced lunch. Other regulations limiting the local sale of both wild meats and fish, even when caught by commercial fishermen and/or treaty people need to be reviewed, as without money people cannot afford to hunt and fish.

An Aboriginal food sovereignty model was developed that shows how CED is needed to counteract the large vulnerability context that is destroying sustainable livelihoods. Food related CED is needed for food security and to move to food sovereignty but this should be part of a broader CED plan that considers underdevelopment in this region and the importance of country foods and sustainable livelihoods. Road access was found to have a significant impact on food security but road access is not seen as an immediate or complete solution, as illustrated by SIL, which has road access but suffers from 100% food insecurity with 74% of households at a severe level according to our food security survey. SIL community people attribute their high food insecurity to their relocation due to Manitoba Hydro flooding. This flooding increased SIL's vulnerability context by ruining their commercial fishing and their subsistence economy without providing adequate infrastructure. They lack safe drinking water, without running water to many houses, food processing facilities, healthy housing, etc.

The Nelson House Country Foods Program works around all the many systems that restrict country food use to recreate sustainable livelihoods and to build traditional cultural awareness in a way that is significantly statistically related to improved food security. This program is revolutionary and connected to food sovereignty. This program should be extended and supported across northern Manitoba and Canada enhancing conservation in the same way as NCN, which may take funding inputs. This program builds community self-reliance in the midst of government regulatory regime which works against food sovereignty, traditional activities and sustainable livelihoods. Also, other CED programs were found to improve food access. Buying southern Manitoba food in bulk for schools and welfare recipients improves food access, with

a few schools employing workers part-time to prepare the school lunches and to purchase the food. However, with the restrictions on buying country foods in place this program is not building food sovereignty. As retail food is purchased, the money flows one way out of the community, without building a sustainable local food economy. If food buying clubs bought from local hunters and fishers, it would be a great first step towards addressing food sovereignty without any increase in funding required, but this would require a change in regulation.

The NHFI has achieved some notable successes, including the gardening, greenhouse, poultry production, and freezer loan projects, as well as the Veggie Adventures school programming. With no greenhouses or gardening materials in most remote communities prior to NHFI, the CED initiated by NHFI has resulted in noticeable changes and enthusiasm at the community level. However, without permanent infrastructure change and with the limited community capacity building NHFI's impact could be transitory without further funding and greater capacity building at the community level. Although there have been initial successes these are relatively small compared to the challenge of a northern food system that needs a major overhaul to reduce the high rate of food insecurity. Enhanced levels of funding, programming, networks and supports are needed to bring about sustainable change and improve food security on a population level. To help meet this challenge, NHFI needs to scale up and diversify its projects portfolio. Areas where NHFI have not made much headway include provincial/federal collaboration, prioritizing remote communities, documentation, on-going evaluation, food enterprises, and promotion or support of traditional country food. The mandate to develop food self-sufficiency requires that supports for hunting, fishing and traditional gathering of medicines and berries be funded, considering commercial enterprises and the great potential for country foods programming. Clearly the gap is large between the high rates of food insecurity and food sovereignty. Much work has to be done. Most of that work should focus on country foods to build sustainable livelihoods as well as food security. As well as food related CED, regulatory regimes, which restrict the use of country foods despite treaty

rights, have to be challenged to achieve food sovereignty.

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