Final Report

Healthy Food, People, and Environments: Listening to First Nation Communities and Sharing Traditional Knowledge

Animbiigoo Zaagi'igan Anishinaabek

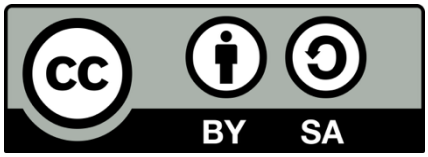
Understanding Our Food Systems

May 2026

UNDERSTANDING
OUR FOOD SYSTEMS

Lakehead UNIVERSITY

Thunder Bay District Health Unit



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Funding and Support

Indigenous Services Canada
The Ontario Ministry of Health
Thunder Bay District Health Unit
Social Sciences and Humanities Research Council (SSHRC)

Suggested Citation

Understanding Our Food Systems. (May 2026). Healthy Food, People, and Environments: Listening to First Nation Communities and Sharing Traditional Knowledge. Thunder Bay District Health Unit. www.understandingourfoodsystems.com

All resources and project materials mentioned in this report can be found on the Understanding our Food systems website at:
https://www. understandingourfoodsystems.com/

Project Background

Traditional foods are integral to the Animbiigoo Zaagi'igan Anishinaabek (AZA) First Nation. More than simply sustenance, they play an essential role in the community's culture, health and well-being, knowledge, and teachings. The impacts of environmental contaminants caused by pesticides and other products on their territories are a significant concern for community members. While several scientific studies have deemed the products safe, many Elders, Knowledge Keepers, hunters, gatherers, and youth have expressed concern about the negative impacts on their food systems. Specifically, community AZA members have expressed concerns around the use of glyphosate, a non-selective, synthetic herbicide used in forestry, agriculture, and land use management. Commercially, it is sold under names like Round-Up and Vision. Glyphosate and glyphosate-based herbicides (GBHs) are used to control unwanted plant species to reduce competition for economically useful plants. It is the most used pesticide in Canada.

This project aimed to explore the experiences and perspectives of AZA First Nation members regarding the impacts of environmental contaminants on their food systems and self-determination. It was based on a collaboration among AZA, the Thunder Bay District Health Unit (TBDHU), and Lakehead University's Sustainable Food Systems Lab through the Understanding Our Food Systems (UOFS) project. The project explored the community's perspectives of glyphosate spraying and what can be learned using different ways of knowing to advance healthy communities and environments. Community members were asked about their experiences living and working on the land with respect to the impacts of environmental contaminants, and what can be learned from different ways of knowing to advance healthy communities and environments.

The goal of this project was to focus on the perspectives and experiences of AZA with environmental contaminants, particularly glyphosate, on their lands, waterways, and food systems. We also wanted to demonstrate the need for different ways of knowing to address issues around environmental contaminants and self-determination.

Understanding Our Food Systems

Understanding our Food Systems (UOFS) is a participatory, community-engaged, and action-focused project led by a passionate team of researchers and community development professionals who work to build a deeper understanding of Indigenous food security, food sovereignty, and self-determination in northwestern Ontario. UOFS was first established in 2018 through a partnership with the Thunder Bay District Health Unit (TBDHU), the Indigenous Food Circle, Lakehead University's Sustainable Food Systems Lab, and numerous organizations and individuals across northwestern Ontario. The primary purpose of the UOFS project is to take leadership from and provide support to fourteen First Nations within the district of Thunder Bay (Robinson Superior Treaty of 1850 and Treaty 9 areas) to better understand and support reclamation of traditional

food systems and establish and implement food sovereignty visions and action plans (See Figure 1).

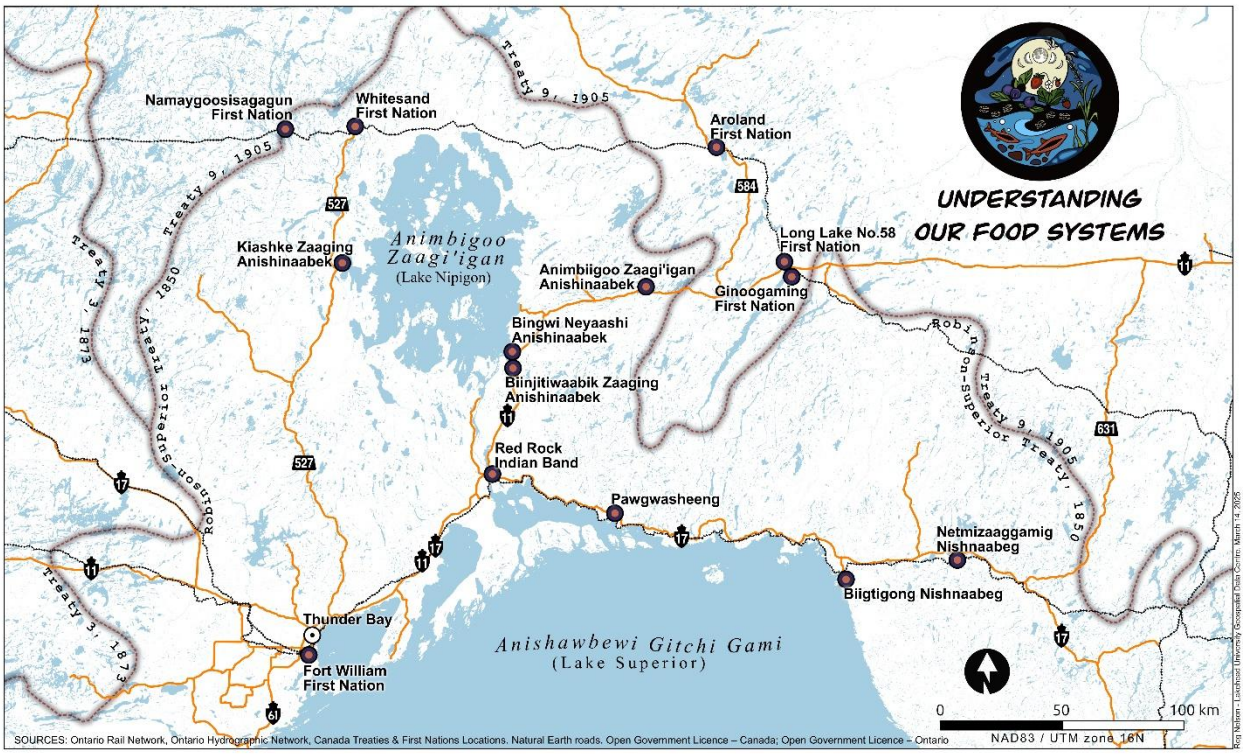

Figure 1. First Nations participating in the UOFS project

Community Background and Project Rational

AZA is a healthy, thriving, entrepreneurial, self-reliant community built on respect, family and traditional values which provides harmony, safety of community members and protection of the land and environment. The First Nation community was historically located near Ombabika Lake and Auden Ontario located on the Northeast side of Lake Nipigon. Through the Lake Nipigon Reserve Negotiations, AZA focused their land negotiations on the establishment of a community (reserve) near Auden/Ombabika Lake. The government disagreed with the establishment of the community's chosen location due to the remoteness, and the people were forced to negotiate and seek alternative locations. In 2002, an agreement was signed outlining the establishment of reserve land located at Partridge Lake near Jellico and in 2008, the community celebrated the creation of their reserve. AZA members are dispersed in municipalities along Highway 11 and 17 from Thunder Bay to Geraldton with the Band administration providing services to all its members in these communities from its office in Beardmore. AZA continues to focus on the development of their community while strengthening their members' resilience through engaging families, households and individuals in a variety of programs. AZA has a registered community membership of 461 people where about 26% are Elders (over 50) and 26% are youth (under 17).

AZA is committed to food work. As a dispersed community, most members live across Beardmore, Jellicoe, Geraldton, Thunder Bay, and Nipigon regions. The community is actively involved in cooking and working with traditional foods from the land including a focus on preparing food over the fire. Hunting, fishing and foraging are essential elements of AZA's historic and contemporary identity and culture. The community hosts cooking classes, canning workshops, and holds an annual fish harvesting festival. Food programming involves actively distributing Good Food Boxes and work to bring more raised garden beds to individual homes. During the COVID-19 pandemic, some of the programming was made accessible by moving cooking programs and harvesting teachings online, but in-person programs are taking place as well. As residents move into the community a community garden has been started and a greenhouse will soon be built and growing will commence.

AZA members have been sharing their concern about environmental contaminants in respect to their food sources and community health for many years (e.g., increased rates of cancer and the decrease in abundance of plants and animals). People that live and work on the land have noticed many changes and expressed a need for research and action to address their concerns. In 2022, AZA participated in UOFS's Food Sovereignty Assessment that identified successes, opportunities and challenges in the region for achieving Indigenous Food Sovereignty. Land stewardship was one of the key themes that emerged from the assessment. Specifically, participants expressed confusion and concern about the impacts of environmental contaminants, particularly glyphosate, on their traditional territories and their effects on berries, animals, medicines, fish, and the ecosystems that sustain all life. As part of the recommendations for research, the final report stated:

> While speaking to community members during the individual consultation discussions, much concern, anxiety, and worry was shared with respect to the spraying that is taking place on traditional lands by the industry as well as unknown levels of mercury contamination of waterways by the extraction industry.

From the report, the section from AZA noted:

> A major focus on the spraying of the traditional territory was very prevalent in the conversations with community members. It is their belief that the spraying of the vegetation, where the trees have been harvested, is affecting all the animals that the members hunt and eat. It was noted that rabbits, moose, and beaver are becoming spoiled. The meat is not good for consumption, and the fish have also been impacted by this. It was also noted that the blueberries are being impacted by the spraying.

The Healthy Food, People, and Environment project aimed to address these concerns through listening to First Nation communities and sharing Traditional Knowledge.

Project Objectives

The Healthy Food, People and Environments project aimed to ensure that AZA and other regional First Nations have access to traditionally hunted, harvested and grown foods and to protect the environments they depend on. To do this we needed to better understand both the scientific literature about environmental contaminants and their impact on people and all living things as well as the traditional and experiential knowledge of people living and working on the land. Gathering, sharing and acting on this knowledge is part of Indigenous Food Sovereignty and self-determination through food.

Short-Term Project Objectives

1. To listen to the experiences and perspectives from people living and working on the land (e.g., Elders, knowledge keepers, hunters, gatherers, and youth) about traditional foods and the concerns about environmental contaminants (e.g., glyphosate)
2. To make connections between Traditional Knowledge and existing scientific research.
3. To share learnings with AZA and other First Nations in the region.

Long-Term Project Objectives:

1. To build knowledge and evidence to advocate for the reduction of environmental contaminants
2. To enhance Indigenous Food Sovereignty and ensure the health and wellbeing of communities

Methodology

The project drew on Indigenous methodologies and qualitative research methods focused on respect and inviting multiple ways of knowing (Riddell et al., 2017), described as Two-eyed seeing (Martin, 2012). The primary method of data collection was sharing circles, an Indigenous method of group information sharing and discussion (Levac et al., 2018). While they share some commonalities with focus groups, they differ because of the “sacred meaning they have in many Indigenous cultures and in the growth and transformation bases for the participants” (Lavallée, 2009, p. 29). The approach focuses on cooperation within the circle by gathering participants and ensuring everyone can speak and listen, often using a talisman to denote the speaker at the time (Hunt & Young, 2021; Levac et al., 2018). As Lavallée (2009) elaborates:

> Sharing circles use a healing method in which all participants (including the facilitator) are viewed as equal, and information, spirituality, and emotionality are shared…circles are acts of sharing all aspects of the individual – heart, mind, body, and spirit…The circle is nonjudgmental, helpful, and supportive. Respect is

> important, and this includes listening to others. Sometimes people speak as they are seated in the circle, either going in a clockwise or counterclockwise direction and hold an object such as a talking stick or eagle feather. Circles begin with a smudging ceremony to rid the circle and people of negativity. Items may be placed in the centre of the circle, depending on the purpose (p. 29).

In August of 2024, the project team travelled to Partridge Lake to attend the AZA Community Gathering and had a sharing circle where community members shared their stories and experiences with environmental contaminants and glyphosate. The sharing circle was audio recorded and had more than twenty community members present in the same space, but only ten consented to share their information or contribute to this research. During the sharing circle, only those ten members who consented spoke directly to the questions being asked and stayed involved for the duration of those specific communications. For those who did not consent, they did not give a reason for doing so and chose not to participate or speak to the question prompts during the sharing circle. The circles began with introductions and an invitation from participants to speak from their experience and from the heart. Each community member was invited to introduce themselves if they felt comfortable, but the recording device was not turned on until after introductions by community members were complete.

One-on-one interviews were also conducted with community members who were interested in participating but unable to attend the gathering. The conversations were recorded, transcribed and coded in order to synthesize the contributions.

Ethics approval was obtained from Lakehead University's Research Ethics Board. We followed OCAP principles (Snarch, 2004) and ensured that all data collected is owned, controlled and eventually returned to AZA.

Results/Findings

AZA and the other First Nations in Northwestern Ontario rely heavily on hunted, fished and gathered foods to maintain their health and support their food sovereignty. Rates of disease amongst community members are on the rise. Climate change, environmental contaminants and access to traditional lands have all led to changes in food sovereignty. As discussed above, the 2022 Food Sovereignty Assessment clearly identified concerns from the participating First Nations about the impact of environmental contaminants on their food sources and a request for additional research within their communities to understand the challenges and potential solutions. In response, working with UOFS and the First Nations, a master's student at Lakehead University reviewed the scientific literature and produced a short report titled, *The impacts of glyphosate spraying in Northwestern Ontario: What information is out there about it?* While this scientific research is essential, equally important is listening to and learning from the experiential and Traditional Knowledge from Indigenous people living and working on the land. Below, we include a synthesis of the findings from the literature review and a summary of key themes that emerged from the sharing circle and

interviews. In addition to these results, we created a short digital video that is available on the UOFS website.

A Brief Summary of the Literature Review

Glyphosate and Glyphosate-Based Herbicides (GBH), commonly known as Roundup or Vision, are the most used herbicides across Canada and account for nearly 54% of all pesticide use across Ontario (ECCC & USEPA, 2022). Aerial spraying (using glyphosate) is used in forestry practices in northern forests to control and reduce unwanted plants and trees not seen as economically valuable, such as broad-leaved plants and trees (e.g., paper birch, blueberries, pin cherry, elderberry), to increase the growth of conifer trees on logging sites (Boulet et al., 2014; CELA, 2022; Patterson et al., 2023; Thompson, 2011). The use of glyphosate and GBH has been and continues to be a contentious topic globally. The International Agency for Research on Cancer (IARC) has classified glyphosate as a Group 2A carcinogen based on what they consider to be "strong evidence from genotoxicity (causes DNA damage) both for "pure" glyphosate and glyphosate formulations" (Boulet et al., 2014; CELA, 2022; Patterson et al., 2023; Thompson, 2011). Other human health issues that have been connected to glyphosate include diabetes, respiratory diseases, neurological disorders (e.g., Parkinson's, Alzheimer's), and reproductive issues (Rani et al., 2020; Zhang et al., 2019). Globally, there is no clear consensus on what level of glyphosate is considered safe (Jefferies, 2022; Patterson, 2023; Peillex & Pelletier, 2020).

The use of glyphosate and GBH impacts ecosystems, affecting Traditional food systems. Many are identified as indirect impacts on non-target species of plants and animals (Helander et al., 2012; van Bruggen et al., 2021; van Bruggen et al., 2017). Helander et al. (2012) conclude that a colder climate and the increased use of herbicides in forestry lead to longer-lasting impacts on northern ecosystems, profoundly impacting non-target species. Surface and groundwater can get contaminated due to glyphosate run-off and its absorption into surrounding soil (Mahmood et al., 2016; Myers et al., 2016; Van Stempvoort et al., 2016). Glyphosate spraying degrades soil health, impacts soil fertility, and decreases beneficial mycorrhizae bacteria and fungi in the soil. Plants need these beneficial bacteria to absorb nutrients and achieve optimal plant health (Helander et al., 2018; Marques et al., 2021; Newman et al., 2016; Ruuskanen et al., 2023; Vazquez et al., 2021). Issues are also being raised about the persistence of glyphosate in the soil, water, and plants as studies show that it stays around longer than previously thought (Myers et al., 2016; Wood, 2019). A study in Northern British Columbia found glyphosate residue in some plant tissues that "persisted for up to 12 years," and was shown to stay longer in root samples taken in colder climates when compared to samples taken from warmer climates (Botten et al., 2021).

In forest areas treated with glyphosate, moose tend to avoid treated areas after an active spray and for some time after since food availability is so low and plants take a while to rebound and regrow (CELA, 2022; Connor, 1992). The forestry industry also harvests and replants trees, such as spruce, which moose don't eat, limiting their food

choices (Anishnabe Moose Research Committee, 2022). Since glyphosate will make its way into both the land and the waters, it will then make its way into the diets of moose through the plants they eat and water they drink, which humans then consume when they eat moose. Glyphosate also reduces edible and medicinal plants that are available, like blueberries, which are plants that both humans and animals, such as deer and moose, rely on for survival (Chiblow, 2019; Lamy & Finnegan, 2019; Lowitt et al., 2023). This has a lasting impact on species distribution and abundance due to these impacts on habitats. Chief Marcus Hardy of Red Rock Indian Band has said how in their community, “there are a few elders that were adamant on explaining exactly what their concerns were,” adding, “We saw less growth in the bush; we saw less plants, medicine plants, blueberries and all that.” (Baxter & Dunne, 2021).

Currently, very few studies acknowledge and honour Indigenous perspectives and contributions to the issues presented here due to colonization that continually persists (Patterson et al., 2023). As Patterson et al. (2023) state that, “Research regarding the impacts of glyphosate-based herbicides used in forestry to Indigenous culture and community wellbeing conducted from an Indigenous perspective have, in general, lacked.” There are also gaps in research using Indigenous methods, led by Indigenous communities, that answer the questions Indigenous Peoples want answered. Minimal research has been done in Northwestern Ontario, specifically looking at the direct and indirect impacts of glyphosate and GBHs toxicity on the environment and how that affects Indigenous health and well-being in this region. According to the *Final Report: Climate Change and Food Insecurity Study,* which was prepared by First Peoples Law and co-authored by Brett Campeau and Alison Porter (2022), an elder from Wahnapitae First Nation discussed how they believe that industrial and forestry activities that are happening in their region have made the soil unsuitable for growing food and they had to construct raised beds and bring in soil to grow food safely. Elders from Biinjitiwaabik Zaaging Anishinaabek and Red Rock Indian Band were again highlighted for bringing forth issues their communities have faced regarding the aerial spraying of herbicides. One Biinjitiwaabik Zaaging Anishinaabek Elder observed “yellow spots on moose meat and fish, which he links to these environmental contaminants” (First Peoples Law, Campeau, & Porter, 2022). A Red Rock Elder spoke about how his “community no longer eat the organs of many animals, including moose, partridge, and rabbit because they have become like “goo” with the spraying of herbicides” (First Peoples Law, Campeau, & Porter, 2022).

The Healthy Food, People, and Environments project is an opportunity to combine traditional and scientific knowledge and with AZA and the other First Nations across Northwestern Ontario (and beyond).

Sharing Circles and Interviews

Speaking with AZA members at the gathering and during interviews, it became clear that environmental contaminants, especially glyphosate spraying, were perceived to have enormous impacts on AZA members and their relationship with the land and their

food systems. Four themes emerged from the discussions. Under each theme, we include a few key quotes from community members.

1. **Contaminants impact relationships to the land**

AZA community members saw impacts such as diseases and abnormalities in plants and animals. It is also becoming harder for community members to access their food and medicines, which are integral to community health and wellbeing. Foods and medicines are a part of AZA's culture and inform their community's knowledges and teachings.

> The fish even have cancer. The fish have little cancer spots on them. Organs are like goo in animals. I caught a fish that was full of worms…duck that was full of worms. I won't eat duck anymore…I won't eat fish unless in the store because I'm afraid of it. Won't eat rabbit, partridge anymore…the taste is gone, the colour is gone, the meat is not the same.
>
> Where we are in Auden there, they [the government] cut it, that whole area back on the west side of the river. And now they started spraying over there. And there's blueberries growing, they're real nice. Now you can't go pick. You just look at your blueberries because you don't want to touch them because of that spraying.
>
> There's people that go out there, like to go catch a couple of fish and have a fish fry. You spend so much money to go out there to pay gas, you buy your hooks, fishing rod, everything costs money. Then you get out there and you can't eat your fish.

2. **Interactions with the government over contaminants impact relationships**

Many AZA community members did not feel heard or supported by the provincial government when they voice concerns around environmental contaminants. Community members felt that better, and more transparent communication from the government is needed. AZA also wants the government to listen to their experiences and expertise. Multiple community members have had their experiences and expertise dismissed by the government.

> We were at the Beardmore Leave and Talk, and then the guy [Ministry of Natural Resources (MNR)] said, no, no, it's safe enough to drink. I said oh, I just happened to have a glass here. Why don't you pour some in there and have a drink of it if that's the case. He said, oh no, no, he says, no, no. I said, well, then if it's not poison, prove it to us that you can drink it. He changed his tone, and I said, 'Well, I think I proved my point.'
>
> They (Ministry of Natural Resources) said, oh, there's no evidence there that the animals are leaving after you spray. I said, well, if you set a trap in there or you see the snow and there's no tracks in there for three or four years, there's evidence

> right there. Yeah, but we [MNR] don't have any evidence, I said, well, maybe you guys should be on the land doing that, you know what I mean? And that's the problem with a lot of these studies and a lot of interviews that you do with First Nation people, but they don't have the physical evidence, even though if they're getting a story from one of us, they don't believe it.

3. **Contaminants impact Indigenous Knowledges & Teachings**

The land is a key part of relationships for AZA to pass knowledge on to future generations. Disruptions to the cycles of the land and the loss of species impacts AZA knowledge transfer to future generations. Many members expressed the need to learn more about Traditional food systems and ways to live in relationship with the land.

> Every time we lose a species we lose a lot. We lose opportunities for the future, for our future generations. There are less teachings, and the Youth are not harvesting as much.

> Well, the way the world is going now, we might have to go back to the old ways and catch our food and grow our own food, you know what I mean, cause all the chemicals are putting in our food and then we have a shorter growing season so we'd have to pick what we want or eat what's here, you know what I mean, so like, blueberries, and raspberries and stuff like that.

4. **Advocacy, solutions, and calls to action**

AZA community members want a seat at the table when it comes to making decisions that impact their community. They also want more transparent communication from the government regarding anything related to the land and their territories. AZA wants more information and testing of waterways, animals, and the land to really get a sense of what is going on. AZA would like more leadership from within the community, empowering the members. They also call for less industry on the land and a ban on spraying glyphosate.

> Give us more voice when any Ministry, um, laws or whatever should be passed, and brought forward to the First Nations to overlook and see if that suits us [the community] not what suits them for this. It's money that's been taken over our health, our livelihood, our animals, our eating, our drinking, our, you know, it's … it's … we have no say anymore and I think we need to start having a voice and we need to be taken seriously.

> I think that should be looked at because there's a lot of stuff like they're doing to our land, they're not actually telling us exactly what it is, and I think we should be informed a bit more so we're aware of these things.

> It's the [community] leaders - they need to be out there. They [community leaders] need to be in power and empower the people [community members].

Conclusion

This project is part of an ongoing study with the potential to expand this work into other First Nation communities within the UOFS project. It is important to note that while AZA community members' experiences were different from what was found in the scientific literature, their experiences are similar to those of other First Nations communities, who are also finding animals with abnormalities in their organs and are seeing fewer plants and animals in the bush (see Campeau & Porter, 2022; Chiblow, 2019; Connor, 1992; Lamy & Finnegan, 2019; Lowitt et al., 2023; Patterson et al., 2023). Combining multiple ways of knowing is important because all knowledge serves a purpose and will give a more complete understanding of the complex issues faced by First Nations and broader society.

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