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Local food development in the Moose Cree First Nation: taking steps to build local food sustainability

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ABSTRACT

It has been well documented that northern Indigenous communities in Canada have disproportionately high rates of food insecurity which is contributing to chronic health conditions such as obesity and type 2 diabetes. Indigenous communities face complex challenges getting regular access to healthy food, whether through traditional food harvesting practices or through imported market food items. In response, many Indigenous communities are seeking ways to develop locally derived solutions that increase local food procurement capacity and rebuild local food systems. The purpose of this paper is to further understand local food initiatives in Moose Cree First Nation, a remote northern community at the base of James Bay, Ontario, Canada. This paper builds on the Indigenous Health Research Group's focus on understanding and documenting the steps taken in support of building local food capacity, more specifically through a community garden project. With a deepened understanding of the challenges and opportunities the community faces in regaining greater autonomy over their food system, the findings presented here build on community-based participatory action approaches when learning and working with communities in support of local food efforts.

KEYWORDS

Food security; indigenous; gardens; health; culture; local food procurement

Introduction

It has been well documented that northern Indigenous communities in Canada have disproportionately high rates of food insecurity (Huet, Rosol, and Egeland 2012; Council of Canadian Academies 2014; Teh et al. 2017) which is contributing to chronic health conditions such as obesity and type 2 diabetes (Willows 2005; Damman, Eide, and Kuhnlein 2008; Seabert et al. 2013). Northern food insecurity is related to the complex challenges faced by communities as a result of European colonization and the forced occupation of land which disrupted, and in some cases, eradicated Indigenous food systems (Robidoux and Mason 2017). With great restrictions to land and land-based food sources, Indigenous peoples are currently struggling to get regular access to healthy food, whether through traditional food harvesting practices or through imported market food items (Stroink, Ramsey, and Nelson 2012). Imported goods are expensive (Rice et al. 2016) and reported to be sold for at least double the price they retail for in southern areas (Spiegelaar

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and Tsuji 2013). As a result, Indigenous communities are increasingly becoming dependent on cheaper, lower quality, energy-dense store bought foods (Batal et al. 2005; Sharma et al. 2010). While programs like Nutrition North Canada have made efforts to subsidize the cost of shipping nutritious food items to remote northern communities, they are achieving limited success as food prices remain high and there are inconsistencies with "eligibility, subsidy rates, eligible foods, and retailer accountability" (Galloway 2014, 17). In response, many Indigenous communities are seeking ways to develop locally derived solutions that increase local food procurement capacity and rebuild local food systems (see Robidoux [2017] for a detailed description of examples of community driven food initiatives). The purpose of this paper is to further understand local food initiatives in Moose Cree First Nation (MCFN), a remote northern community at the base of James Bay, Ontario. With limited research on MCFN's local food efforts, this paper builds on the Indigenous Health Research Group's (IHRG) focus on learning what steps are being taken to build local food capacity and the challenges and opportunities the community faces in regaining greater autonomy over their food system. We share our community-engaged learnings and processes that combine learning and working with community members in support of their local food efforts. Giving voice to community led efforts shifts the mainstream deficit views and attitudes that neglect sovereignty held and fostered with Indigenous nations and within food initiatives. While food security or insecurity is a common focus in literature (Power 2008), a turn toward emerging research on Indigenous food systems and sovereignty centers Indigenous knowledge as foundational to structural and critical social change (Kepkiewicz and Dale 2019; Morrison 2008; Settee and Shukla 2020).

Research context

The research for this project took place in the Moose Cree First Nation (MCFN) of Moose Factory, an island community located at the base of James Bay, between 51.264 latitude and −80.597 longitude (Louttit 2006) (see Figure 1). There are 4,838 registered band members, with 1844 people living on the reserve (Indigenous and Northern Affairs Canada 2020). When the water is not frozen, the community is accessible by boat taxi, and during the colder winter months by winter road. Throughout the year helicopter service provides access to the island, which is particularly important during freeze-up and breakup. Prior to the arrival of the Hudson Bay Company (HBC) in the late seventeenth Century, the Mushkegowuk People, also known as Western James Bay Cree, lived semi-nomadic lifestyles in small (10–15) kin-based hunting groups that followed land mammal food sources throughout much of the year, remaining more stationary in the brief summer months living by water sources that enabled a more steady reliance on fish (Steegmann 1983). Lifestyles were dramatically altered with the establishment of HBC forts along Hudson and James Bay which initiated the trade of fur-bearing animals in exchange for European goods (Swedlund and Herring 2003). By the early eighteenth Century, excessive pressures on fur-bearing mammals as a result of trapping and increased hunting to feed HBC employees quickly depleted critical food and material resources making it less possible to live entirely from the land. Semi-nomadic groups (recognized as kinship systems) began to centralize around these trading posts as people became more reliant on western goods (food provisions, tools and other materials). The signing of Treaty 9 in 1905 and adhesions to the Treaty in the 1930s (Long 2006) forced the Mushkegowuk People into permanent settlements and living

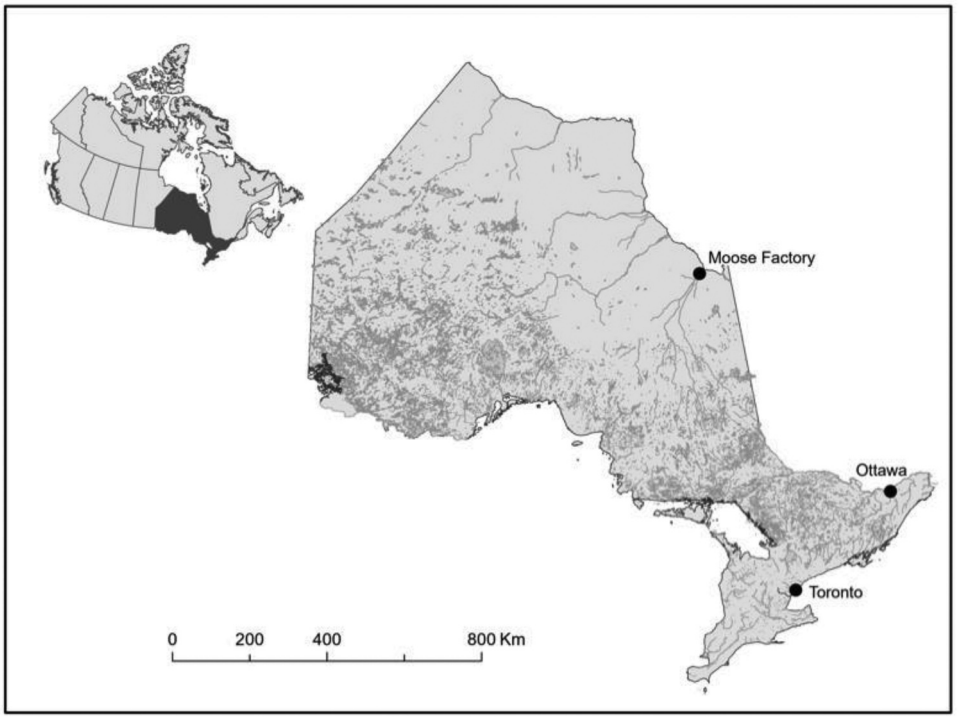

Figure 1. Map identifying the location of the northern First Nation community of Moose Factory in Ontario, Canada. Map created by University of Ottawa April 15, 2020.

more sedentary lifestyles. For the people living in Moose Factory, these forced lifestyle and nutrition transitions led to increased rates of malnutrition and dietary related diseases (Hoppa 1998; Kirby et al. 2007; Neufeld, Richmond, and Health Southwest Ontario Access Centre 2017).

In response to the food security and dietary-related challenges and increasing efforts of cultural resurgence, many Indigenous peoples throughout Canada are seeking to restore local food systems to move beyond food security and become food sovereign (Cidro et al. 2015; Morrison 2011; Shukla 2014). As Morrison (2008) states food sovereignty is the "most innovative approach to addressing the complex issues impacting the ability of individuals, families and communities to respond to their own needs for healthy, culturally adapted Indigenous foods" (11). These efforts involve a combination of increasing traditional land-based harvesting practices and programs, and actively engaging in alternative food procurement such as community and family gardening. The Moose Cree have been engaged in multiple food initiatives that not only seek to increase nutritional food access, but attempt to address the cultural, social and spiritual needs of its community. These efforts are layered and involve a variety of food development initiatives, including aquaponics, Farmers' Markets, and traditional land-based food initiatives such as Project George and John R. Delaney Youth Center, Cultural Camps. The aquaponics system is a multi-million dollar investment that is currently being designed with an external company to farm fish and make use of fish waste to fuel year round indoor gardening. It builds off two technologies: recirculation aquaculture and hydroponics (Joyce et al. 2019; König et al. 2018). The system

has been purchased and was intended to commence operations in the summer of 2020, but delays were experienced as a result of the COVID-19 pandemic and the stages of community lockdowns that were enforced. The Farmers' Markets initiatives have been running for several years and continued throughout the pandemic. They are designed to import fresh produce at more affordable prices for local residents. There are two markets held once a month (two in total per month). The first involves ordering fresh fruit and vegetables through a wholesale food distributor from Toronto, and selling it at a cost to community members. The second involves members of a Mennonite community near Timmins, Ontario (approximately 300 km south of Moose Factory) traveling by train to set up a market to sell their organically grown meat, fruit and vegetables. In both cases, food items are more affordable and fresh than what is available in the two grocery stores. Our research team assisted in setting up both types of markets which were heavily attended and all food items were sold out within two hours of opening.

Local food efforts also involve making wild animal food sources more readily available to the population, in particular those who have less means to get on the land and harvest foods on their own. Project George is one such example, that was introduced in 2009 to bring at risk youth on the land and teach them hunting, fishing, survival skills, and Cree ways of life (Gaudet 2017, 2021). Project George creates a learning environment that promotes recovery and personal growth for the youth at risk of external stressors. The program brings the community together, contributes to knowledge exchange between Elders and the youth, and supports connections to the land. Although Project George asserts its success in improving the quality of life for their youth and their families, the piece-meal funding, the administrative burdens, and high costs of land-based excursions (including food) has limited the expansion of the program and structural changes to make healthy food more regularly available to community members. Project George like other culturally based camps, such as the Milo Pimatisiwin Project, organized out of the Moose Cree John Delaney Youth Center, integrates its values of self-reliance, knowers of their ecosystem, Cree knowledge, life-stage teachings, Elder wisdom, intergenerational learning, and land-based skills training (Gaudet and Chilton 2018). The aim to strengthen "healthy living" has focused primarily on regeneration and cultural resurgence due to the harmful effects of colonialism which severed relationships to the land, to kin systems, to Cree knowledge, to language and to life itself. The research being presented here, builds on these local food efforts and documents more recent initiatives to build local food capacity. Despite the cultural and nutritional importance of local land-based food (Kuhnlein 2003; Gendron 2016; Martens 2018), animal food resources are limited and there are considerable challenges for many people to get on the land.

In addition to traditional food harvesting, there is a long history of gardening on the island, originally starting with the Hudson Bay Company Forts that were established in Moose Factory and forts along the coast in the late seventeenth Century (Moodie and Kaye 1969). Gardening efforts continued well into the twentieth Century by non-indigenous and later Indigenous families developing successful family gardens on the island (Judd 1983). Today many families maintain family gardens that produce a wide variety of vegetables and fruit (primarily berries) throughout the summer, and there have been iterations of community gardening initiatives led by individual community members, but difficult to sustain once these individuals were no longer capable of taking care of the gardens for multiple reasons, such as employment commitments, health factors,

and other time demands.[1] As a result, the community is seeking to develop a more formalized food sustainability strategy that combines traditional food harvesting with alternative food procurement (such as gardening) to increase access to more affordable and healthy food items.

Methodology

The research for this project builds on the longstanding relationships the Indigenous Health Research Group (IHRG) has with northern remote Indigenous communities. Given the long history of disempowering research methodologies within an Indigenous context, it was appropriate to engage in a participatory action-based approach that draws on Indigenous Research Methodologies (IRMs). It is important to state that not all the authors of this paper are of Indigenous identity or heritage, and we recognize the importance of not overemphasizing the incorporation of IRMs given that they are based in Indigenous worldviews and epistemologies (Chilisa, Cram, and Mertens 2016; Kovach 2009). Research informed by IRMs does, however, enable research to be conducted as a translational strategy that creates connections between academics and communities, and is often aimed at reducing health barriers and inequalities (Wallerstein and Duran 2010; Frerichs et al. 2016). Our community-centered approach seeks to minimize power differences, promote knowledge sharing, community engagement, and theories in research to further allow fieldwork to benefit both the community and the researchers (Wallerstein and Duran 2010). A participatory action-based approach creates a cooperative environment that favors researchers speaking with the community instead of for the community (Arieli, Friedman, and Agbaria 2009). It focuses on the development of practical knowledge, where both the community and the researchers experience an ongoing participatory exchange, and highlights a collaborative gathering and sharing of knowledge (Kidwai and Iyengar 2017).

Although our time in the community was limited for this particular project, one of the researchers had worked with the community, Moose Cree Band Council and John Delaney Youth during her doctoral studies from 2012 to 2015. During this time, she spent four months over a period of three years in the community and has since continued to be in relationship with community members since then through publication processes, visiting and exchanging at each other's home, sharing resources, and discussing the ongoing research efforts of the land-based programming with youth. With community engagement as a core value, it is important to consider the significance of methods that not only build relationships but strengthen existing relationships and foster community capacity.

Methods

This project employed a participatory action-based approach which supports different forms of engagement as methods (Kindon, Pain, and Kesby 2007). It created a setting focused on the development of practical knowledge, where both the community and the researchers experience an ongoing interactive exchange that highlights a collaborative gathering of knowledge (Arieli, Friedman, and Agbaria 2009; Kidwai and Iyengar 2017). The research involved two stages of fieldwork conducted in Moose Factory in May and June 2019, and in September that same year. The participatory action-based approach

was initiated after conversations with community leaders known by the second author on this paper. This led to dialog with the Community Economic Development Officer who asked that our research team assist and participate in the Food Sustainability Plan given the extensive research by one of the researchers (second author). Part of the research plan was to invest in and work with a newly hired Food Developer from the community as requested by the leadership. In so doing, researchers were able to learn from and with community members through two specific Indigenous methods: "learning by doing" and "visiting" – all of which involved extensive field note taking. In addition to assuring MCFN was engaged in the research activities and planning process, the project underwent a full ethics review and was approved by the University of Ottawa's Research Ethics Board.

Learning by doing

Learning by doing as a research method is focused on learning from one another by observation, listening and sharing knowledge in layers (Gaudet, Dorion, and Flaminio 2020). As discussed in the literature, this method focuses on kinetically learning inclusive of observation, listening and exchanging knowledge (Absolon 2011). It involved our research team working in collaboration with community members to develop community gardens and participate in different community and family gatherings, one of them being the Delores. D. Echum Composite School (DDECS) cultural camp. We were invited to attend the DDECS cultural camp for one day and took comfort within the canvas walls of a traditional structure known described in the language as *sabtuan* (www.moosefactorystories.com). During that time, we learned from two local hunters about the techniques used to prepare wild game. We also visited a family camp for the day, helping to clear out brush, visiting, and sharing in their fish harvest. Participating in people's everyday lives generates unexpected learnings and deepens our understanding of a context that is too often unknown within our academic settings. In this way, we are able to privilege the depth of knowledge and wisdom embedded in the skills and knowledge needed to navigate the complex water system that surrounds the island. This includes the complexity of a vibrant and living ecosystem that includes the caring and cautious ways of co-existing with animals who share the island. Learning by doing requires researchers to show up. Although it may appear to be from the outside that we are simply "flying in" and "flying out," building capacity is multi-layered and involves fostering awareness with emerging students, researchers and continuously exposing our vulnerabilities as we work in community settings. Learning by doing also means that we roll up our sleeves and do the hard work, in this case, it was supporting the revitalization of community gardens. Dialog preparing and planning for this process occurred over several months. Spending time together, visiting, and sharing the knowledge we have, learning from one another is another form of active engagement and building capacity. Although our focus of this paper is describing the process of re-investing in community gardens by understanding the historical and current context of local food initiatives, there remains a significant value to the investment of relationships given that culture around food brings community together.

Visiting

Visiting with one another further contributes to other Indigenous methods and is a key component of Cree culture. As an Indigenous way of life, visiting (*keeoukaywin/kiyokewin*) maintains relational accountability through sharing and exchanging knowledge most often instilled in life roles and responsibilities. Also recognized as an Indigenous research methodology, the way of visiting holds great significance in the social, political, spiritual and kinship systems (Simpson 2014; Flaminio 2019). Visiting allowed for an unscripted flow of ideas without any pressure placed on either the community or on the researchers. The visiting way principles helped to guide the researchers' interactions (on being good visitors) with members of the community in their homes, their offices, their gardens, while using means of transportation around the community, and while participating in the DDECS cultural camp. This lived throughout this research project in many ways including sharing of food, visiting family camps, gardening and supporting the Farmers' Market. The researchers spent time with the Economic Developer, the Local Food Developer, members of the community, Elders and the Executive Director of the healing lodge. This approach was especially useful in the first few days in the community which involved meetings and introductions and visiting with members of the community, given that the second author on this paper had been engaged in Moose Factory's youth and land-based wellness research initiatives since 2013.

Re-investing in community gardens

We traveled to Moose Factory in the spring of 2019. The timing coincided with the hiring of Anthony a Local Food Developer (third author on this paper), funded in part by the Moose Cree First Nation, funds from our five-year Social Sciences and Humanities Research Council of Canada research grant with the Moose Cree First Nation, and funding provided by the Nishnawbe Aski Nation, a political organization that represents the 49 communities in the Treaty 9 region of Ontario. Through meetings and prior conversations with the Economic Development staff, it was decided that restoring community gardens would be an important means to mobilize the emerging food sustainability strategy. In his role as Food Developer, Anthony was interested in exploring the possibility of creating community gardens that would contribute to the community food sustainability plan he was charged with developing. It was clear from the rich agricultural history in Moose Factory that there was gardening capacity on the island, but would there be interest and support in community gardening as a food sovereignty strategy? Our research team was eager to explore this with Anthony and take part in whatever community garden efforts there would be.

With limited budget, our team worked with Anthony in first assessing various locations that might be suitable for garden development and what, if any, equipment would be available for us to commence land preparation. Two locations were visited where previous community garden efforts were visible. The first was directly across from the Elders' Complex, the other behind the Anglican Church. Both areas were completely overgrown with tall weeds and brush, but underneath was dark rich soil with demarcations of where previous gardens were. One of the obvious concerns revolved around water accessibility, as there were no water sources near the sites. Lack of water access is not a rare challenge

when it comes to community gardening (Alaimo et al. 2016), and can negatively influence participation if watering becomes too onerous of a task (Drake and Lawson 2015). It was also not certain if the land was available for public community garden development which required meeting with the Economic Development staff to learn about the previous garden operations and if anyone was currently involved in either space.

Based on the meetings and introductions to community members who were involved in the previous gardens, it was noted that the land across from the Elders' Complex had been managed by volunteer health officials but they experienced difficulties with establishing an equitable food distribution strategy which led to garden activities ceasing. The garden space behind the Anglican Church was run by volunteers from the Healthy Babies, Healthy Children Program (HBHCP) and the food grown in the garden was intended for the families involved in the program. In both cases, maintaining a steady team of volunteers proved difficult, which led to decreased involvement and the land eventually going fallow. Our team met with the primary gardener who was still very interested in keeping up the gardens but was physically not able to do it on his own. He explained that if this community garden project would move forward, he would offer us any help he could provide, whether it be sharing his knowledge, providing us with tools and machinery, and advise us as we moved forward with planting. He turned out to be instrumental over the course of the project.

With everyone in agreement about the locations, the next stage was to begin the laborious process of cleaning the sites of debris and clearing the expansive weeds and brush. With only hand tools at our disposal and only four of us doing the work, a decision had to be made about how much space would be cleared. The original garden across from the Elders Complex was approximately 100 m in length and 10 m wide. The HBHCP land was slightly smaller, but still a considerable area of land to restore considering what we had at our disposal. With rakes, shovels, hoes, and pitchforks, the team began cutting weeds standing 1.5 m in height, digging out roots, removing rocks, and piling everything into mounds that were to initiate composting. There was a fence and fence posts that had been knocked down in the garden across from the Elders Complex which was set aside to be reconstructed at a later date. Slowly the space was transformed exposing the richness of the soil that would occasionally offer up potatoes, carrots, and onions that had remained in the soil since the previous garden. The soil was then rototilled which again proved difficult because we only had access to older machines that were not functioning properly. We borrowed four machines in total, with the fourth being efficient enough to tear through the rough terrain. In less than a week, approximately 500 m^2 of garden space was cleared across from the Elders' Complex, which was about half of the original garden size. A space about a fifth of the size was cleared behind the Anglican Church which was less than half of the original size of the garden (see Figures 2 and 3). Each day toiling in the gardens, more people would come to talk to us about what we were doing, often discussing previous gardens in the community and providing advice about what they felt might work best in the areas we were preparing. Despite the work being highly demanding, it was a positive and rewarding experience, especially seeing people's responses to the transformed spaces.

With the land prepared, the next stage to be considered was the planting of crops. In order to move forward with this, it was necessary to determine what types of crops to plant based on climate and growing season, but also on food preference. It had been

Figure 2. Moose Cree community garden being cleared out across from the Elders' Complex.

decided that the garden produce would go to Elders in the complex and families who participated in the HBHCP; thus, it was important to plant items that would appeal to both groups. Based on conversations with participating groups, it made sense for this first year to plant potatoes, carrots and onions because they had been successfully grown in the past, and they were staples people liked to consume. The other important consideration was the timing for planting, which needed to occur only after frosts were no longer predicted in the forecast. Despite being the end of May beginning of June, temperatures were still falling below zero overnight, which forced us to delay planting until the final days of the trip. With only two days left before the scheduled departure dates, the planting commenced. The area was once again raked over and the remaining weeds and rocks were removed. Multiple rows for potato planting were created with smaller sections left open where carrots and onions were to be planted. Potato plants were split and hardened overnight and planted in rows the following day. Once the potatoes were planted, the onions and carrots were planted along the bottom of the gardens with the help of one additional community member. Finally, one row of sunflowers were planted along the river side of the Elders' Complex garden, which was in part to help beautify the space, but also to learn about the potential for growing other plants in and around the garden.

The research team remained in contact with Anthony over the course the summer who provided text and photo updates. It was apparent that the garden across from the Elders' Complex was a higher traffic area and it was necessary to erect a fence to prevent dogs from digging up the garden. The irrigation issue was not resolved which forced Anthony to run a 50 m hose from across the street and water the garden manually. The

Figure 3. Land for Moose Cree Healthy Babies Healthy Children community garden being cleared out.

HBHCP garden was only rainfed. Despite this, both gardens performed considerably well and were ready to harvest in September.

One member of the research team returned to Moose Factory to assist Anthony in harvesting activities and help prepare the soil for the following season. The timing of the trip was not ideal because of unusually warm temperatures the region had been experiencing and were expecting for the next two weeks. During this time, potatoes were harvested, but carrots and onions were left for further maturation, and soil preparation was not completed. The two gardens experienced very different levels of maintenance over the course of the summer. Despite repeated calls for volunteers to assist with looking after the gardens, Anthony and the Economic Development Officer were the only two individuals who were involved with regularly weeding and watering. They decided to focus exclusively on the Elders' Complex garden which was the larger of the two gardens. The rainfed HBHCP garden did not seem to be negatively affected by lack of water, but was seriously overgrown with weeds. Underneath the tall weeds, however, potato plants were still able to grow and after pulling some of the soil away, it was clear potatoes had grown. After a full day of weeding, it was possible to see the struggling plants. Plans to harvest were underway.

The harvesting started with the garden across from the Elders' Complex and was relatively straightforward. The mounds were gently pitchforked and potatoes were drawn by hand from the soil. In certain sections of the garden, the plants were much more robust and produced greater yields, which was likely a combination of sun and water exposure (See

Figure 4. Moose Cree community garden ready to harvest across from the Elders' Complex.

Figure 4). Red potato plants performed far better than white potatoes that were randomly planted. The potatoes were placed on a scale, weighed and then placed in cardboard boxes. In total, 180 pounds of potatoes were harvested from the site, which were then distributed to the elders in the lodge. The harvesting at the HBHCP garden was slightly more orchestrated with a date set for interested families to come together and harvest. Families were able to take home whatever they harvested. The event was scheduled for a weekday evening and it was uncertain how many people would attend. It was threatening rain which raised doubt that many people would show up. The harvesting was to start at 6:30pm, and shortly thereafter, trucks began pulling out with multiple generations of families arriving, grandmothers and grandfathers, mothers and dads and children (see Figure 5). There were approximately 20 people in attendance. Tools were provided to anyone wishing to pick and after some brief instructions from Anthony, the picking began. The event was filled with laughter, with children playing and discovering what the plants had provided. The fact that some plants produced more than others made it exciting every time a new plant was uncovered. Similar to the Elders' garden, some areas of the garden produced higher amounts than others, and the red potatoes were clearly more abundant than the white version. In less than an hour the entire garden was picked. The potatoes were put on scales and weighed, and families were given the potatoes they picked. In total, 100 pounds were harvested, this in a garden that was rainfed and left entirely alone for the entire summer.

Figure 5. Families from the Healthy Babies Health Children Program harvesting potatoes.

Discussion

In describing the ongoing efforts that northern remote Indigenous communities are making to address the food and health challenges, it is important to consider the opportunities and challenges that are present in small-scale local food production initiatives. There are other examples of communities investing in larger scale food operations, for example sophisticated greenhouses (Armstrong 2016; Chen and Natcher 2019) and fisheries (Myers 2000; Thompson et al. 2014), but such initiatives not only require considerable budgets, they require multiple layers of resource capacity to maintain and operate them. There are advantages to smaller scale projects, such as what is taking place in the Moose Cree First Nation, as they do not rely on major funding dollars, require minimal expertise, and are not too time onerous to manage, which is a significant issue for many communities that are already under-resourced and have limited access to a trained workforce. The community greenhouse initiative was largely spontaneous and involved less than 2,000 USD of funding. Those involved had limited gardening experience, but were keen to learn about gardening potential in the area. As learners within this project, it is important to highlight the successes that were encountered, the challenges that were faced and what opportunities there are for future development.

The first and most visible sign of success was the transformation of under/non-utilized spaces in the community into functional, productive and esthetically pleasing garden spaces. On multiple occasions, community members who were not attached to the project expressed how pleased they were seeing the gardens and the beautification efforts

that surrounded them. Elders would often come visit with Anthony when working in the garden, asking if he would be doing this again next year and encouraging him no to "not to give up." Also successful were the yields that each garden produced with limited maintenance, irrigation and gardening experience. This in itself demonstrated the tremendous growing potential there is on the island which could be developed even further with increased community investment. If time permitted and if equipment was at our disposal, it would have been advantageous to conduct soil sampling to determine what if any soil amendments could be required for optimal growing, but also to learn what plants would grow most effectively under the current soil conditions. The fact that the land had grown fallow over the years likely enriched the soil and contributed to the surprisingly productive yields, especially in the HBHCP garden which was left unattended the entire summer. Finally, the success of this first phase of community gardening generated enough interest at the leadership level to initiate the development of a funding proposal to purchase supplies for hoophouse garden structures that would enable an extended growing season. The application was successful which led to the purchasing of materials and the construction of hoophouses in October 2019 (See Figure 6). The inspiration for the hoophouse design came from previous community-based work our research group conducted and continue to support in the Wapekeka First Nation (Thompson, Mason, and Robidoux 2018). Unlike elaborate greenhouse structures that require considerable expertise and resources to manage, the hoophouse structure provides a simple and affordable means to optimize growing capacity, especially in northern regions where growing seasons are short.

The development of these two community gardens is an important step toward building a sustainable food model in the MCFN, but community garden projects do not come without challenges. Milliron et al. (2017) evaluated a community garden initiative in an urban medical setting and discovered many barriers that discourage people from volunteering to participate in the garden. Some of these barriers include, not knowing enough about the garden site, lack of interest and time, transportation barriers, uncertainty of food distribution process, shifting priorities, and desiring more knowledge about gardening. This was a similar challenge with the Moose Cree community garden project. Despite several recruitment strategies Anthony employed, attracting volunteers to assist with maintaining the garden over the course of the summer was a challenge to overcome. Posters were displayed at different strategic sites in the community advertising the garden initiative which did lead to people saying they were interested in participating, but no one actually turning up. There were also efforts to tie garden participation with existing programs being run in the community, such as the community youth center where youth are required to fulfill a minimum amount of volunteer hours, but again, without perceived success. Calls over the radio and social media platforms generated positive feedback, but did not materialize in volunteers getting involved at this time. This led to some frustration for Anthony who became overwhelmed trying to maintain the gardens while still fulfilling the other everyday demands in his role as Community Food Developer. At this point, it remains uncertain why these efforts did not translate into volunteer participation, nor is it clear what strategies might be employed to facilitate garden participation– again, something that is not unique to this community garden project context (Loopstra and Tarasuk 2013). With that being said, perhaps a volunteer model might not be sufficient to support the

Figure 6. Moose Cree hoophouse structure built in the fall of 2019.

community garden project being envisioned as part of a food sustainability plan. If food sustainability planning is a priority for community leadership, dedicating funds to support paid staff to work in all stages of the garden (preparation/expansion, maintenance, and harvesting) would not only ensure successful garden operations, but would also signify the importance of this food strategy to community members and perhaps generate more collective investment.

Over and above the challenge of securing personnel to work the gardens, the issue of garden production capacity must be acknowledged. The yields that were recorded from the first year are commendable considering the limited planning and expertise. There is clearly more potential to optimize what the gardens are able to produce. For the community gardens to have a meaningful impact on making healthy food more readily available for a community of this size, they would need to be dramatically expanded. As Skinner et al. (2014) and Thompson, Mason, and Robidoux (2018) have documented in other northern community garden contexts, garden yields are more symbolic of a food sovereignty strategy rather than literally addressing household food security needs or giving communities greater control over food systems. If gardens are to expand and intensify production a much more considerable investment (financial and in terms of human resources) is required for garden operations. Therefore, it is necessary to balance yield expectations with community capacity. At this point, it would seem prudent to follow the targeted approach of food distribution that Anthony devised, directed toward specific groups that might be most vulnerable to food insecurity, such as Elders and participants in the Health Babies Healthy Children Program.

In moving forward in the spring of 2020 and in years to come, the successes and challenges highlighted here are being taken into consideration to strategize the important opportunities that lay ahead. In his role as Food Developer the third author continues to seek more funding to build garden capacity, which involves both infrastructure and human resource support. The funding proposals are not only to support the enhancement of the two community gardens, but to work with individual families to help develop their own personal gardens. There are limitations/barriers associated with community gardens which to a certain extent can be mitigated, but looking at complementary gardening activities, such as family gardens, might be a more attractive option for those who are either not interested or face challenges participating in the community gardens. There are many families in the community who already have flourishing family gardens, and thus looking to support other families looking to start up their own gardens seems to be a promising strategy.

In addition to seeking ways to enhance and optimize garden production, it is also worth considering how to tie in local food production with small-scale economic development. As indicated earlier, there are currently bi-monthly Farmers' Markets that run throughout the year, but the markets source food from outside of the community. With this market model already in place, encouraging local food production that could be sold seasonally within the current Farmers' Market program might generate more interest in community and individual garden development. This strategy would also bring some economic return for growers. Making fresh locally grown fruit and vegetables available within this market context would enable those without the means or interest to develop their own garden to access healthier food options that are generally of lower quality, less available and at higher costs at the store. It would also valourize local food efforts and potentially contribute to the food sustainability planning the community is striving to achieve. Planning was currently underway for our research team to return to Moose Factory in the spring of 2020 to continue support these local food efforts and explore further opportunities for local production; however, the COVID-19 pandemic has made travel impossible. Our research team will continue to remotely support whatever activities the community is able to generate (if any) under the current social/physical distancing measures being enforced across Canada.

Conclusion

The ongoing challenges northern remote Indigenous communities face getting regular access to nutritious food have been well documented, prompting communities and researchers to develop strategies to move toward community engaged research that contributes to community capacity building. Many of these strategies are focusing on the augmentation of local food procurement either from traditionally sourced foods (hunting, fishing, wild edible gathering) or alternative methods such as community and personal gardening. This paper describes the early stages of food sustainability planning by the Moose Cree First Nation under the leadership of their Economic Development Department and the newly assigned position of Local Food Developer. The community has a history of running land-based food/teaching programs and has more recently sought to introduce innovative growing technologies which are being consolidated in the more comprehensive food sustainability plan. As part of the local sustainability

efforts, our research group was able to participate in the planning, creation and monitoring of two community gardens. This involvement provided firsthand knowledge of the successes, challenges and opportunities community gardening presents as a step toward food sovereignty. There are ample spaces on the island with rich soil that require little amendment to grow a variety of vegetables in the short but viable growing season. The investment in irrigation systems and rudimentary infrastructure to extend growing seasons would go a long way to increase garden productivity and plant diversity. Investing in positions to work and manage the gardens would also be highly beneficial and demonstrate the commitment community leadership has toward local food production. This investment could be supported through economic development around garden production and integrate yields into the existing Farmers' Markets the community already has in operation.

The potential contribution of locally grown food must not, however, be overestimated as yields offer a small fraction of what is required to feed a community throughout the year. Local food initiatives should not discount the importance of market (store) food consumption and the need to find cost-effective distribution strategies that would make healthy store food from the south more readily available and affordable for community members. Where there is likely greater opportunity with the limited yields from the gardens, is with vulnerable community members as were targeted in this first year of garden planning. Working specifically with the small number of Elders living in the Elders' Complex and with families involved with the Health Babies Healthy Children Program, the Local Food Developer provided food to those who had limited means of acquiring fresh produce from the store. These choices further the Mushkegowuk kin-based and life-stage systems of taking care first for children and their Elders. This targeted approach is especially important in the earliest stages of garden development where volume and variety are low. It is hoped that increased involvement and investment in the garden activities will increase garden productivity and to the local food system. This project describes the first year of the Food Sustainability Plan and its gardening efforts with limited resources and expertise. The successes that were achieved despite these limitations are impressive and point to important opportunities moving forward as the community seeks to build local food capacity and gain greater control over its local food system.

Note

1. In 2017, the MoCreebec Council of the Cree Nation, a First Nations group that occupies a small portion of the island independent of the Moose Cree First Nation, developed multiple greenhouses and elaborate gardens through their EcoLodge business enterprise and with assistance from Health Canada. The funding has since ended and the project lead no longer lives in the community which has limited gardening activities at this site.

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