



Anishinabek  
Nation

# Final Report: Climate Change and Food Security Study

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**Prepared by First Peoples Law  
for Anishinabek Nation**

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Anishinabek Nation Multi-Region  
Vulnerability Assessment: Using  
Traditional Knowledge to Identify  
and Respond to Climate Change  
and Community Adaptation  
Priorities for Food Security



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## **Preface**

This Report was prepared by First Peoples Law, with support from Anishinabek Nation staff, to document the findings of a project funded by Indigenous Services Canada's Climate Change and Health Adaptation Program for First Nation Communities South of 60°N:

The project involved two main components: 1) a literature review of existing knowledge about climate change impacts on food security in Indigenous communities, particularly Anishinabek Nation member First Nations; and 2) interviews and surveys with community members from Anishinabek Nation member First Nations about climate change impacts on food security.

A presentation summarizing preliminary project findings was delivered at the Anishinabek Nation Lands, Resources & Economic Development Forum on February 16, 2022. The presentation PowerPoint materials can be viewed online at the forum website (<https://landsandresources.ca/>), and a recording is available on the Anishinabek Nation YouTube channel (<https://www.youtube.com/watch?v=6Bhezwh8Xm0>).

This Report compiles the final results of both the literature review and interview/survey components of the project, and offers recommendations to address climate change vulnerabilities for improved food security in the four Anishinabek Nation Regions.

## **Acknowledgements**

We would like to acknowledge and thank the survey participants and the nine Elders who contributed their time and knowledge to this report. The preparation of this report was only possible with your contributions. We thank you for your generosity in sharing your knowledge and lived experience.

The following Elders participated in interviews with Anishinabek Nation staff: Jeff Beaver, Tom Borg, Sue Chiblow, Leroy Dolson, Bill Fisher, Jean McGregor, James Mishquart, Garland Moses, and Fawn Pettifer.

Your sharing of knowledge will help ensure that Anishinaabe can plan and prepare for the changing climate. Your contributions will support a better future for many generations to come.

Chi Miigwetch.

## **Introduction**

### *Context & Purpose*

Climate change is causing significant changes to the global environment, with many changes to the land, water, plants, wildlife, and weather on Indigenous lands, including those used and occupied by the Anishinabek Nation member First Nations. These changes can have important consequences for “food security” or “food sovereignty” by affecting the quality or availability of wild foods and the ability to grow crops or raise livestock. They also affect cultural spirituality, wellness, and the ability to transfer knowledge about food, harvesting, and cultural practices.

The concepts of food security and food sovereignty describe the relationships between the availability or affordability of nutritious and culturally-appropriate food and community wellbeing. Food security refers primarily to the human security element, emphasising the link between food availability and human health, whereas food sovereignty adds the element of self-determination for communities to maintain and promote food security. The concept of food sovereignty emphasises the importance of community control and cultural factors, like respect for community requirements and practices (norms), in maintaining resilient food systems. For First Nation people, this concept has a clear link to many traditional views and practices, including the need to maintain good relationships with the land, water, plants and animals (Morrison, 2011).

This Report examines documented and community-held knowledge about climate change impacts on food security or food sovereignty to improve Anishinabek Nation’s understanding of the impacts experienced by Anishinaabeg and other Indigenous peoples. In this way, it seeks to improve the ability of Anishinabek Nation and its member First Nations to adapt to or build resilience against climate change impacts, thus helping to improve food security and food sovereignty.

Adaptation and resilience are inherent parts of First Nation traditional practices and ways of being (Comberti, Thronton, & Korodimou, 2016). Indigenous peoples have always lived in harmony with the land and wildlife, despite historic changes in the environment, by maintaining respectful relationships with Creation (Golden, Audet, & Smith, 2015). Anishinaabe knowledge is given by the Creator for the benefit and well-being of the Anishinaabeg, e.g., to support the ability of Anishinaabeg communities to adapt and respond to environmental change (Davidson-Hunt, 2013). Building climate change resilience to ensure the continuity of culture and traditions can therefore be viewed as part of Anishinabek traditional practice.

To support continuity in the face of climate change, it is important to document and share the knowledge of Anishinabek Nation citizens. This knowledge can help inform the decisions and policies of Anishinabek Nation and its member First Nations. It can also support the efforts of individuals to exercise their rights to hunt, fish, trap, or gather on the land, e.g., by providing insight on the negative impacts of climate change and how to avoid or respond to them.

## *Methodology & Scope*

The project involved two main components: a literature review and interviews/surveys with Anishinabek Nation community members.

The literature review component involved a review of documented knowledge from publicly-available sources – including academic research articles and reports – as well as sources held by Anishinabek Nation. To identify relevant publicly-available sources, the Report authors searched for key terms in library databases and Internet search engines. We list all sources in the attached Bibliography at the end of this Report.

Our search for sources focused on studies relating to climate change and food security/sovereignty in: 1) Anishinabek Nation member communities; 2) Ontario First Nation communities generally; and 3) Indigenous communities generally.

The interview/survey component involved interviews with community Elders and knowledge-holders and an online survey about climate change impacts on food security. Anishinabek Nation staff conducted interviews with 9 individuals, and 18 individuals completed the online survey (see Table 1 below).

For both project components, our primary objective was to identify the main concerns, priorities, and responses of Anishinabek Nation member First Nations specifically, with reference to the broader provincial and international context, to find common themes for climate change impacts, adaptation and resilience-building.

Both the literature review and interview/survey components adopt a regional analysis approach, where possible, to identify differences in the concerns, priorities, and responses of Anishinabek among the four Anishinabek Nation Regions: the Southwest Region, the Southeast Region, the Lake Huron Region, and the Northern Superior Region. Where documented knowledge is attributable to a specific Region, it is highlighted to allow for learning and comparisons with other Regions. Some of the Regions are better represented in the data than others, but they all have either an interview or some survey responses.

**Table 1.** Home Regions of interview and survey participants.

<b>Anishinabek Nation Region</b>	<b>Number of Interviews</b>	<b>Number of Survey Responses</b>
Northern Superior Region	3	0
Lake Huron Region	3	12
Southeast Region	1	1
Southwest Region	2	4
Within Southwest Region (but not Anishinabek Nation)	N/A	1
<b>Grand Total</b>	<b>9</b>	<b>18</b>

Similarly, the project also identifies key differences in documented knowledge among Anishinaabeg demographic groups – like Elders, middle-aged adults, and youth – where possible, but it focuses on identifying common themes and regional differences.

## **Overview: Climate Change and Food Security Impacts on Indigenous Peoples**

The urgency and global nature of the climate change crisis has demanded a global response, involving international cooperation through the United Nations Framework Convention on Climate Change (UNFCCC). Under the 2015 Paris Agreement, the international community developed targets to reduce greenhouse gas emissions and limit warming to well below 2 degrees Celsius above pre-industrial levels. These targets have helped to spur commitments to limit warming from industry and the business community, NGOs and civil society groups, and all levels of government, including First Nation governments.

Climate change is now widely recognized as one of the most important issues of our generation, with predictions of major consequences should warming continue (IPCC, 2021). It is already causing serious disruptions to wildlife and to many human activities, like agriculture, that are critical to our wellbeing. And it has been recognized that Indigenous peoples are likely to be among the most impacted by climate change, because of their close relationships to the natural world.

Many Indigenous cultural/spiritual practices and traditional harvesting activities – like hunting, fishing and gathering – depend on healthy ecosystems, which are now increasingly threatened by climate change and the impacts of other human activities, like forestry, mining, oil and gas development, and hydroelectric development. The combination of these pressures results in cumulative impacts to the land, which can negatively affect food security/sovereignty by reducing the ability of Indigenous peoples and other land users to harvest wild foods or practice agriculture.

## **Law and Policy Developments for Climate Change Mitigation, Adaptation and Resilience-Building**

Law and policy tools can help to address the impacts of climate change on food security in Anishinabek Nation communities. These tools include legislation, regulations, policies and programs to mitigate climate change and to promote adaptation and resilience-building. They also include recourse to the legal system, e.g., to punish non-compliance with environmental laws and to seek redress for violations of Indigenous rights or other human rights, like those protected under the *Canadian Charter of Rights and Freedoms* (the Charter). Indigenous rights, including those protected by s. 35 of the *Constitution Act, 1982*<sup>1</sup> or enshrined by the *United Nations Declaration*

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<sup>1</sup> *The Constitution Act, 1982*, Schedule B to the Canada Act 1982 (UK), 1982, c 11.

*on the Rights of Indigenous Peoples*,<sup>2</sup> can be invoked to help protect the environment and food security by virtue of their connection to the land and environmental wellbeing.

### ***Legislation and Policy***

In Canada, the federal government introduced a carbon tax through the *Greenhouse Gas Pollution Pricing Act*,<sup>3</sup> as well as various other law and policy measures to incentivize reductions in greenhouse gas emissions. Ontario is currently subject to the federal carbon tax, but many other provinces have implemented their own carbon pricing systems.

The federal *Impact Assessment Act*<sup>4</sup> lists climate change as a factor that must be considered in all project assessments. It also permitted the federal Minister to order a “Strategic Assessment of Climate Change”, completed in October 2020, to guide the consideration of climate change impacts in assessments under the Act.

The federal government has also sought to promote adaptation and resilience-building through research and funding programs, including the Climate Change and Health Adaptation Program that supports this project.

Canadian provincial and territorial governments have also begun to take steps to address climate change. In Ontario, for example, the provincial government launched a provincial climate change impact assessment to identify climate change impacts and vulnerabilities, with results expected in 2022.<sup>5</sup> The provincial/territorial governments are also developing and implementing environmental assessment processes that consider the climate change impacts of proposed projects. However, it is unclear how Ontario’s newly amended *Environmental Assessment Act*<sup>6</sup> and in-development regulations will fare in terms of balancing climate change risks with other project impacts, or how effectively they will incorporate Indigenous knowledge and interests.

Indigenous governments and regional advocacy organizations are increasingly taking a leading role in climate change mitigation and adaptation. While First Nations have been a very small contributor to greenhouse gas emissions, compared to Canada or other nation states, they unfortunately are among the more vulnerable groups to the impacts of climate change, as we describe in this Report. However, they also have a wealth of knowledge about how to live well in

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<sup>2</sup> UN General Assembly, *United Nations Declaration on the Rights of Indigenous Peoples*: resolution / adopted by the General Assembly, 2 October 2007, A/RES/61/295.

<sup>3</sup> *Greenhouse Gas Pollution Pricing Act*, SC 2018, c 12, s 186.

<sup>4</sup> *Impact Assessment Act*, SC 2019, c 28, s 1 at s 63 (e): “the extent to which the effects of the designated project hinder or contribute to the Government of Canada’s ability to meet its environmental obligations and its commitments in respect of climate change”.

<sup>5</sup> Dina Awad and Susan Fridlyand, “Made-in-Ontario environment plan: Ontario launches first climate change impact assessment”, *Canada Regulatory Review* (August 19, 2020).

<sup>6</sup> *Environmental Assessment Act*, RSO 1990, c E.18.

relationship with the Earth, which can inform First Nation mitigation and adaptation/resilience-building efforts, as well as those of other governments or peoples.

The Assembly of First Nations declared a First Nations Climate Emergency in July 2019,<sup>7</sup> and is in the process of developing a National Climate Strategy. Regional Indigenous organizations and individual First Nations are pursuing similar initiatives to respond to climate change, with many seeking to develop their own strategies and environmental laws.

However, because climate change knows no borders, First Nation and other governments must work together to manage the impacts. This presents a number of challenges in Canada owing to the complex jurisdictional environment.

### *Jurisdictional Overlap and Legal Considerations*

The jurisdiction to enact laws and policies for climate change and environmental protection is shared across federal, provincial/territorial, municipal, and Indigenous governments, making for a complex web of laws and regulations. The question of jurisdiction is especially complicated off-Reserve, on First Nation traditional territories and Treaty lands. These lands are primarily governed by provincial/territorial law for environmental matters, but there is a growing recognition of shared jurisdiction with Indigenous governments as a form of Treaty partnership or the exercise of inherent rights, or as formalized through self-government agreements with the Crown.

Even where First Nation jurisdiction has yet to be formally recognized, the Crown is obligated to consult with (and where necessary accommodate) First Nations for any Crown decisions that may affect s. 35 Aboriginal and Treaty rights. Crown decisions about land use and environmental protection off-Reserve will often engage this duty, since they can have important impacts on the environment and therefore on Indigenous rights to use the land for traditional activities, like hunting/fishing/trapping.

First Nations can adopt their own laws and policies and implement their own programs for climate change mitigation/adaptation and improved food security/sovereignty, but these efforts will need to be supported and complemented by those of other governments in Canada. This collaboration is also necessary for the Crown to meet its legal duties under s. 35.

For example, the Crown has a duty to ensure that Crown-authorized development activities do not result in cumulative impacts on the environment that impede the exercise of Indigenous rights. This was confirmed in the recent *Yahey v British Columbia*<sup>8</sup> (*Yahey*) decision. The Court found that the Crown had violated the plaintiff Blueberry River First Nations' Treaty rights by

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<sup>7</sup> See Assembly of First Nations Resolution no. 05/2019, online: < <https://www.afn.ca/wp-content/uploads/2019/08/2019-AGA-Resolutions.pdf>>.

<sup>8</sup> *Yahey v British Columbia*, 2021 BCSC 1287.

authorizing takings of land – for oil and gas development, forestry, mining, agriculture, etc. – to an extent that meaningfully diminished the plaintiffs’ rights to use the land.

Instead of appealing the decision, the British Columbia government agreed to implement the Court’s orders to build a new mechanism to monitor and manage cumulative impacts on the land, in partnership with First Nations. It also agreed to establish funded programs to support First Nation initiatives for cultural revitalization and environmental protection. This stands as an example for how other provincial/territorial governments might choose to partner with First Nations to address climate change and cumulative impacts on traditional territories or Treaty lands.

In Ontario, provincial government decisions to authorize development activities have contributed to the gradual degradation of Treaty lands. These decisions are presumptively made as an exercise of the Crown’s power to “take up” lands under Treaties with First Nations, subject to the Crown’s duty to consult. However, the province has often made these decisions without adequate consultation, especially in early post-Treaty years before several key legal cases<sup>9</sup> clarified the legal duty. And recent legal developments relating to Aboriginal title and Treaty interpretation<sup>10</sup> stand to further strengthen the protections afforded to Indigenous lands.

As *Yahey* demonstrates, the status quo of Crown decision-making, made without due regard for cumulative impacts, can result in rights violations and legal liability for settler governments.

Impacts on food security/sovereignty can amount to impacts on both s. 35 rights and other human rights, like the Charter protected right to life, liberty and security of the person (s. 7). For s. 35 rights, food security/sovereignty is clearly connected to the right to hunt/fish/trap/gather in a First Nation’s traditional territory; a diminishment of this right will result in reduced food security for First Nation rights-holders. Similarly, for Charter rights, reductions in food security may – in extreme cases – interfere with the right to life, liberty and security of the person; the inability to access healthy food can reduce health prospects for First Nation persons. Where these impacts are the results of Crown decisions or legislation, the Crown may be found to have violated the Charter, which could lead to declarations of constitutional invalidity for the impugned legislation.

In short, where cumulative impacts from Crown failures to mitigate climate change or control development affect Indigenous food security/sovereignty, the Crown could potentially be compelled to take remedial action, if the impacts amount to rights violations.

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<sup>9</sup> See especially *R v Sparrow*, [1990] 1 SCR 1075; *R v Van der Peet*, [1996] 2 SCR 507; *R v Gladstone*, [1997] 2 SCR 723.

<sup>10</sup> See especially *Tsilhqot’in Nation v British Columbia*, 2007 BCSC 1700; *Restoule v Canada*, 2021 ONCA 779; *Yahey*, *supra* note 8.

## **Common Themes Among Ontario First Nations**

In Ontario, there has been significant concern among First Nations about the impacts that climate change is having, in combination with development activities, on the land and their rights. As Ontario First Nations increasingly seek to renew and implement their Treaty relationships with their Crown partners, Canada and the Province of Ontario, it has become apparent that much more needs to be done to manage the impacts of climate change and development activities in a manner consistent with Treaty rights and responsibilities.

For many Ontario First Nations, Treaties with the Crown were meant to bring the Crown into relationship with the First Nations and the land, effectively extending the responsibility to serve as good stewards of the land to settler governments, alongside the First Nations. It is this shared responsibility that must be exercised to protect the land from climate change and development impacts.

Among Ontario First Nations, there exist several common themes for the types of impacts that climate change is having on food security/sovereignty. These include: 1) Impacts on Birds, Animals & Insects; 2) Impacts on Water & Fish; 3) Impacts on Weather; and 4) Impacts on Culture.<sup>11</sup> We examine each of these themes in turn, with a focus on the observed impacts among Ontario First Nations or Anishinabek Nation members specifically.

### ***Impacts on Birds, Animals & Insects***

Climate change is having impacts on birds, animals, and insects. These impacts adversely affect the ability of Anishinabek Nation members to exercise their harvesting rights, which in turn negatively impacts the food security or food sovereignty of member First Nations.

Changes in the health or abundance of wildlife used for food or other purposes by Anishinabek Nation members also has negative effects on the food security of individuals and on their wellbeing generally, e.g., by contributing to a loss of traditional skills, culture or language.

There are some studies that show negative effects on hunting and trapping are already being experienced by Anishinaabe and other First Nation people (Rall & LaFortune, 2020). A member of Garden River First Nation, for example, reported changes to animal distributions over the last 50 years, as well as fewer muskrat and beavers (Chiblow, 2019). The Garden River First Nation member had also noticed a reduction in food sources for larger wildlife. The quality of meat from the land was also an issue reported by Anishinaabe Elders from Batchewana First Nation, who said “With all the pollution that’s going on now... I recognize the difference between a moose about 25 years ago. Like nowadays it tastes different; it doesn’t taste like moose meat anymore” (Tobias & Richmond, 2014).

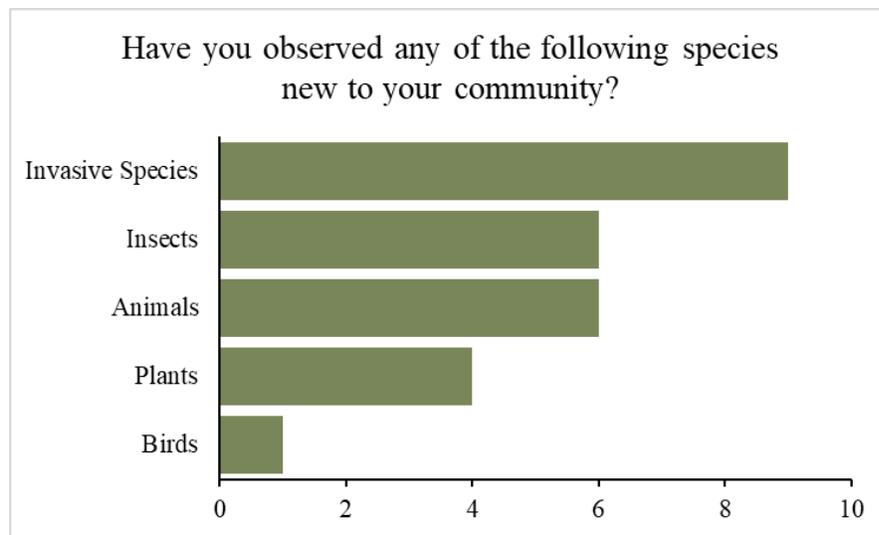
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<sup>11</sup> These common themes align with the topics chosen for the interview and survey components of this project.

Many wildlife species that are not commonly used by Anishinabek Nation members, like many insects, have an important role in the ecosystem disrupted by climate change. Knowledge of the role that these species play, and the impacts of a changing climate on their ecosystem, is also important to build resilience as a community.

### Interview and Survey Results

Most survey participants reported that they had noticed changes in the birds, animals, and insects in their territories. The most common changes participants had noticed were species of animals and insects that were new to the territory, and the arrival of invasive species (Figure 1). However, there was only one survey participant of the eighteen total who reported observing new species of



**Figure 1.** Number of survey participants (out of a total 18 participants) who reported new species to their community.

birds in their territory. One participant from Garden River First Nation has observed that with the warming climate, deer have expanded their distribution into moose territory. The participant explained that deer brought with them new diseases to the area that are transmissible to moose.

One Elder interview, of Red Rock Indian Band, has noticed changes to the bird species around the north shore of Lake Superior compared to when they were younger. He has noticed that there are now black neck swans and turkey vultures in the area, and that the number of bald eagles has increased.

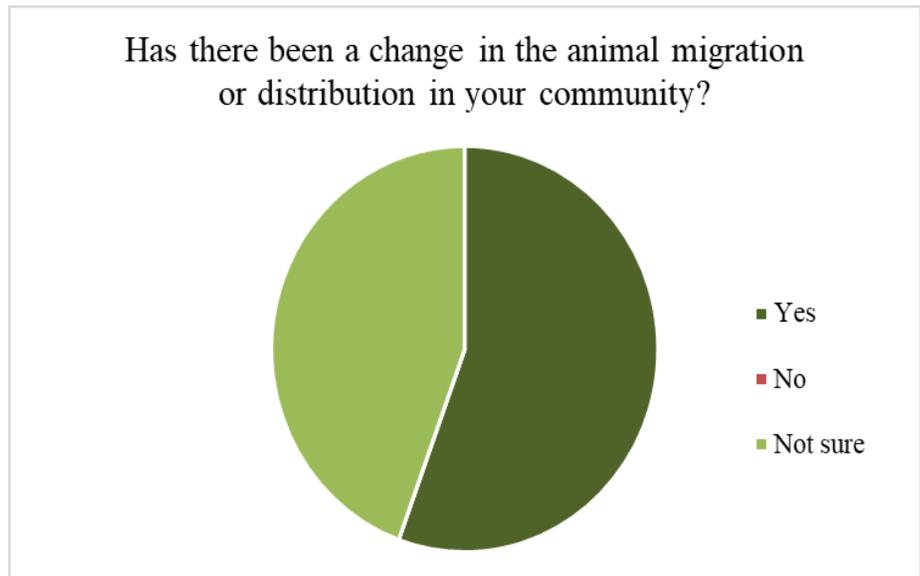
Despite commonly observing new, and sometimes invasive, species in their territories, just under half of the participants were unsure whether the distribution or migration of animals in their communities had changed, while the other half were confident that some animals had changed migrations and distributions (Figure 2).

## *Impacts on Water & Fish*

Climate change is having impacts on water and fish. These impacts can adversely affect the health of aquatic ecosystems, which could in turn harm the ability of Anishinabek Nation members to exercise their right to fish or gather aquatic plants, like wild rice. Climate change may also contribute to a decrease in water quality for drinking or other domestic/recreational uses, as warming waters are associated with higher risks of infectious diseases (Union of Concerned Scientists, 2011).

Fish and aquatic plants could be adversely affected by rising water temperatures, changes in water levels and water quality, and changes in the seasonality of water flows and ice cover. Any impacts on these wild foods can quickly translate into effects on the food security of individuals and on their wellbeing generally, e.g., by contributing to a loss of traditional skills, culture or language. Many First Nation people in Ontario are reportedly grappling with the decreased availability of wild fish, and have concerns about the impacts on their community's health (L McGregor, 2018).

In discussions on the impacts of climate change with First Nations, changes to water were continuously raised as a serious concern (Rall & LaFortune, 2020). Adults remembered being able to drink water directly from lakes and rivers, but many feel it is no longer safe to do so. There were also concerns with water levels, which tended to be low in recent years. Low water levels are thought to be connected with warming temperatures causing

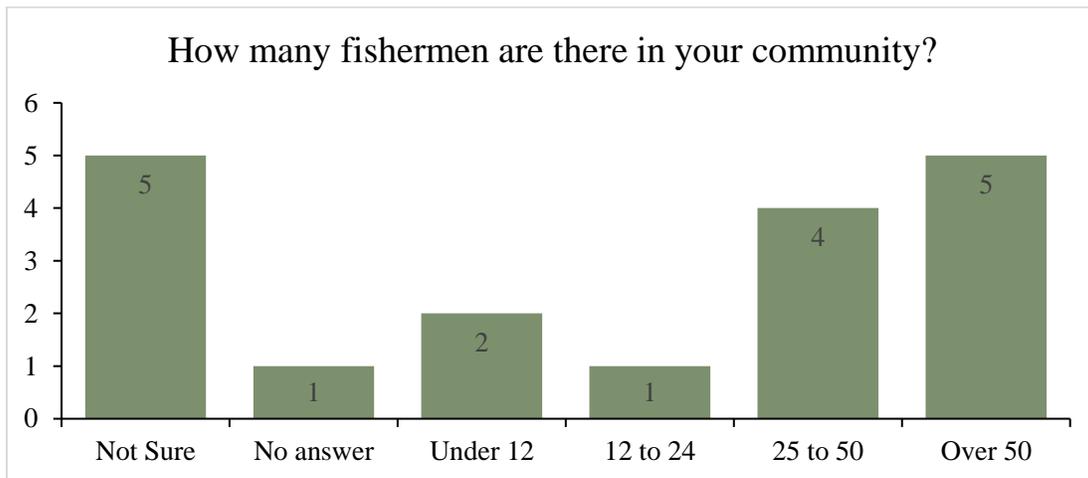


**Figure 2.** Proportion of survey participants (out of a total 18 participants) who reported changes in animal migration or distribution.

increased evaporation. These low water levels were also possibly connected to less snow during the winter. However, changes to water as observed by First Nation members appeared to vary, as there were also reports of unusually high water levels following snowmelt and run-off. Concerns about these extremes were raised by study participants.

### Interview and Survey Results

Several survey participants commented on changes they have observed relating to the water and fish in their communities. A survey participant from Aamjiwnaang First Nation reported that net fishers in their communities have been encountering fish with tumors and other deformities since the 1990s. This participant explained that they cannot eat the fish caught around Aamjiwnaang territory because of the deformities. A participant from Wahnapiatae First Nation has observed different fish species in their community now compared to when they were younger. Changes to the fish and the water are impacting fishing across Anishinabek Nation, as reported by twelve of the eighteen survey participants. This is significant for Anishinabek Nation because fish is traditionally a staple food in many communities. Understanding the impacts of climate change on fish is important also because there is a significant number of fishermen across Anishinabek Nation. Most survey participants reported there was over 25 fishermen in their community (Figure 3).



**Figure 3.** Most survey participants (out of a total 18) have more than 25 fishermen in their community.

One concern of a participant from Aamjiwnaang First Nation was the erosion of the communities' shoreline, which is evident considering that trees planted in the 1970s are now at the edge of the riverbank. This participant explained that the eroding shoreline was putting their home at risk. Although the house has not washed away it seems less stable now, as it shakes when trucks drive by or large boats pass on the river, which has created cracking. This participant also described their yard as sinking and believes that the community needs to begin shoreline protection.

Access to drinking water is an existing concern for a few First Nations in Anishinabek Nation, and climate change poses an added challenge. Climate change can impact access to fresh and safe water in several ways including through drought, floods (which cause sewage to contaminate drinking water sources), and rising water temperature (which can increase the risk of water-borne pathogens) (UNICEF, 2022) (United Nations, n.d.).

The survey results show that Anishinabek Nation members are experiencing climate change impacts that could pose a risk to drinking water access. Six of the eighteen survey participants reported that they had experienced drought or dry conditions in the past three years. These six participants include representatives of all three Anishinabek Nation Regions from which survey results were received: Lake Huron Region (Nipissing First Nation, Aundeck Omni Kaning, Moose Deer Point First Nation, and Ojibways of Garden River First Nation), the Southeast Region (Curve Lake First Nation), and the Southwest Region (Aamjiwnaang First Nation). Flooding appears to be a risk for several First Nation members of Anishinabek Nation as eight survey participants experienced flooding in the past three years. Flooding was reported by participants from six Lake Huron Region First Nations (Aundeck Omni Kaning, Nipissing First Nation, Mississauga First Nation, Wahnapiatae First Nation, Moose Deer Point First Nation, and Garden River First Nation) and two participants from the Southwest Region (Aamjiwnaang First Nation, and nearby non-Anishinabek Nation member Walpole Island First Nation).

### *Impacts on Weather*

Climate change is having impacts on the weather. For example, in many parts of the world, people have observed an increase in the frequency of major storms, extended periods of drought or heatwaves, and a decrease in the predictability of the weather generally (IPCC, 2021). These impacts can disrupt ordinary agricultural or harvesting practices, which are often tied to seasonal timing or weather events.

Changes in the weather can harm the health of plants and wildlife by affecting their habitat and the seasonal events that ordinarily influence migration or other behaviors. They may also reduce the ability of harvesters to predict the availability of wildlife for harvest or to navigate their environment safely. Indigenous harvesters in Labrador, for example, have experienced changes when harvesting cloudberries, which are less abundant and have experienced changes in ripening time (Anderson, Ford, & Way, 2018).

Almost all aspects of Anishinaabe life are impacted by warming temperatures. The warmer weather has had particularly important impacts on water, snow and ice. For First Nations whose way of life relies on travel across ice in the winter, warming temperatures have caused significant problems and have made winter travel and hunting increasingly dangerous. Several First Nations in northern Ontario have experienced a change in ice formation, which has inhibited movement across ice (Golden, Audet, & Smith, 2015). This impacts the health and wellbeing of these First Nations by introducing new challenges for winter hunting and the transportation of goods, like food and fuel, across ordinarily ice-covered waters.

Anishinaabe rely on their understanding of seasonal patterns in weather to carry out their way of life. Climate change is expected to impact seasonal patterns and Anishinaabe knowledge may become less accurate in predicting weather. Anishinaabe participants in a recent study looking at their concerns regarding climate change highlighted changes to seasonal patterns (Gallant, Bowles, Patterson, & Popp, 2020). One participant in that study said “You can't read what's going on around you, you can't read the water, it's hard to read the sky. Things are getting difficult” (Gallant,

Bowles, Patterson, & Popp, 2020). The practice of traditional Anishinaabe ways of life is expected to become more challenging as weather patterns change and become unpredictable.

### *Interview and Survey Results*

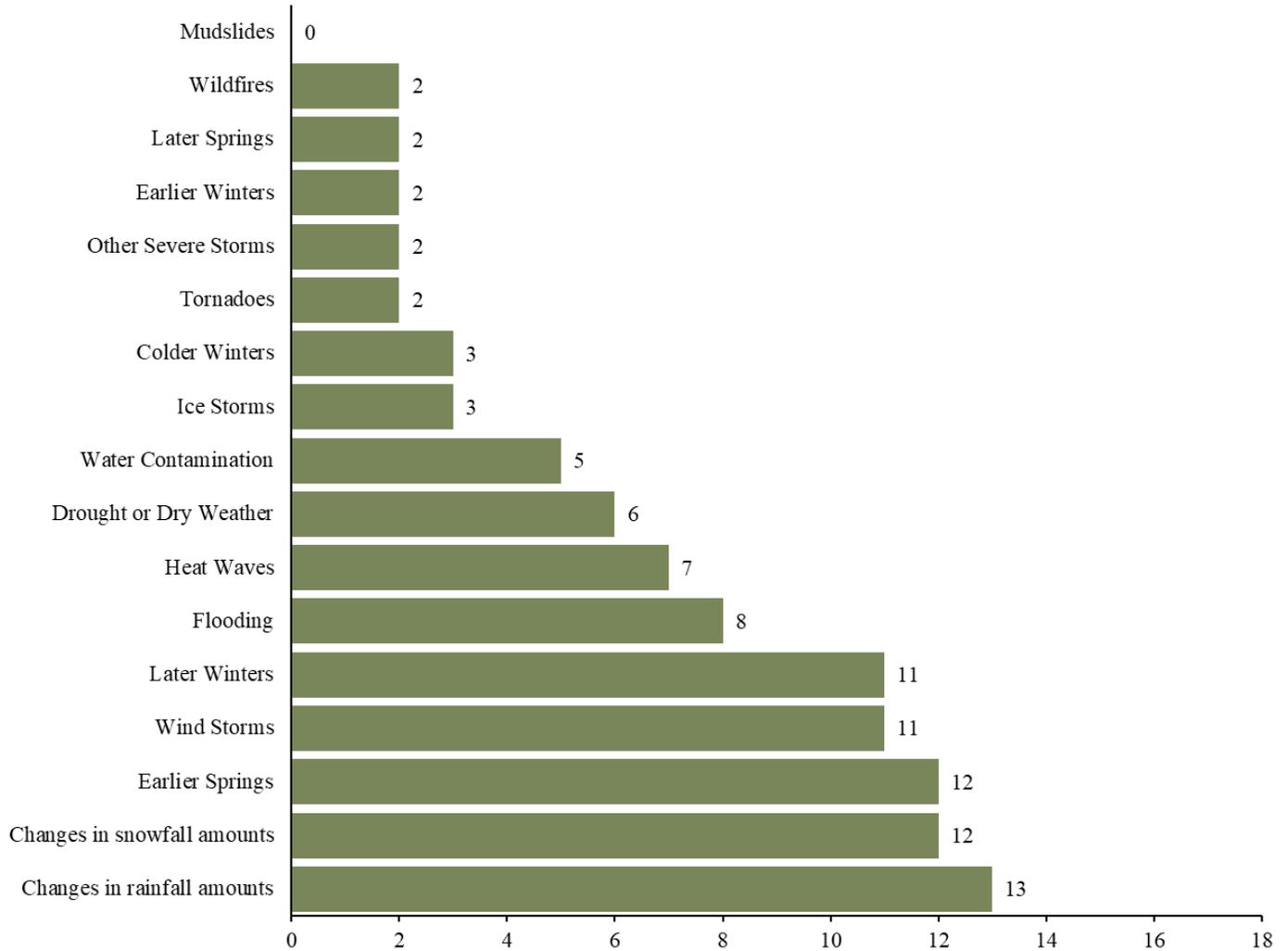
People across Anishinabek Nation have already begun to experience significant impacts of climate change relating to weather. Every survey participant reported that they have experienced at least one change in weather within the past three years that they attribute to climate change. The most common impact on weather that survey participants reported was changes in rainfall amounts (Figure 4). Impacts on precipitation were common in general, as twelve of the participants reported changes in snowfall amounts, and six had observed dry or drought weather conditions.

Climate change appears to be impacting seasonal patterns, particularly those associated with warmer temperature, across Anishinabek Nation according to survey participants' observations. Twelve of the eighteen participants reported experiencing earlier springs within the past three years, and eleven participants had observed later winters. Some participants did observe, however, changes to seasonal patterns that are not associated with warmer temperatures. For example, three participants reported that they had experienced colder winters, while two participants reported later springs and earlier winters. This may reflect the fact that climate change does not necessarily always cause warmer conditions, but more generally changes to a region's typical climate.

Climate change is expected to cause a higher incidence of extreme weather events, and the survey results suggest that some are already being experienced across Anishinabek Nation. The most common extreme weather reported by survey participants was windstorms, as eleven of the eighteen survey participants had experienced them in the past three years (Figure 4). Flooding and heat waves were also commonly experienced by the participants, with eight and seven participants reporting these events, respectively (Figure 4). A couple participants reported that they had experienced ice storms, tornadoes, or wildfires, and no participants had experienced a mudslide in the past three years.

An Elder interviewee from Alderville First Nation explained that the weather patterns had significantly changed. In the past, the weather had been predictable, but the Elder explained that this was no longer the case, and that weather is more extreme, particularly with strong winds. For example, the Elder was only able to get out one night for spring pickerel fishing season because the winds were too strong.

Number of participants (out of 18) who experienced the following climate-related events in the past 3 years



**Figure 4.** Climate-related events experienced by Anishinaabe in the past three years.

### *Impacts on Culture*

Climate change will likely have impacts on the culture and languages of Anishinabek Nation member First Nations, by interfering with the transmission of traditional knowledge, while also contributing to an evolution in traditional practices or norms. Culture is a source of resilience and continuity that can be leveraged to help respond to climate change, by way of traditional teachings and traditional ecological knowledge (“TEK” or Giikendaaswin) (Chiblow, 2019).

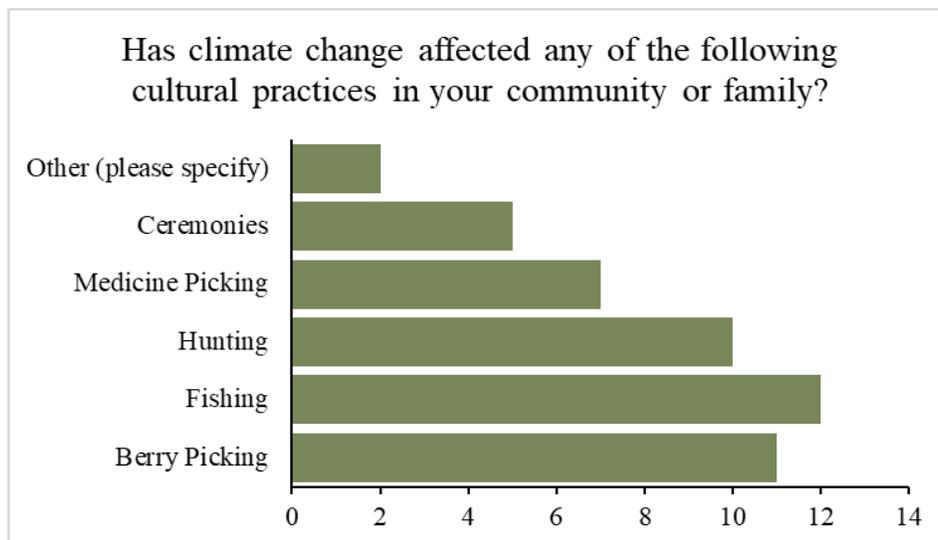
For example, youth participants in the Garden River First Nation study expressed their eagerness to learn traditional Anishinaabe practices (Chiblow, 2019). However, as reported by Elders in

Batchewana First Nation and Pic River First Nation, climate change is reducing the capacity to participate in and therefore share traditional practices (Tobias & Richmond, 2014).

Climate change could therefore threaten the continuity of many Anishinaabe traditions. Anishinaabe have reported that their greatest concern regarding climate change is the impact on their traditions and spirituality, which are both tightly linked to the natural environment (Gallant, Bowles, Patterson, & Popp, 2020).

### *Interview and Survey Results*

The results from the surveys regarding the impacts of climate change on Anishinaabe culture support the findings from previously reported studies: climate change is inhibiting the practice and generational transmission of several Anishinaabe cultural practices. According to the survey participants, Anishinabek Nation members are experiencing the impacts of climate change on cultural practices relating to food: twelve out of eighteen participants reported that climate change had impacted fishing, eleven reported that berry picking was impacted, and ten reported that hunting had been impacted (Figure 5). One participant from Serpent River First Nation reported that maple sap harvesting has been impacted by climate change. The use of traditional medicines and holding ceremony were also impacted by climate change according to seven and five participants, respectively.



**Figure 5.** Climate change is impacting Anishinaabe cultural practices, particularly berry picking, fishing, and hunting.

An Elder from Garden River First Nation shared her experience with the impacts of climate change on harvesting medicine. In her community, people collect medicines from swampy areas, but recently the water levels have been so high that people are not able to reach down to the root to

harvest the medicine. She has noticed that the medicines are less abundant as well, which could be caused by higher water levels.

Survey participants found that climate change was impacting their responsibilities and roles as stewards to the lands. Several participants explained that the conditions caused by climate change made carrying out their stewardship role and responsibility more challenging. There were a few reasons given to explain the challenge, including having to respond to unexpected rapid environmental changes, which are more difficult to monitor and therefore respond to. A participant explained that their community does not have capacity to address the rapid and unprecedented number of changes they are experiencing. Another participant touched on this issue when they highlighted how society's emphasis tends to be on economic development that causes destruction to the environment by way of clear-cuts, increased waste on the land, and incursion by motorized vehicles. These concerns may be exacerbated by the impacts of climate change.

Climate change may have serious impacts on Anishinaabemowin, and Elders of Anishinabek Nation are already noticing changes associated with traditional food systems. An Elder from Whitefish River First Nation explained that there are terms used in the language that describe aspects of Anishinaabe traditions and practices, but they have not been used for a long time because the traditions and practices have not been carried out for a while. For example, the term used for garden preparation has likely not been heard in years. These terms are learned through action, and if climate change prevents Anishinaabe from carrying on traditional ways of living, more Anishinaabemowin terms may be lost.

## Regional Differences Within Anishinabek Nation

The Anishinabek Nation membership is organized into four strategic regional areas or Regions (See Figure 6), based on geographic considerations that influence their concerns and priorities. Each Region is represented by a Regional Deputy Grand Council Chief. This regional approach is core to Anishinabek Nation’s mission as an advocacy body for the whole of its membership.

While some common themes exist, each Region has experienced climate change impacts on food security/sovereignty in their own unique way. The documented knowledge and interviews/surveys from the Regions illustrate how their concerns and priorities are likely to differ with respect to climate change adaptation and resilience-building going forward.



**Figure 6.** Map of the four Anishinabek Nation strategic regional areas (Regions) and the Anishinabek Nation member First Nations.

## *Southwest Region*

The Southwest Region contains significant industrial activity and urban development, and as a result Member First Nations located in this Region are exposed to significant amounts of industrial waste and pollution. This pollution issue is expected to intensify the effects of climate change on food security/sovereignty in Southwest Region member First Nations, relative to other First Nations. However, the Southwest Region has had and is expected to continue to have the greatest potential for agricultural activity, which may play a role in offsetting the adverse impacts of pollution and climate change on the availability of wild foods for harvest.

Pollution and climate change have led some First Nations in the Region to challenge provincial government policies. For instance, a member of Aamjiwnaang First Nation is advancing a traditional food legal action to challenge Ontario's lack of action on climate change, on the basis that it breaches their right to life, liberty and security of the person (Shantz, 2020). The First Nation member, Beze Grey, grew up in an area with several refineries, and explained why they were participating as a plaintiff in the action: "As Indigenous, I'd really like to be able to practice my culture and traditions, but with climate change that's becoming an issue ... It's different to try and practice (our culture) than it was for my grandma, and part of that is because of climate change."

Many Anishinaabe in the Region feel that pollution makes it unsafe to rely on their traditional food system. For example, members of Aamjiwnaang First Nation who live on reserve are eating less traditional wild foods collected from the land. One member explained that because of the pollution "Nobody eats the fish... [t]here is concern about eating the rabbits...[and] I'd be washing my food out if there was a garden around here anyway" (Bedeau, 2006). Other members expressed sadness when describing how they were not able to practice their traditions or teach their culture to youth because their traditional food system was no longer safe (Bedeau, 2006). Members of other First Nations in the Region, including the Chippewas of the Thames, also avoid consuming traditional wild foods because of environmental contaminants released by industrial activity (Neufeld & Richmond, 2017). An Indigenous woman who participated in a study on traditional food systems in southwestern Ontario explained "There's so much pollution in the water and on the earth and in the air. You gotta really think about it, is it really healthy for me to be eating so much of this natural source of food that our people used to live on?".

The concern with consuming traditional wild foods in the Southwest Region is supported by evidence showing high levels of contaminants in biological samples provided by members of Aamjiwnaang First Nation. For example, one study detected elevated levels of mercury in biomarkers (i.e., hair, blood and urine) from Aamjiwnaang First Nation members (Cryderman, Letourneau, Miller, & Basu, 2016). Another study found evidence that exposure to industrial pollution has altered the sex ratio in Aamjiwnaang, with more females being born than males (Mackenzie, Lockridge, & Keith, 2005).

Traditional Anishinaabe food systems in the Southwest Region are at an increased risk from climate change because they are already significantly compromised by industrial pollution. Cultural, emotional, and health impacts caused by a compromised food system are already being

experienced by member First Nations in the area. Anticipated impacts to traditional food systems caused by climate change, such as changes to seasonal cycles and the distribution and abundance of animals and plants, will likely exacerbate the existing food system challenges faced by Anishinaabe in the Region.

### Interview and Survey Results

The impacts of industrial pollution and development and the consequent vulnerability to the impacts of climate change were apparent in the interview and survey results from members of First Nations in Anishinabek Nation's Southwest Region. Interviews were conducted with an Elder from the Chippewas of the Thames First Nation and another Elder from Munsee-Delaware Nation, and three members of First Nations in the Region participated in the survey. Another survey participant's answers were considered in this Region despite not being a member of an Anishinabek Nation community, because they live on a reserve (Walpole Island First Nation) next to the Southwest Region.

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**“Being in chemical valley, pollution is a huge problem that my community faces”**

– Aamjiwnaang First Nation Member

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The Elder interviewed from Chippewas of the Thames First Nation has carried out traditional ways of living his entire life and has experienced significant changes associated with the climate in the past ten years. These changes, he said, are impacting every aspect of traditional Anishinaabe life.

One change that the Elders have noticed is the presence of new species in the area. Around 15 years ago possums arrived in the area from the South, and there are many new species of insects, including the invasive Emerald Ash Borer, which has destroyed white ash and oak trees. There are also several traces of new animals to the area, including black bear scat, and wolf and cougar tracks. The survey participants from the area concurred with these observations, as they have also observed new species of wildlife and plants in the area and have noticed a change in the migration and distribution of many species.

Hunting and berry picking has changed considerably according to the Elders and survey participants. The Elders both explained that berries used to be abundant, and both Anishinaabe and birds would eat the berries, but they are now difficult to find. Rabbits (*waabooz*) were also numerous in the past, but appear to have declined by 90% in the past four years according to the Chippewas of the Thames Elder. He believes that the decline in rabbits may have been caused by an increased population of coyotes. Survey participants from the Southwest Region have experiences that are consistent with those of the Elders, as they have also noticed changes in animal migration and distribution.

Nuts (hazelnuts, walnuts, hickory nuts, etc.) are a traditional food eaten in the Chippewas of the Thames Elder's community and were a particularly important food source during winter. The Elder has noticed several changes regarding their quality and abundance. Hickory nuts, which the Elder

explained are traditionally used for high heat cooking and smoking food, are less abundant after a road was built through the hickory trees. Around four years ago the Elder noticed hickory nuts having small holes in them, likely from bugs that recently arrived in the community.

In addition to collecting plants and nuts for food, Anishinaabe in the Southwest Region carried out agriculture. The Elder from the Chippewas of the Thames First Nation explained that around four generations ago his community farmed russet apples. The apple orchards served as a reliable source of food, but around 150 years ago they were gone. The community continued to grow their own food after that, as the Elder described that while he was growing up everyone in the community grew food in gardens. The Elder continues to garden, but he says that gardening is not as common as it was in the past. Survey participants indicated that there are some members of their communities who have their own gardens to grow plants, including medicines. The Elder of Munsee-Delaware Nation shared similar observations as he grew up farming cattle, pigs, chickens, potatoes, berries, corn and wheat. Today he has noticed a shift away from farming for food to farming cash crops like soybeans. This is a shift he has made as he now leases his fields to local farmers.

Growing up, people were always out fishing in the Chippewas of the Thames Elder's community no matter the season or weather, and fish was a main part of the community's diet. People would eat every kind of fish, and from a young age the Elder knew how to prepare fish. The Elder described how he would spend the day in the bush and cook fish next to the river by packing the fish in clay and placing it in coals. Today, however, the people of his community are no longer catching and eating fish like they used to. The community has shifted their fish-eating habits significantly, as today they tend to only eat pickerel. The Elder explained that one factor for the change is that people do not want to eat fish from the river because they believe it is polluted and unsafe. The same is true for Munsee-Delaware Nation, as the Elder explained community members will not eat fish from the Thames River; they commonly travel to Kettle Point on Lake Huron to fish instead.

The impact of pollution in the Thames River extends beyond harvesting fish for food. The Munsee-Delaware Nation Elder explained that people will no longer eat squirrel, deer or wild turkey in the area because those animals drink from the Thames River. This has contributed to a diet shift from local game to corn and other foods.

Survey results from the Southwest Region support the Elders' observations. Participants from Aamjiwnaang First Nation reported that they cannot eat the fish from the lake or river because of the pollution. The survey participants explained that fish caught by Aamjiwnaang First Nation members are often deformed or have growths. Despite this, there are still a number of fishermen in the Southwest Region, as survey participants from Aamjiwnaang reported that there are between 25 and 50 fishermen in their community.

Pollution from industrial and agricultural activities has impacted the ability to lead a traditional life according to the Chippewas of the Thames Elder. When he was young, everyone could drink water from natural springs, and snow was safe to eat. Today, his community commonly experiences boil-water advisories and highly polluted air. The Elder has observed trees falling for no apparent reason, particularly in swamps. He believes that the runoff of agricultural chemicals may accumulate in the swamps and be causing trees to fall. Pollution appears to be impacting gardens in the Elder's community as well because their plants appear wilted after rain. The Elder suspects that this is caused by pollution in the rain. Survey respondents from Aamjiwnaang First Nation have made similar observations about the impacts of industrial activity, as they reported that the air is so polluted that it smells.

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**“My Dad told me when I was twelve: I don’t have to worry about you. You go out there in the garden you know how to provide for the family. You know how to bring in wood, water. All that stuff that my dad taught.”**

– Chippewas of the Thames First Nation Elder

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Erosion of the shoreline and the integrity of the ground and infrastructure are other concerns for some Anishinaabe living in the Southwest Region. A survey participant from Aamjiwnaang First Nation detailed how the shoreline in their community began to deteriorate about ten years ago. The survey participant explained that trees that were planted in the 1970s along the river road are now at the edge of the river. Today the participant's yard is sinking, and cracks are appearing and widening around their house and driveway. Additionally, their home shakes whenever a truck drives by. These observations indicate that some communities may have existing structural vulnerabilities in the face of flooding, wind storms, and other effects of climate change.

Communities in the Southwest Region are experiencing water security issues due to a lack of groundwater, in addition to pollution in the Thames River. The Elder from Munsee-Delaware Nation described how groundwater has dried up in his community, and how there is no longer sufficient rainfall to replenish wells used by members for drinking water. In the past, this had not been a concern.

As the environment changes and grocery stores offer convenience, the Chippewas of the Thames Elder has observed a change in how traditional knowledge is shared. The Elder explained that it was the responsibility of fathers and uncles to teach youth about hunting, plants, and fishing. The Elder began going to Elders in his community to ask questions about culture and traditions when he was about eight years old. The Elder does not see this custom often today, however, and his community has lost some traditional knowledge as a result.

### ***Southeast Region***

The Southeast Region contains less industrial activity than the Southwest Region, but it is still subject to significant development pressures that could exacerbate the impacts of climate change

on food security/sovereignty. And some of its First Nations have unique challenges relating to access, owing to reliance on ice roads for winter travel.

First Nations in this Region have begun to explore strategies to improve their resilience to climate change impacts. Curve Lake First Nation, for example, plans to learn about the impacts of climate change on traditional foods systems by interviewing Elders and has committed to a *Community and Corporate Climate Action Plan* (Greater Peterborough Area Economic Development Corporation, 2017). This Action Plan is part of a larger plan for the surrounding Peterborough area. In the Action Plan, Curve Lake First Nation recognizes the loss of ice fishing and ice roads, and the need to ensure that the community has access to sufficient food. Curve Lake First Nation plans to achieve this by practicing *miinidiwag*, the custom of giving what one does not need to those in need, with a food cooperative. Curve Lake First Nation will also develop a strategy to protect and enhance traditionally important species, such as *manoomin*, or wild rice, in the face of climate change.

Beausoleil First Nation has begun *The Agaaming – Across the Bay: Beausoleil First Nation Wind and Water Monitoring Project* in response to changes to their traditional territories that Elders reported over the years (Hawke, 2021). The First Nation’s reserve land is located on islands in Georgian Bay, and its members have relied on ice roads for winter transportation of food and other goods (Hawke, 2021). The community had reported changes in ice, and *Agaaming* was developed for the First Nation to monitor these changes by measuring climatic conditions.

The Chippewas of Georgina Island First Nation is also taking steps to adapt to the anticipated impacts of climate change. Part of the First Nation’s climate change adaptation strategy was conducting a Traditional Ecological Knowledge survey of members about the impacts of climate change (Charles, 2016). The survey was made specific to the experience of living on Georgina Island; it asked 19 members about changes they had noticed. The interviewed members reported that:

- the colour and temperature of lake Simcoe had changed;
- creeks had dried up;
- there were fewer cold water fish;
- specific species of birds (whippoorwills and mourning doves) were no longer around;
- spring came earlier and summers were longer and hotter, and winter was warmer;
- the ice quality had changed, and there was less snow;
- rough winds had damaged roofs; and
- community members were getting rashes from the water.

The Chippewas of Georgina Island First Nation also identified vulnerabilities they face due to climate change, such as flooding washing out roads or causing mold in flooded homes, the loss of 5 feet of shoreline from erosion, eutrophication of the lake causing poor water quality, and a risk of damage or loss of the ice road. Based on the changes identified, the traditional food system is likely also vulnerable due to changes in food availability, quality, and access.

### *Interview and Survey Results*

Our community information for the Southeast Region consisted of one survey result from a member of Curve Lake First Nation, and one interview with an Elder of Alderville First Nation. Both participants have observed changes to the climate, and specifically those that impact the traditional food system. They reported seasonal changes observed in other regions that are related to a warmer climate: winters are warmer and mild, spring begins earlier, and summers are longer and hotter. In the past three years, the survey participant has experienced heat waves, windstorms, and drought. Curve Lake First Nation has an existing water advisory, and climate change could pose a further threat to the community's drinking water.

Curve Lake First Nation engages in traditional wild rice harvesting, which yields over 50 lbs. of rice each year. Alderville First Nation also has a traditional wild rice harvest. However, the survey participant and the Elder both report that climate change has impacted fishing and hunting for their communities. This impacts on the communities' food security and culture considering Curve Lake First Nation, for example, has around 25-50 hunters, and 25-50 fishermen. These traditional practices have become more challenging with climate change because animal migrations are changing, and due to changes in the water levels and weather. The participant from Curve Lake First Nation reports eating traditional foods monthly, although they would prefer to eat traditionally every day if it was possible.

The Elder has observed changes in species and weather in the Region as well. They are particularly concerned about the impacts of invasive or overpopulated species: the Emerald Ash Borer has destroyed the leaves of most white ash trees in the area; the gypsy moth is removing leaves from oak trees; the overpopulation of Canada geese, which pull or clip rice plants, has impacted rice harvests; and the overgrowth of starry stonewort is altering waterways.

Curve Lake First Nation has potential to grow more of its own food according to the survey participant. The participant reported that a significant area of farmable land exists in their community: 51-100 acres. The community would need to invest in capacity to expand the growing of their own food; the participant highlighted the need for increased capacity for the existing community garden to have an impact on food security.

### ***Lake Huron Region***

The Lake Huron Region is less urban than the Southern Regions, but it is home to significant forestry and mining development activity, which can contribute to environmental degradation and thus exacerbate the impacts of climate change on food security/sovereignty.

There is already considerable evidence that Anishinaabe in the Lake Huron Region are experiencing the impacts of climate change on their traditional food systems. Jayce Chiblow carried out research in her home community on community-specific impacts of climate change on Indigenous food sovereignty (Chiblow, 2019). Members of Garden River First Nation who were

interviewed explained that they had noticed changes to their food system that could be linked to climate change. The study's adult participants noted that water was no longer safe to drink directly from the river as it had been when they were young, and that water levels were lower than they had been in the past. Study participants also reported that animal distributions had changed over the past fifty years, and that there were fewer muskrat, beaver, fish, and large wildlife. Similarly, they noted a change in the distribution of plants used by community members, and that plants were smaller and less abundant.

Chiblow's research highlighted the impacts that these changes to water, plants and animals had on culture and traditions in the food system (Chiblow, 2019). Youth study participants expressed an eagerness to learn their Anishinaabe practices and language, and to go out on the land and fish, hunt, trap, and harvest medicines. However, adult participants expressed concern about how climate change is impacting their ability to pass along traditional knowledge. One participant told Chiblow that "With less plant, fish and wildlife species around to learn these traditions, there are less opportunities for Youth to learn and build meaningful relationships."

Climate change is therefore impacting the ability of Garden River First Nation members to transmit traditions and culture to future generations. According to Chiblow, climate change initiatives therefore require interconnectivity with cultural elements (Chiblow, 2019).

On the largest freshwater lake island in the world, the First Nations of Mnidoo Mnising (Manitoulin Island) have noticed many changes to the environment that impact their food systems. In 2019, in the context of *References re Greenhouse Gas Pollution Pricing Act, 2021 SCC 11*, Chief Patsy Corbiere of Aundeck Omni Kaning First Nation described how their members and those of other United Chiefs and Council of Mnidoo Mnising ("UCCMM") communities have witnessed declines in many important food species, including moose and whitefish (Corbiere, 2019). These changes have made it increasingly difficult for the First Nation members to feed themselves and their families in accordance with their traditional customs and practices. Chief Corbiere also described a similar decline in the availability of medicinal plants.

Another study conducted by Tobias and Richmond (2014) collected information about the impacts of climate change experienced by Anishinaabe who live adjacent to Garden River First Nation and are members of Batchewana First Nation. Batchewana First Nation Elders reported that moose have changed over the past 25 years, in that they no longer taste the same, but like pollution (Tobias & Richmond, 2014). The Batchewana Elders highlighted the need for the community to plant gardens, which had been a more common practice in the past. The Elders explained that these community gardens improve access to traditional foods, which is important for the community.

Climate change is expected to impact water levels and may cause unprecedented flooding of lands that are traditionally used for hunting, collecting traditional plants, and trapping. Magnetawan First Nation, for example, has expressed concern about new patterns of flooding caused by climate change. Magnetawan First Nation has taken steps to address this concern through floodplain mapping based on the anticipated effects of climate change on water levels (Marshall & Taylor, 2020). This floodplain mapping work will help to improve planning for safety, emergency

response, land use, as well as the communication of risks to people accessing the land in light of a changing climate.

### *Interview and Survey Results*

Twelve Anishinaabe from the Lake Huron Region shared their experiences and took part in this project's survey. And three Elders from the Lake Huron Region shared their experiences on the impacts of climate change and traditional food systems during interviews with Anishinabek Nation staff. The Elders were from three different communities: Garden River First Nation, Wahnapiatae First Nation, and Whitefish River First Nation. All three Elders described extensive changes to their home communities that are linked to climate change.

The results from the surveys and interviews reveal that Anishinaabe in the Lake Huron Region are experiencing the impacts of climate change on their food systems. The changing climate has caused typical seasonal patterns to change, as survey participants reported later winters and earlier springs. Along with the changes in seasonality are generally warmer and windier conditions. These conditions appear to have impacted the wildlife and plants in the Lake Huron Region as survey participants have observed invasive species in the Region and new species of animals. Additionally, the cultural impacts on Anishinaabe in the Lake Huron Region are extensive, as 3/4 of survey participants believe that climate change has impacted berry picking, and about 2/3 have noticed changes to fishing and hunting.

The Elders from the Lake Huron Region all described how the climate is now warmer and how this impacts their territories. Like the reports from the survey participants, winters appear noticeably warmer, shorter, and with much less snow and ice. The Elder from Whitefish River First Nation described the typical seasonal pattern leading to winter, which is no longer occurring: in November the temperature would drop and ice would form on the lake. It was not until about two weeks later that any snow would form. Anishinaabe further North and outside Anishinabek Nation explained that when ice forms before the snow falls, "blue ice" forms (Golden, Audet, & Smith, 2015), which is much stronger and has better structural integrity than if ice forms on a body of water after it has snowed. The Elder explained that people at Whitefish River First Nation would use the ice for travel. Now, the Elder explained, ice arrives later and there is less snow.

Climate change appears to have impacted travel across water and ice for Anishinaabe in the Lake Huron Region. The change in ice formation creates less safe ice for travel. The Elders also explained that water levels have changed and are less predictable. Specifically, there are years when the water is too low, and others when the water is too high. Changes like these to the water levels have complicated navigating the water by boat or canoe.

Elders from the Lake Huron Region have observed a decline in water quality, and it is impacting their food systems. The Elder from Whitefish River First Nation explained that in the past, members of her community would fish in clear water, but today they cannot see down through the water to the rocks at the bottom because they are covered in vegetation. The Elder thinks that the change in water quality has caused a decline in the health of fish, which today have worms. Pickerel in the area are showing signs of change, as they are less abundant and no longer grow as

large as in the past. Marshes in the Region are drying up with the rising temperatures, meaning a loss of spaces where ducks and deer would visit to feed, according to the Elder from Whitefish River First Nation. The Elder from Wahnapiatae also described that the water conditions of Lake Wahnapiatae are declining. With increases in the lake's temperature, algae blooms have occurred, and people are now developing rashes from swimming in the lake.

During their interviews, the Elders described changes to several types of plants and wildlife in the Lake Huron Region. Changes noticed in Whitefish River First Nation include the arrival of migratory birds not previously observed in the area, such as snow geese, as well as the emerald ash borer and giant hogweed. On the other hand, some species have almost disappeared from the Lake Huron Region, including the whippoorwill, the whiskey jack, rabbits, deer, and foxes. The Elders also reported that there are fewer fish.

Elders from the Lake Huron Region have not only noticed a change in the abundance of traditional wild food, but also in its quality. One Elder recalled picking very large mushrooms in the past, but that today these mushrooms are scarce and very small. Similar observations were made about blueberries and raspberries in the Region. The Elder also reported that sugar maples are taking a long time to produce sap, and some were drying out or dying.

Elders highlighted the impacts of industrial activity, like forestry and mining, during their interviews. An Elder from Wahnapiatae First Nation explained that mining activity in the Sudbury area released particulates, which raised the acidity of the soil. There are also concerns about environmental and health impacts from the aerial spraying of herbicides by the forestry industry in the Region. The Elder believes that industrial activity and forestry in the Region has made the soil unsuitable for farming, and Anishinaabe in Wahnapiatae First Nation now have to bring in soil and use raised beds to grow food.

The Elder in Whitefish River First Nation continues to eat wild meat as she did in the past, including fish, moose, deer, beaver, and rabbit. The Elder from Lake Wahnapiatae used to eat more fish, but she also explained that earlier in life she did not live off the land.

The Elder from Garden River First Nation highlighted specific examples of how climate change has impacted trapping and fishing. She has noticed a change in the behaviour of rabbits, which has made setting snares and trapping them more challenging. She said that typically rabbit tracks have an identifiable linear pattern, but lately their tracks appear random making it difficult to set snares. Trapping muskrats has also become more difficult with changes to the climate due to rising water levels that immerse their lodges. With regards to fishing, higher temperatures have shortened the ice fishing season. The Elder from Garden River First Nation has recently observed several other unusual animal behaviours, which may also impact hunting, or ecosystem functioning. These include deer swimming across the river in the winter, Great Blue Herons staying in the area during winter, and fish arriving sooner and staying longer during the spawn harvest.

There are also new challenges for harvesting medicines in swamps and hunting, according to the Elder from Garden River First Nation. When it is time to harvest medicine from swamps, the people cannot reach the roots because the water level is so high. At times, the high water levels are causing a decrease in plants, possibly because sunlight cannot reach far enough into the water.

And hunters are having to adapt to the higher temperatures by working faster to skin animals to ensure the meat is kept fresh.

Although the Elders in the Lake Huron Region continue to rely on wild food, the general shift by people in their communities to store-bought foods is impacting culture. One Elder raised concerns about the loss of language used for traditional foods. The Elder explained that there are descriptive words that used to be used in Anishinaabemowin that are not being used today because the traditions they describe are not being carried out. For example, the term used for garden preparation has likely not been heard in years. The Elder added that words that describe specific seasonal changes and events may also be threatened by climate change.

### ***Northern Superior Region***

The Northern Superior Region is the least urban of the Regions, but it is increasingly exposed to pressures from forestry and mining development activity, which can exacerbate climate change impacts on its boreal forest environment. Climate change is expected to have major impacts on the boreal forest, e.g., by contributing to an increase in the frequency or severity of forest fires and pest infestations (IPCC, 2021), which can harm the health of the ecosystem and thus decrease the availability of wild foods, impacting food security/sovereignty in the Region.

Anishinaabe in the Northern Superior Region have already reported impacts of climate change on traditional food systems. For example, in a 2014 study, Elders from Biigtigong Nishnaabeg First Nation were interviewed about the perceived health impacts caused by climate change (Tobias & Richmond, 2014). The Elders described reduced access to traditional foods, and the reduced ability to participate in and share knowledge of land-based practices. The Elders also noted that community gardens used to be more common and revitalizing their use would increase access to traditional foods.

Other stories were recorded from individuals belonging to First Nations located near the Northern Superior Region by Long Lake #58 First Nation member Sterling Finlayson (Garrick, 2019). The stories collected by Finlayson highlighted the changes that Anishinaabe had experienced when hunting or accessing water on their traditional lands. Specifically, people spoke about how they hunted more frequently in the past, and how they used to drink water directly from rivers. Participants had also noticed that warming temperatures affected their ability to access the land for traditional activities like hunting; water was not staying frozen as long as it had in the past, and there was also unusual flooding.

A study was recently published that shared the opinions of knowledge keepers from Fort William First Nation on the impacts of climate change (Galway, Esquaega, & Jones-Casey, 2022). The knowledge keepers were asked about the changes linked to climate change that they had noticed. The most common changes were related to water and waterways (access, quantity, quality), flora, trees and forests, air and winds, the distribution and wellbeing of wildlife, and seasonality. The knowledge keepers described how all of these changes are interconnected, and how the

Anishinaabe were also connected to the health of the land: “it [climate change] makes the land ill and us ill.” Knowledge keepers spoke specifically about how their traditional food systems had changed, and how the community was experiencing food insecurity as a result: “[M]y grandpa used to go and hunt for what we ate and now – there’s no food to even go and hunt for. It’s gone ...”.

The impacts of resource extraction will likely interact with those of climate change in the Region to further disrupt food systems. Indeed, most of the interviewed Elders from Fort William First Nation had experienced the loss of blueberry patches, partly due to resource development (Galway, Esquaega, & Jones-Casey, 2022). Climate change was a significant concern for the community, as described by the knowledge keepers, because of its contribution to the loss of livelihoods, medicines, foods, and connectedness to the land. Because of the Anishinaabe understanding that humans are part of the natural world, and kin to other creatures, the loss of interconnectedness to the lands would be a major loss to Anishinaabe identity and culture.

Red Rock First Nation is taking action to support food security/sovereignty by starting a butcher shop for the community (Turner, 2021). The butcher shop was created to increase access to wild game, and to host community gatherings to share food and knowledge about traditional food preparations and hide tanning. Tim Ruth, one of the project’s leads, explained “To have wild game at your table is a big part to get back to our traditions and have healthier eating.”

Biinjitiwaabik Zaaging Anishinaabek and several other First Nations in the Northern Superior Region – including Fort William First Nation, Namaygoosisagagun First Nation, Netmizaaggamig Nishnaabeg, and Biigtigong Nishnaabeg – have all begun community garden projects to support food security/sovereignty in their communities (Understanding Our Food Systems, 2020).

In Thunder Bay, the Indigenous Food Circle has worked with the district’s Health Unit and Lakehead University to develop and implement food sovereignty visions for 14 First Nations in the Thunder Bay area. The Indigenous Food Circle has begun to affect positive change for the food sovereignty of participating Anishinaabe First Nations; the collaboration between the district Health Unit and the First Nations has helped the Health Unit confront colonialism and support Indigenous-led strategies (Levkoe, Ray, & Mclaughlin, 2019).

As the most northern Region of Anishinabek Nation, the Northern Superior Region would be expected to experience the greatest impacts of climate change, since northern regions are warming at a faster rate than other parts of the world (IPCC, 2021). This vulnerability to warming has led to significant research on the impacts to Northern Indigenous communities. As a result, many Anishinaabe, particularly among the northern Anishinabek Nation and Nishnawbe Aski Nation member First Nations, have participated in studies on climate change. One prominent example is the “Up North on Climate: Climate Change Impact and Adaptation Study for the North of Ontario”, which involved the development of a “Fictional Example Community” report based on the Traditional Ecological Knowledge of Elders from over 60 partner communities (Up North on Climate, 2019). This report highlights key risks and adaption priorities to assist with adaptation planning in northern communities.

Northern Indigenous communities experience a cold climate, and have unique challenges related to climate change, such as winter road access. However, they can also provide more general insight on how climate change can impact Anishinaabe food systems. For instance, several northern Anishinaabe communities have documented changes to seasonal cycles, with important consequences for transportation and wildlife harvesting practices (Golden, Audet, & Smith, 2015). As fall changes to winter, ice ordinarily forms before the first snowfall, but as the climate warms, snow is often falling before ice is formed. The ice that forms now is less thick than in the past, which inhibits travel over ice for traditional on-the-land activities. Changes to freeze/thaw cycles were also reported and can be dangerous for travelers. Changes to seasonal and freeze/thaw cycles that impact ice and snow will likely have major impacts on winter hunting, trapping, and fishing activities in the more northerly Anishinabek Nation communities.

### *Interview and Survey Results*

Anishinaabe living in the Northern Superior Region of Anishinabek Nation have experienced significant changes over the years, which they believe are linked to climate change. Three Elders – one from Biigtigong Nishnaabeg, one from Biinjitiwaabik Zaaging Anishinaabek, and one from Red Rock Indian Band – shared the impacts of climate change that they have experienced during interviews with Anishinabek Nation staff.

One of the most striking changes in the Northern Superior Region described by Elders during the interviews was mild winters and the impacts this has on their way of life. Changes in winter conditions include a decrease in precipitation. The Elder of Biigtigong Nishnaabeg recalled back in 1991 when seven feet of snow fell in their community. In the past, it was typical for lots of snow to fall over the course of winter; however, recently snow only accumulates to around ankle height. Winter temperatures are less cold, and the Elder from Biinjitiwaabik Zaaging Anishinaabek described how unusually mild and short the past few winters have been as he is able to sit outside in January to make a fire, and that quickly after a cold snap in February spring arrives. The Elder from Red Rock Indian Band explained that the ice along the route that he frequently used for travel was no longer safe, and that he has fallen through the ice. This has caused food security issues for the Red Rock Elder as the ice is along his trapline.

Regarding summer, the Elders described temperatures being warmer than before, and an increase in wildfires. The smoke from the wildfires caused health issues in the communities for people who have asthma and prevented people from going outside. The heat and risk of fires prevented people in Biinjitiwaabik Zaaging Anishinaabek from having a sweat lodge due to health concerns with the extreme temperature and the increased risk of fire.

The Elders explained that these changes to the climate have impacted the plants and wildlife in their communities. One of these impacts is changes in species distribution, including the expansion of southern species to the North, or changes to seasonal movement. For example, there are now pelicans during the summer in Biinjitiwaabik Zaaging Anishinaabek, and racoons have appeared in the community for the first time. Smelts are another species that was introduced to the Region,

and they have become invasive in Lake Nipigon. Invasive fish species are a concern for the community, where fish is the main source of food. The Elder from Red Rock Indian Band also reported black necked swans and turkey vultures as new to the Region.

The Elder from Red Rock Indian Band has trapped all his life, and he has noticed changes in some species that are culturally important for Anishinaabe in the Northern Superior Region. For instance, the number of star-nosed shrew in the Region has diminished and could impact Anishinaabe trapping as it is a preferred food source for the marten. Lake trout have disappeared, possibly due to shallow water temperatures increasing too much. The Elder has also noticed that porcupines and blue jays are no longer in the Region. There appear to be changes to food plants as well, as the Elder noted that highbush cranberry plants no longer bear fruits, and that it was too hot this past year (2021-2022) for blueberries to grow.

The changes to species in the Region have impacts on other interconnected species across the ecosystem. The Elder from Biinjitiwaabik Zaaging Anishinaabek recounted how last summer (2021) was very dry, and blueberries were small and scarce. The bears rely on blueberries as a source of food, and that summer the bears were very underweight. The Elder anticipated that there will be few bear cubs the following spring.

The increased temperature appears to be changing the behaviour of animals in the summer according to the Elder from Biinjitiwaabik Zaaging Anishinaabek. He has seen moose and bears cooling off in the water near one another, which is unusual as the moose would typically run away from a bear. The Elder explained that it seems as though the animals have an understanding in the face of a warming climate. Changes to animal behaviour will likely impact how the ecosystem functions. Anishinaabe may be able to learn from how the animals are adapting to the changing climate, which is something that they have always done, particularly with regards to food. The Elder shared how Anishinaabe learned that sucker heads in the spring were an excellent source of nutrition by watching wolves eating them, years ago.

Elders described the connections between the changing climate and their traditional food systems.

The impacts of climate change are likely compounding pre-existing environmental challenges from development in the Northern Superior Region. The impacts from development may be from activities that occurred in the past, such as contamination of the water from the use of cyanide to extract gold around Biinjitiwaabik Zaaging Anishinaabek, which was linked to sickness, death, and premature births. There was also concern expressed by the Elders from Biinjitiwaabik Zaaging Anishinaabek and Red Rock Indian Band regarding the impacts of aerial spraying of herbicides, and the salt runoff from roads into the lake. The Biinjitiwaabik Zaaging Anishinaabek Elder has observed yellow spots on moose meat and fish, which he links to these environmental contaminants. The Red Rock Elder explained that in his community people no longer eat the organs of many animals, including moose, partridge, and rabbit, because they have become like “goo” with the spraying of herbicides. The contamination of water, the land, and living things places the traditional food systems in a vulnerable state in the face of climate change.

Despite the challenges faced by Anishinaabe in the Northern Superior Region, the Elders reported that they continue to eat wild food. The Elder from Biinjitiwaabik Zaaging Anishinaabek

emphasized the importance of eating wild food as part of Anishinaabe identity, and in preventing diseases like diabetes that have become common in Anishinaabe communities since colonization, owing to the prevalence and convenience of settler foods. The Elder remarked that people used to have longer lifespans, when they ate what the animals ate, and that with today's shorter lifespan traditional knowledge is lost faster.

### *Regional Differences in Interview and Survey Results*

Anishinabek Nation is divided into four strategic Regions to facilitate the provision of location-specific support to member First Nations. One aim of this study was to consider the Region-specific impacts of climate change, and how Anishinabek Nation should support member First Nations in addressing them, because the strategic Regions have unique challenges and climate experiences.

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**“This food has been in our DNA for thousands of years”**

– Biinjitiwaabik Zaaging Anishinaabek Elder

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We compared the Regions' challenges and needs based on the survey results and interviews. However, our analysis was limited owing to an uneven sample distribution and – for some Regions – small sample sizes. In particular, we only have information from one individual in the Southeast Region, two in the Northern Superior Region, and

five in the Southwest Region. The Lake Huron Region is well represented in this study with fifteen individuals providing insight.

One of the most apparent regional differences from the survey and interview results is that the food systems of Anishinaabe in the Southwest Region is significantly compromised by industrial and agricultural pollution, unlike the other Regions. Pollution is preventing Anishinaabe from eating wild food because it causes disease (e.g., growths on fish), damages gardens, and limits the transmission of traditional knowledge relating to local food systems. Water contamination was also more frequently reported by participants from the Southwest (three out of four Southwest Region participants reported contaminated water, compared to one out of twelve Lake Huron Region participants). Moreover, grocery stores tend to be more accessible for Anishinaabe communities in the Southwest Region due to the extensive human development, and Anishinaabe are resorting to the grocery store more and more. On the other hand, in other Anishinabek Nation Regions, particularly the Lake Huron and Northern Superior Regions, resorting to the grocery store is often not an option. The impact of pollution and the challenge with transmitting traditional knowledge makes the food systems more vulnerable to climate change.

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**“[We have] a false security in access to grocery stores [as] an urban Rez”**

– Aamjiwnaang First Nation Member

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In the Lake Huron Region, the changes in seasonality, such as later and shorter winters, and earlier springs, appears to be more apparent than in other Regions. Ten of the twelve survey respondents

reported later winters, whereas in the Southwest Region (including the individual from Walpole Island First Nation) only one out of five reported later winters. This difference may reflect the increased vulnerability to climate change in northern regions. It would be insightful to collect more survey results in Regions other than the Lake Huron Region to determine if Anishinaabe in the North are also experiencing more pronounced changes to seasonality.

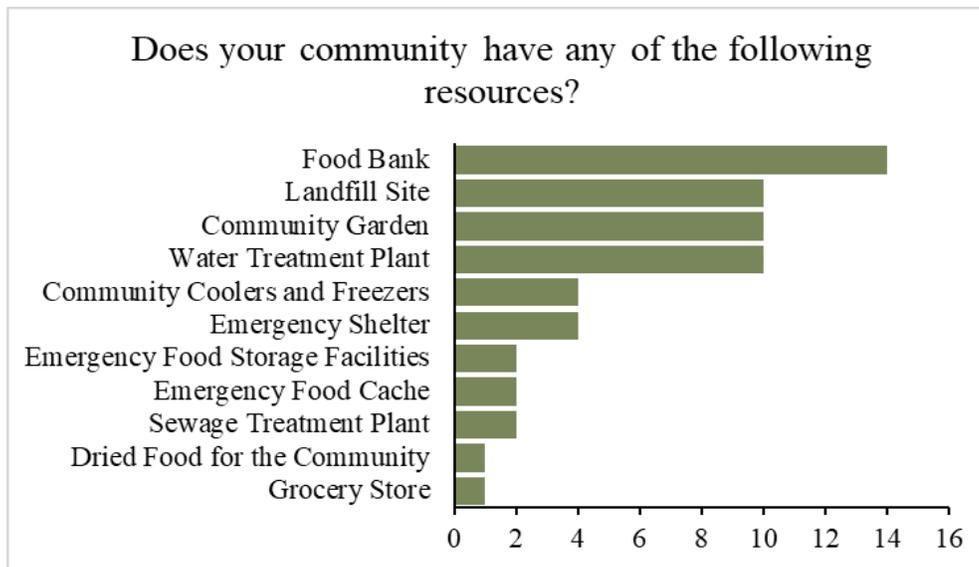
Increased temperature and dry weather appear to be having an impact on the ability for some communities in Anishinabek Nation to practice ceremony. In the northern regions where there are more wildfires, certain ceremonies and traditions have been put on hold. An Elder from Biinjitiwaabik Zaaging Anishinaabek recounted how their community could not have a sweat lodge or burn the sacred fire at a powwow because of heat and dry conditions. Three quarters (nine out of twelve) of the survey participants from the Lake Huron Region, reported that their ceremonies had not been impacted by climate change. Of the four survey participants located in or near the Southwest Region, two reported that ceremonies were impacted by climate change. These results suggest that in the warmest climate and in Regions where wildfires are more common, communities may be at a higher risk of climate change-induced changes to ceremony.

### **Current Climate Change Resources Across Anishinabek Nation**

To address and respond to climate change impacts on Anishinaabe food systems, members of Anishinabek Nation will need to be equipped with a variety of resources. In this study, we asked survey participants and interviewees how their communities respond to the impacts of climate change. This information will be useful for Anishinabek Nation in determining how it can best support member First Nations facing climate change impacts.

There are several First Nations across Anishinabek Nation that have invested in and developed strategies and infrastructure to address climate change. However, only two of the seventeen survey participants were aware of their communities (Nipissing and Aamjiwnaang First Nations) monitoring weather or other environmental parameters (e.g., water levels, water flow, ice movement, etc.). Six of the seventeen participants from Anishinabek Nation were not sure whether their communities carried out any monitoring and the remaining eight reported that no monitoring occurs in their community. Increasing community awareness of and participation in monitoring projects will help strengthen community support for climate change initiatives.

Some Anishinabek Nation member communities have put in place emergency measures for food shortages, which may be helpful for climate-related emergencies. Fourteen of the eighteen survey respondents reported that their First Nation has a community foodbank, ten reported that their community has a community garden, and ten reported that their community has a water treatment plant (Figure 7). However, there are few resources available, according to survey participants, to ensure a reliable supply of food, as only four respondents reported that their community has community coolers or freezers, one reported there was dried food for the community, and only one participant’s community had a grocery store. This suggests that these Anishinabek Nation communities may be highly vulnerable to climate change’s impacts on food availability.

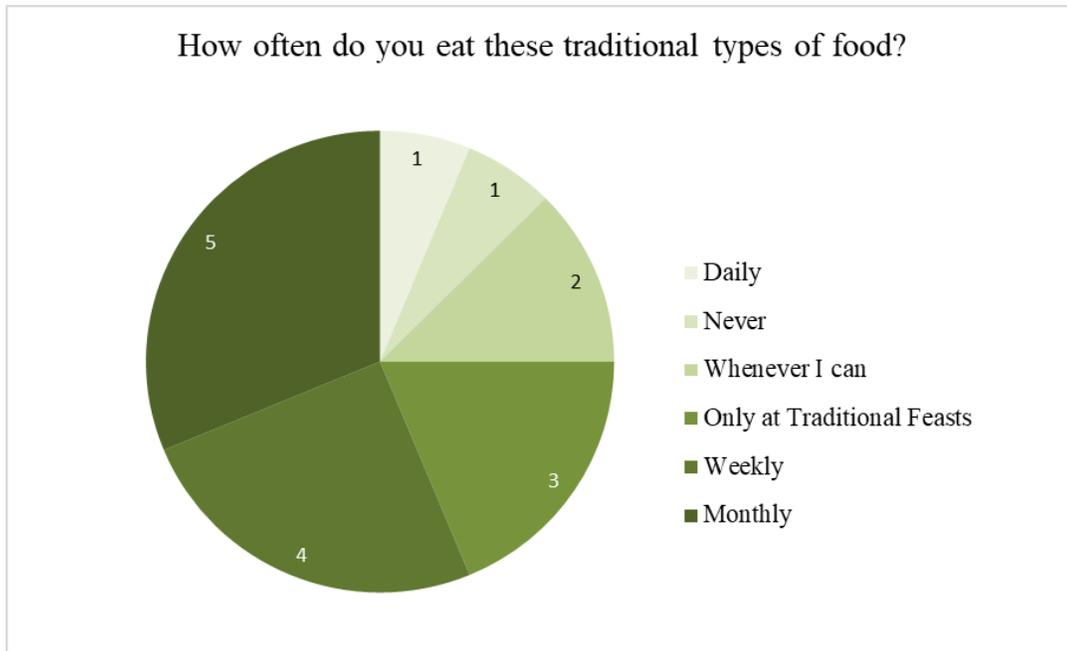


**Figure 7.** Resources available in First Nations to respond to food shortages and address health needs.

It is therefore important for Anishinabek Nation members to focus on developing and maintaining robust strategies for food sovereignty. Currently, most communities across Anishinabek Nation have few resources to support food sovereignty and to reinvigorate traditional food systems. Several of the survey participants highlighted that their community requires more capacity to organize community gardens, greenhouses, or environmental management strategies. There is potential across Anishinabek Nation to bolster food sovereignty and traditional food systems because there are many hunters/fishers/trappers and Elders who can contribute to and share knowledge about traditional food. Individual First Nations will require capacity support so their members can contribute their time to these initiatives.

## The Revitalization and Protection of Traditional Food Systems

Anishinaabe face many challenges when seeking to base their diets on traditional foods; however, almost every individual surveyed and interviewed for this project want to eat traditional foods every day if possible. Currently, few of the participants eat traditional food daily, with most having it monthly or weekly (Figure 8). The Elders who participated in interviews eat traditional foods regularly and it is an important part of their life.



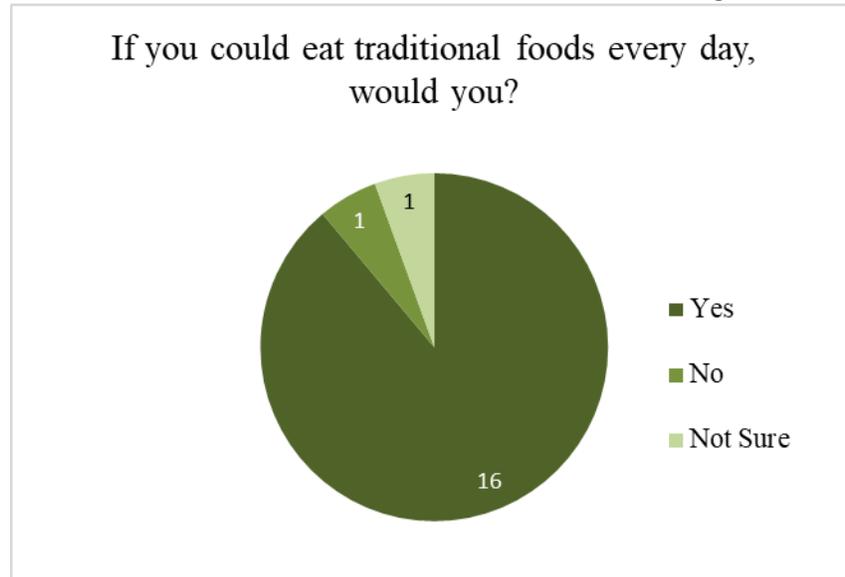
**Figure 8.** Frequency that survey participants eat traditional foods.

Protecting and revitalizing traditional food systems is important to Anishinaabe. Almost every survey participant reported that they would eat traditional food every day if possible (Figure 9). It will be important to implement strategies to ensure that Anishinaabe food systems continue in the face of climate change.

### *Solutions Proposed by Study Participants*

In the interviews and surveys, Anishinaabe offered recommendations for how their First Nations should address the impacts of climate change on traditional food systems.

The Anishinaabe who shared their opinions and knowledge for this project had several suggestions about how First Nations can work with federal and provincial governments to address climate change and its impacts on food sovereignty. The Elder from Biinjitiwaabik Zaaging Anishinaabek suggested that Anishinaabe need to monitor and have more dialogue and engagement with federal and provincial governments about proposed industrial initiatives. The Elder explained that Anishinaabe need to be included in these discussions right from the start.



**Figure 9.** Almost all survey participants want to eat traditional food daily.

The survey respondents echoed this suggestion and emphasized the need for leaders who put the land first; one participant suggested that a law should be developed on behalf of the land that requires accountability and action against those who harm the land. A survey participant from Aamjiwnaang First Nation would like First Nation leaders to work with federal and provincial governments on the development of

environmental standards for emissions and water quality. A member of Nipissing First Nation recommended that First Nations should work with provincial and federal governments on establishing First Nation led parks and protected regions.

Several of the survey participants believe that it is important that First Nation leadership advocate for Anishinaabe on the impacts of climate change. Raising awareness about how Anishinaabe life is impacted by climate change could help secure support from other governments and groups. Some participants suggest that such support should be used to hire youth to work on climate change strategies for the First Nations, and to hire climate change coordinators and food sovereignty coordinators for First Nation Bands.

A member of Nipissing First Nation suggested that Anishinabek Nation could develop a centre focused on climate change and food security. This participant explained that the Anishinaabe working for the centre would monitor environmental conditions, and develop strategies to address the impacts of the changing climate, including those on traditional foods.

Anishinaabe participants in another recent study suggested that traditional Indigenous ways of knowing need to be better integrated with Western science (Gallant, Bowles, Patterson, & Popp, 2020). They suggested that strong and respectful relationships should be built between those who carry out Western research and those who carry Indigenous knowledge.

An overwhelming number of survey participants believe that funding and education for climate change are what their communities need to properly address climate change and the impacts on food security. Elders who were interviewed also shared their concern regarding the transmission of knowledge. Lack of capacity is limiting the transmission of knowledge, and investment in education about climate change and traditional food systems is key for Anishinaabe to build resilience according to this project's participants.

Funding and education would support another suggestion made by participants, which is to carry out stewardship on the land, and live traditionally off the land. It is currently challenging for many Anishinaabe to carry out their roles as stewards of the land and to live off the land due to the financial pressures of settler society and the associated limitations for the transmission of traditional knowledge. Anishinaabe participants would like Anishinabek Nation to prioritize funding for initiatives and education in this area.

The Elder interviewed from Whitefish First Nation believes that addressing climate change and food security would be important for teaching and protecting Anishinaabemowin. Teaching the language should be a component of a climate change strategy, since according to this Elder, Anishinaabemowin is taught by carrying out actions, and protecting Anishinaabe food systems would allow for activity-based and land-based language learning.

Another strategy that can protect Anishinaabe food systems is for First Nations to organize the growing of food like they did in the past. The Elder from Wahnapiitae First Nation suggested that permaculture and community-managed food forests would offer food security, traditional foods, and protect against wildfires. The Elder from the Chippewas of the Thames First Nation would like to see more community gardens, and other traditional practices like smoking meat and canning food revitalized.

### ***Recommendations for Adaptation and Resilience-Building***

By examining common themes and regional/demographic differences from the literature and interview/survey results, it is possible to identify recommendations for further research and climate change adaptation or resilience-building. We have identified, for example, common themes of impacts on wildlife, water, weather, and culture, which could each benefit from:

- Strategies to better understand the impacts, e.g., through improved environmental monitoring and modelling and floodplain mapping;
- Strategies to promote adaptation, e.g., by supporting community garden or greenhouse projects, community butchers, and community freezers; and
- Strategies to build resilience, e.g., by supporting initiatives to document and share traditional knowledge and build on-the-land and water/ice skills.

We also identified some key differences between the four Regions, which could help to inform further research or develop Region-specific recommendations. These differences include:

- A greater concern in the southern Regions about how industrial pollution exacerbates the negative effects of climate change on food security/sovereignty, relative to the more rural northern Regions;
- A greater concern in the northern Regions about how the impacts of resource development activities, like forestry and mining, exacerbate the negative effects of climate change on food security/sovereignty, relative to the more urban southern Regions;
- A greater concern in the northern Regions and in island-based communities about deteriorating waterway and ice road conditions, for winter food and fuel transport and access to the land for harvesting, relative to the southern Regions or mainland-based communities;
- A greater potential for agricultural projects, as a form of adaptation or resilience-building, in the southern Regions relative to the northern Regions, owing to climate and soil condition differences; and
- A greater potential to implement on-the-land harvesting programs in the more northern Regions, relative to the southern Regions, as a means to secure wild foods for community members, owing to the relatively unfragmented condition of wildlife habitat and lower human population densities.
- A greater need for food programs tailored to urban First Nation people, in the southern Regions with more urbanized populations.

However, for all Regions, it will be important to support efforts to reconnect with or reinforce regionally-based traditional livelihoods and food systems, in a way that honours Treaty relationships and remains rooted in Anishinaabe culture, language, and practice. While climate change and human activities have undoubtedly had consequences on food security/sovereignty, they can be addressed by applying Anishinaabe traditional ecological knowledge or *Giikendaaswin* to understand and respond to change.

The results from the surveys demonstrate that Anishinaabe are often not fully informed about food resources available in their community. When asked whether hunters or fishermen sold their catch or meat to the community, survey respondents most often replied that they were not sure. Similarly, survey respondents were not aware of an annual hunt or fish camp that occurs in their community. It would be helpful for First Nations across Anishinabek Nation to improve the sharing of information related to food resources.

Similarly, Elders who were interviewed for this project were interested in sharing their knowledge about the local traditional food system with youth, but they noticed a lack of opportunities to do so. Anishinabek Nation members could support the transmission of this knowledge to support traditional food systems by providing support to Elders interested in teaching youth. This support could include assisting with funding, organizing, and managing Elder-youth programs.

Education focused on traditional knowledge, food systems, and climate change would be an essential component of any Anishinabek Nation climate change strategy. The most common recommendation from Anishinaabe participants was for improved education of the people. Supporting education will be an important aspect of adaptation and resilience-building for Anishinabek Nation communities.

## Conclusions

Anishinabek Nation community members hold a wealth of knowledge about climate change impacts on food security that can help inform regional approaches to adaptation and resilience-building. This knowledge is well-represented in the existing literature, as found by the literature review, but the interviews and surveys show that even more information can be documented and shared by engaging directly with knowledge-holders.

A significant body of literature exists about the impacts of climate change on food security/food sovereignty in Ontario First Nations and the Anishinabek Nation member First Nations. Many of the existing studies provide insight on key themes, which emerge for communities within all four of the Anishinabek Nation Regions. However, there is also evidence, from studies focusing on specific communities, of differences in the concerns and priorities between the Regions and demographic groups, like Elders, middle-aged adults, and youth. It will also be important to highlight the specific impacts on other groups, like family units, women, and traditional harvesters.

The knowledge shared in the interviews and surveys illustrate that the Regions have experienced climate change impacts differently and have responded differently in kind. While some commonalities exist, the personal experiences of each study participant are all unique, and help to shed light on the different ways that climate change can adversely affect food security in Anishinabek Nation communities.

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## **APPENDIX A: Survey questions and responses**

Anishinabe k Nation Region	First Nation	1. (A) In the past 3 years has your community experienced any of the following climate related events?								
		Flooding	Heat Waves	Ice Storms	Wind Storms	Tornadoes	Other Severe Storms	Mudslides	Drought or Dry Weather	Wildfires
Lake Huron	Aundeck Omni Kaning	Yes	No	No	No	No	No	No	Yes	No
Near Southwest Region	Walpole Island First Nation	Yes	No	No	No	Yes	No	No	No	No
Lake Huron	Nipissing	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Southwest	Aamjiwnaang	Yes	No	No	Yes	No	Yes	No	No	No
Southwest	Aamjiwnaang	No	Yes	No	Yes	No	No	No	No	No
Southwest	Chippewas of the Thames	No	No	No	No	No	No	No	No	No
Lake Huron	Mississaugi	Yes	Yes	Yes	Yes	No	No	No	No	No
Lake Huron	Wahnapiatae	Yes	Yes	No	Yes	No	No	No	No	Yes
Southwest	Aamjiwnaang	No	No	No	Yes	No	No	No	Yes	No
Lake Huron	Serpent River	No	No	No	No	No	No	No	No	No
Lake Huron	Nipissing	No	No	No	Yes	No	No	No	No	No
Lake Huron	Sheshegwaning	No	No	No	Yes	No	No	No	No	No
Lake Huron	Moose Deer Point	Yes	Yes	No	Yes	No	No	No	Yes	No
Lake Huron	Ojibways of Garden River	Yes	No	Yes	Yes	No	No	No	No	No
Lake Huron	Aundeck Omni Kaning	No	No	No	No	No	No	No	No	No
Lake Huron	Ojibways of Garden River	No	Yes	No	No	No	No	No	Yes	No
Lake Huron	Wiikwemkoon g Unceded Territory	No	No	No	No	No	No	No	No	No
Southeast	Curve Lake	No	Yes	No	Yes	No	No	No	Yes	No

Anishinabek Nation Region	First Nation	1. (B) In the past 3 years has your community experienced any of the following climate related events?							
		Changes rainfall amounts	in Changes snowfall amounts	Colder Winters	Earlier Winters	Later Winters	Earlier Springs	Later Springs	Water Contamination
Lake Huron	Aundeck Omni Kaning	No	No	No	No	No	No	No	No
Near Southwest Region	Walpole Island First Nation	Yes	No	No	No	No	No	No	No
Lake Huron	Nipissing	Yes	Yes	No	No	Yes	Yes	No	No
Southwest	Aamjiwnaang	No	No	No	No	No	No	No	No
Southwest	Aamjiwnaang	Yes	Yes	No	No	Yes	Yes	No	Yes
Southwest	Chippewas of the Thames	No	No	Yes	No	No	No	No	Yes
Lake Huron	Mississaugi	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Lake Huron	Wahnapiatae	Yes	Yes	No	No	Yes	No	No	No
Southwest	Aamjiwnaang	No	Yes	No	No	No	Yes	No	Yes
Lake Huron	Serpent River	Yes	Yes	No	No	Yes	Yes	No	No
Lake Huron	Nipissing	Yes	No	No	No	Yes	No	No	No
Lake Huron	Sheshegwaning	Yes	Yes	Yes	No	Yes	Yes	No	No
Lake Huron	Moose Deer Point	Yes	Yes	No	No	Yes	Yes	No	No
Lake Huron	Ojibways of Garden River	Yes	Yes	No	No	Yes	Yes	No	No
Lake Huron	Aundeck Omni Kaning	Yes	Yes	No	No	Yes	Yes	No	Yes
Lake Huron	Ojibways of Garden River	Yes	Yes	No	Yes	Yes	Yes	Yes	No
Lake Huron	Wiikwemkoong Unceded Territory	No	No	No	No	No	Yes	No	No
Southeast	Curve Lake	Yes	Yes	No	No	No	Yes	No	Yes

Anishinabek Nation Region	First Nation	2. Have you observed any of the following species new to your community?					
		Plants	Animals	Birds	Insects	Invasive Species	Other (please specify)
Lake Huron	Aundeck Omni Kaning	No	No	No	No	Yes	
Near Southwest Region	Walpole Island First Nation	No	No	No	No	Yes	Decline in insects and native plant species
Lake Huron	Nipissing	Yes	Yes	No	Yes	No	Settler Governments
Southwest	Aamjiwnaang	No	Yes	No	Yes	No	
Southwest	Aamjiwnaang	No	Yes	No	No	Yes	
Southwest	Chippewas of the Thames	No	No	No	No	No	
Lake Huron	Mississauga	Yes	Yes	Yes	Yes	Yes	
Lake Huron	Wahnapiatae	Yes	No	No	Yes	Yes	
Southwest	Aamjiwnaang	No	No	No	No	Yes	
Lake Huron	Serpent River	No	No	No	No	No	
Lake Huron	Nipissing	No	No	No	No	No	
Lake Huron	Shesheganing	No	No	No	No	No	Unsure
Lake Huron	Moose Deer Point	No	Yes	No	No	Yes	
Lake Huron	Ojibways of Garden River	Yes	Yes	No	Yes	Yes	
Lake Huron	Aundeck Omni Kaning	No	No	No	No	No	
Lake Huron	Ojibways of Garden River	No	No	No	Yes	No	
Lake Huron	Wiikwemkoong Unceded Territory	No	No	No	No	No	
Southeast	Curve Lake	No	No	No	No	Yes	

Anishinabek Nation Region	First Nation	3. Has there been a change in the animal migration or distribution in your community?	4. Has climate change affected any of the following cultural practices in your community or family?					
			Berry Picking	Fishing	Hunting	Medicine Picking	Ceremonies	Other (please specify)
Lake Huron	Aundeck Omni Kaning	Not Sure	Yes	Yes	No	Yes	No	No
Near Southwest Region	Walpole Island First Nation	Yes	Yes	Yes	Yes	Yes	Yes	No
Lake Huron	Nipissing	Yes	Yes	Yes	Yes	Yes	Yes	No
Southwest	Aamjiwnaang	Yes	No	No	No	No	No	No
Southwest	Aamjiwnaang	Yes	Yes	Yes	No	Yes	Yes	No
Southwest	Chippewas of the Thames	Not Sure	No	No	Yes	No	No	No
Lake Huron	Mississauga	Not Sure	Yes	Yes	Yes	Yes	Yes	No
Lake Huron	Wahnapiatae	Yes	Yes	Yes	Yes	No	No	No
Southwest	Aamjiwnaang	Yes	No	Yes	No	No	No	No
Lake Huron	Serpent River	Not Sure	Yes	No	No	No	No	Maple sap harvesting
Lake Huron	Nipissing	Not Sure	No	No	Yes	No	Yes	No
Lake Huron	Sheshegwaning	Yes	No	No	No	No	No	No
Lake Huron	Moose Deer Point	Not Sure	Yes	Yes	No	No	No	No
Lake Huron	Ojibways of Garden River	Yes	Yes	Yes	Yes	Yes	No	No
Lake Huron	Aundeck Omni Kaning	Not Sure	Yes	Yes	Yes	No	No	No
Lake Huron	Ojibways of Garden River	Yes	Yes	Yes	Yes	Yes	No	No
Lake Huron	Wiikwemkoong Unceded Territory	Not Sure	No	No	No	No	No	Not sure
Southeast	Curve Lake	Yes	No	Yes	Yes	No	No	No

Anishinabek Nation Region	First Nation	5. What tools or resources would best assist your community in responding to climate change?	6. Does your community currently monitor weather or environmental parameters?
Lake Huron	Aundeck Omni Kaning	Training for equipment use	Not Sure
Near Southwest Region	Walpole Island First Nation	Financial help is always appreciated. Training on how to combat climate changes with the community. FYI: Listing our community about would be helpful. Walpole Island First Nation Bkejwanong Territory	Yes
Lake Huron	Nipissing	Non-proposal-based funding for communities, paid by the Indigenous Services Canada	Yes
Southwest	Aamjiwnaang	Shoreline protection	Yes
Southwest	Aamjiwnaang	Leadership on climate change research and food sovereignty practices	Yes
Southwest	Chippewas of the Thames	No	Not Sure
Lake Huron	Mississaugi	Education, planning should we face climate related hardships	Not Sure
Lake Huron	Wahnapiatae	More collaborative research, more safety equipment, training and resources	No
Southwest	Aamjiwnaang	We have a great environment program; however, being surrounded by 70 + refineries is overall detrimental to the Aki/mother earth. Raising the bar and having the government lower emission standard from the petrochemical refineries has been an uphill battle since they arrived in our territory over 6 decades ago.	No
Lake Huron	Serpent River	Not sure	Not Sure
Lake Huron	Nipissing	Education, emergency preparedness, serious planning and action around food sovereignty	Not Sure
Lake Huron	Sheshegwaning	Ways we can reduce our footprint	No
Lake Huron	Moose Deer Point	Asset management tools; training GIS mapping; emergency planning	No
Lake Huron	Ojibways of Garden River	Having access to funding for a Climate Change Coordinator and Food Sovereignty Coordinator for the GRFN Lands & Resources Department.	No
Lake Huron	Aundeck Omni Kaning	Already answered	No
Lake Huron	Ojibways of Garden River	Money, money, money to educate our people and develop solutions by the people	No
Lake Huron	Wiikwemkoong Unceded Territory	Build more greenhouses	Not Sure
Southeast	Curve Lake	Information or assistance with food security and food sovereignty methods.	No

Anishinabek Nation Region	First Nation	<b>7. How does climate change affect our responsibilities and role as stewards of the land?</b>
Lake Huron	Aundeck Omni Kaning	It affects our ability to exert food autonomy through sustainable hunting, foraging, and cultivating practices. Pollution that is produced from large scale resource extraction and agricultural monocropping is negatively impacting our climate on a large scale.
Near Southwest Region	Walpole Island First Nation	It increasingly makes it more difficult to be good stewards of the land when it is changing so rapidly. We are battling flooding and invasive species.
Lake Huron	Nipissing	Too many changes, little capacity to monitor them all
Southwest	Aamjiwnaang	Increasing observation, new ideas & planning response to curb destruction by individual community members, stop unfettered so called Economic development/ environmental destruction, prohibit clear cutting, cleanup junk piles, introduce bylaws to protect natural areas and untouched archaeology from ATVs running everywhere, junk piles, old car & tire yards
Southwest	Aamjiwnaang	I think climate change affects our responsibilities and role as stewards of the land by placing a more urgency to be aware of the land, how it's being affected, and eventually adapted along with the land the effects of climate change
Southwest	Chippewas of the Thames	No
Lake Huron	Mississaugi	We need to focus on educating to reduce effects of climate change
Lake Huron	Wahnapiatae	Our responsibilities have always been the same - to be stewards of the land and water - question in always capacity and resources ... and funding
Southwest	Aamjiwnaang	Voicing our opinions to all government representatives as much as possible will be beneficial. Also, doing our part is key, taking only what we need from the land, conserving Nibi, replenishing what is provided i.e., planting gardens etc.
Lake Huron	Serpent River	Not sure
Lake Huron	Nipissing	No
Lake Huron	Shesheganing	It means that we aren't doing our best, I think many people have given up their fight towards climate change due to large corporations. We need to see people fighting and easy ways we can implement the fight into our daily lives.
Lake Huron	Moose Deer Point	harder to understand and respond as change is unpredictable
Lake Huron	Ojibways of Garden River	Climate change brings many changes with it and each change is complex and very difficult to deal with. An example of this would be the warming climate is driving deer further North into moose habitat. Deer are bringing diseases that are transmittable to moose.
Lake Huron	Aundeck Omni Kaning	No
Lake Huron	Ojibways of Garden River	Humans are the cause of the climate crisis. We are ignoring our responsibilities to the lands and waters.
Lake Huron	Wiikwemkoong Unceded Territory	Our ways of watching the birds, animals, plants and fish
Southeast	Curve Lake	It is becoming more challenging to harvest due to animal migration and changes in weather/water levels. In Curve Lake the water levels are controlled by Parks Canada along the Trent Severn waterway.

Anishinabek Nation Region	First Nation	8. What actions can be taken from a personal perspective to protect our land?
Lake Huron	Aundeck Omni Kaning	Educate community members to respect and manage our lands more sustainably to preserve our gifts, seven generations into the future. Restore and preserve waterways, swamps, and endangered species. Conduct environmental research prior to infrastructure development to protect natural habitats.
Near Southwest Region	Walpole Island First Nation	Planting native species that help combat excessive water and that help bring in more pollinators, combined with actively going out and pulling/cutting invasive species.
Lake Huron	Nipissing	More funds for real long-term positions
Southwest	Aamjiwnaang	Personal perspective? Not sure what you're getting at here
Southwest	Aamjiwnaang	Being aware of our water and food intake, where it's coming from and being aware of what's happening to the water in other surrounding and distance communities. Being aware of our own waste management, how we can try to be zero waste as much as possible and learning more about and sharing to others our learning. Additionally, being aware of our own consumer habits, supporting local or Indigenous businesses, not being wasteful or greedy when taking of the land, and advocating whenever possible about policies and laws that are affecting the land, which ultimately affects all of us.
Southwest	Chippewas of the Thames	No
Lake Huron	Mississauga	Recycling, permaculture, sustainable harvesting
Lake Huron	Wahnapiatae	Reduce consumption & unnecessary travel, educate friends and family on climate change impacts locally to globally
Southwest	Aamjiwnaang	Raise awareness (share knowledge)
Lake Huron	Serpent River	Not sure
Lake Huron	Nipissing	No
Lake Huron	Sheshegwaning	I think again, limiting your footprint. Example, we have a dump here, we should have a fully functional garbage system. The neighbouring community burns their garbage. Neither and good for the environment, eco systems, or the atmosphere. Even something that seems small can make a big difference, such as at least one house recycling instead of throwing all waste. Composting options as well.
Lake Huron	Moose Deer Point	Use less fossil fuels - less driving, more walking; reduces garbage going to landfill
Lake Huron	Ojibways of Garden River	Increase one's own food sovereignty and personally grow, hunt, fish, and trap your own food.
Lake Huron	Aundeck Omni Kaning	Already answered.
Lake Huron	Ojibways of Garden River	Consumerism - stop buying stuff that isn't from our territory or from Turtle Island. We don't NEED gold, silver, a new cell phone every 2 years, etc. Get educated about the climate crisis.
Lake Huron	Wiikwemkoong Unceded Territory	Living off the land
Southeast	Curve Lake	Educational resources on how we can better protect our land in a contemporary society. Encourage members to do their part through information sessions.

Anishinabek Nation Region	First Nation	<b>9. What actions can be taken from a family and community perspective to protect our land?</b>
Lake Huron	Aundeck Omni Kaning	Educate within the home. Reduce, reuse and recycle. Community gardening, hunting, fishing and natural habitat restoration projects.
Near Southwest Region	Walpole Island First Nation	Same as above. Including raising awareness.
Lake Huron	Nipissing	More engagement on policies and generating said policies from FN communities. I.E. environmental management planning
Southwest	Aamjiwnaang	Nothing further to add here
Southwest	Aamjiwnaang	Starting to learn more about the plants, animals, insects, and species our lands as a family or community, re-connecting to the land by spending more time outdoors, and learning more about climate change and ways to reduce carbon emissions, food and water waste as a family or community.
Southwest	Chippewas of the Thames	No
Lake Huron	Mississaugi	Recycling, education, permaculture approach to growing food
Lake Huron	Wahnapiatae	Set up and implement effective waste diversion programs and partners, protect local watercourse buffers and biodiversity, volunteers, educate
Southwest	Aamjiwnaang	In my opinion, every day should be earth day.
Lake Huron	Serpent River	Not sure. awareness.
Lake Huron	Nipissing	No
Lake Huron	Sheshegwaning	I'll say again that implementing at the very least, garbage systems to promote clean and uninterrupted eco systems.
Lake Huron	Moose Deer Point	car pool, encourage better waste management, education and awareness raising
Lake Huron	Ojibways of Garden River	Develop ways and incentives to use less fossil fuels, use less plastics, create community-driven food sustainability programs, educate communities on how to live a more sustainable life so our people can lead by example of how to take care of our environment.
Lake Huron	Aundeck Omni Kaning	Already answered
Lake Huron	Ojibways of Garden River	This is what the money would be for - to develop a community plan, to do a documentary in our community about the climate crisis.
Lake Huron	Wiikwemkoong Unceded Territory	Living off the land
Southeast	Curve Lake	Invest in more land to preserve and protect

Anishinabek Nation Region	First Nation	10. What actions can be taken from a Nation perspective to protect our land?
Lake Huron	Aundeck Omni Kaning	Inspire youth to become future stewards of the land. Fund education and community projects working towards environmental sustainability development.
Near Southwest Region	Walpole Island First Nation	Practicing what we preach.
Lake Huron	Nipissing	Establishing a Centre to monitor effects from the 39 first nations. A center of excellence for environment and stewardship, non-for-profits created by Indigenous.
Southwest	Aamjiwnaang	As above
Southwest	Aamjiwnaang	Drafting and enacting policies and procedures that better protect the land. More action and accountability needs to be made for Nation to Nations
Southwest	Chippewas of the Thames	No
Lake Huron	Mississaugi	Sustainable harvesting practices
Lake Huron	Wahnapiatae	Honour the Treaties
Southwest	Aamjiwnaang	*Raising awareness, working together and sharing information.
Lake Huron	Serpent River	Not sure
Lake Huron	Nipissing	No
Lake Huron	Sheshegwaning	This is a tricky one, I think large scale we all need to unlearn everything colonization taught us. That money comes first and environment comes last when in fact it should be the opposite. Environment over money always. It just takes open mindedness and a willing to implement change into your daily or even weekly routines.
Lake Huron	Moose Deer Point	education and awareness; try to develop public transit options
Lake Huron	Ojibways of Garden River	Create awareness of issues and draft meaningful policies to address climate change issues. Hire Youth and fund lands departments with Climate Change Coordinators and Food Sovereignty Coordinators.
Lake Huron	Aundeck Omni Kaning	No
Lake Huron	Ojibways of Garden River	Political pressure on governments and industry. They are the biggest culprits in the climate crisis. They must take action Now.
Lake Huron	Wiikwemkoong Unceded Territory	Living off the land
Southeast	Curve Lake	See above.

Anishinabek Nation Region	First Nation	11. What actions can be taken from a political perspective to protect our land?
Lake Huron	Aundeck Omni Kaning	Protect our water. Improve waste management. Ban single use plastic everything! The list can go on...
Near Southwest Region	Walpole Island First Nation	Listen to Indigenous peoples on how to care and protect the land instead of trying to force their views and rules on us, because we all know how well their systems work...
Lake Huron	Nipissing	Working with First Nations to establish Parks/Preserves that are dictated by the First Nations in the Treaty Area and not by Crown entities.
Southwest	Aamjiwnaang	No
Southwest	Aamjiwnaang	Though we live a neo-liberal capitalistic society, more leaders are needed in roles of authority who put the land first as it Nourishes and sustains each of us, not matter our political beliefs. A law on behalf of the land needs to be made to protect it, and real accountability and action for those who seek to harm the land
Southwest	Chippewas of the Thames	No
Lake Huron	Mississauga	Protection of lands, wetlands, reduce urbanization
Lake Huron	Wahnapiatae	Walk the talk
Southwest	Aamjiwnaang	To have our leaders join the Ontario and Provincial government to work on various standards (emission, water quality etc.)
Lake Huron	Serpent River	Not sure
Lake Huron	Nipissing	No
Lake Huron	Sheshegwaning	Politically, I would say protests, but people have been protesting for decades. Greed is what needs to be stopped. How do we do that? I'm not too sure at the moment.
Lake Huron	Moose Deer Point	pressure to access funding
Lake Huron	Ojibways of Garden River	No
Lake Huron	Aundeck Omni Kaning	No
Lake Huron	Ojibways of Garden River	Support the grass root peoples in their efforts when demonstrating against industry and governments.
Lake Huron	Wiikwemkoong Unceded Territory	Living off the land to understand why they need to be more attention and solutions and actions taken
Southeast	Curve Lake	Encouraging environmental stewardship and the significant impacts of climate change if we don't change some of our methods or styles of living.

Anishinabek Nation Region	First Nation	12. From your memories of childhood, how has our climate changed?
Lake Huron	Aundeck Omni Kaning	Weather patterns are quite different.
Near Southwest Region	Walpole Island First Nation	It has changed drastically, sometimes I look around and it feels like I don't recognize it anymore.
Lake Huron	Nipissing	Falls has become warm. Winters are less cold, and spring warm up is fast.
Southwest	Aamjiwnaang	The air is so very dirty Now. In the 70s we didn't have to clean the outside windows every week. We can no longer eat the fish from the lake or the river. Net fishers started seeing fish showing up with tumors and other gross deformities in 1990s. The air stinks. One can hardly see the stars at night, due to the air and light pollution. The shoreline is washing away and the house, items on the shelves and light fixtures shake and rattle every day Now when a truck goes the down the road or a large ship passes in the river. The yard is sinking, and cracks are appearing in the driveway. Cracks are appearing and widening all over the house, especially along the ceiling, windows, and doors. These changes started about 10 years ago and they are increasing every year. Trees planted along the river road in the late 70s are Now inches from the crest of the riverbank. The shoreline was repaired a couple times since the 60s, but it seems to have its passed its' tipping point the last couple years.
Southwest	Aamjiwnaang	I remember way more snow and longer winters. I remember usually always having large amounts of snow at Christmastime, and so much snow that I could build huge snow forts as tall as their garage in my grandparents' backyard. I don't think they even get that much snow Now for a number of past years. The heat also seems to last longer later in the year, as I didn't really remember being warm outside early October.
Southwest	Chippewas of the Thames	No
Lake Huron	Mississauga	Winter is later, summers warmer
Lake Huron	Wahnapiatae	Much shorter and warmer winters; more drought, forest fires, and fire bans; change in fish and plant species and water levels; globally just more extreme weather of all kinds all the time
Southwest	Aamjiwnaang	We don't have the same amount of snow.
Lake Huron	Serpent River	Indicated above. weather changes
Lake Huron	Nipissing	No
Lake Huron	Sheshegwaning	Less snow is the main thing I've seen, as well as higher water levels. Not to mention the countless changes I've seen on social media in other countries.
Lake Huron	Moose Deer Point	Winters are different - variable amounts of snow, rapid changes in temperature, thunderstorms in winter generally much windier
Lake Huron	Ojibways of Garden River	Less ice and shorter winters.
Lake Huron	Aundeck Omni Kaning	No
Lake Huron	Ojibways of Garden River	Severely
Lake Huron	Wiikwemkoong Unceded Territory	I'm not sure seems the same to me
Southeast	Curve Lake	winters are warmer and not as harsh. summers are longer and hotter, there is less rain.

Anishinabe k Nation Region	First Nation	13. Does your community have any of the following resources?										
		Food Bank	Grocery Store	Water Treatment Plant	Sewage Treatment Plant	Community Garden	Landfill Site	Emergency Food Cache	Dried Food for the Community	Emergency Food Storage	Emergency Shelter	Community Coolers & Freezers
Lake Huron	Aundeck Omni Kaning	No	No	Yes	No	Yes	Yes	No	No	No	Yes	No
Near Southwest Region	Walpole Island First Nation	Yes	No	Yes	No	No	Yes	No	No	No	No	No
Lake Huron	Nipissing	Yes	No	Yes	Yes	No	Yes	No	No	No	No	Yes
Southwest	Aamjiwnaang	Yes	No	No	No	No	No	No	No	No	No	No
Southwest	Aamjiwnaang	Yes	No	No	No	Yes	No	No	No	No	No	No
Southwest	Chippewas of the Thames	Yes	No	No	No	Yes	No	No	No	Yes	Yes	Yes
Lake Huron	Mississauga	Yes	No	No	No	Yes	Yes	No	No	No	No	No
Lake Huron	Wahnapiatae	No	No	No	No	No	Yes	No	No	No	No	No
Southwest	Aamjiwnaang	Yes	No	No	No	No	No	No	No	No	No	No
Lake Huron	Serpent River	Yes	No	No	No	No	No	No	No	No	No	No
Lake Huron	Nipissing	Yes	No	Yes	No	Yes	Yes	No	No	No	No	No
Lake Huron	Sheshegwaning	Yes	No	Yes	No	Yes	Yes	No	No	No	No	Yes
Lake Huron	Moose Deer Point	No	No	Yes	No	No	No	No	No	No	Yes	No
Lake Huron	Ojibways of Garden River	Yes	No	Yes	No	Yes	Yes	No	No	No	No	No
Lake Huron	Aundeck Omni Kaning	No	No	No	No	No	No	No	No	No	No	No
Lake Huron	Ojibways of Garden River	Yes	No	Yes	No	Yes	Yes	No	No	No	No	No
Lake Huron	Wiikwemkoong Unceded Territory	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Southeast	Curve Lake	Yes	No	Yes	No	Yes	No	Yes	No	No	No	No

Anishinabek Nation Region	First Nation	14. What traditional food sources does your community have access to on reserve or within traditional territory?										
		Moose	Deer	Fish	Berries	Rabbit	Wild Rice	Duck	Goose	Partridge	Maple Syrup	Other (please specify)
Lake Huron	Aundeck Omni Kaning	No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Bever
Near Southwest Region	Walpole Island First Nation	No	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	
Lake Huron	Nipissing	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Southwest	Aamjiwnaang	No	No	No	No	No	No	No	No	No	Yes	Deer of unknown health status
Southwest	Aamjiwnaang	No	Yes	No	Yes	No	No	Yes	No	No	Yes	
Southwest	Chippewas of the Thames	No	Yes	Yes	No	Yes	No	No	No	No	No	
Lake Huron	Mississauga	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	
Lake Huron	Wahnapiatae	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	
Southwest	Aamjiwnaang	No	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes	
Lake Huron	Serpent River	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	
Lake Huron	Nipissing	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	
Lake Huron	Sheshegwaning	No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Note though, not many of us are able to hunt, fish or trap. I think there needs to be less gatekeeping of culture between families and more community sharing of knowledge.
Lake Huron	Moose Deer Point	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No	
Lake Huron	Ojibways of Garden River	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	
Lake Huron	Aundeck Omni Kaning	No	No	No	No	No	No	No	No	No	No	
Lake Huron	Ojibways of Garden River	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	
Lake Huron	Wiikwemkoong Unceded Territory	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Wild edibles
Southeast	Curve Lake	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	

Anishinabek Nation Region	First Nation	15. How often do you eat these traditional types of food?	Other (please specify)	16. If you could eat traditional foods every day, would you?
Lake Huron	Aundeck Omni Kaning	Weekly		Yes
Near Southwest Region	Walpole Island First Nation	Only at Traditional Feasts		Yes
Lake Huron	Nipissing	Monthly		Yes
Southwest	Aamjiwnaang	Weekly		Yes
Southwest	Aamjiwnaang	Never		Yes
Southwest	Chippewas of the Thames	Only at Traditional Feasts		No
Lake Huron	Mississaugi	Weekly		Yes
Lake Huron	Wahnapiatae	Monthly		Yes
Southwest	Aamjiwnaang	Other (please specify)	when I can.	Yes
Lake Huron	Serpent River	Other (please specify)	whenever available	Yes
Lake Huron	Nipissing	Monthly		Yes
Lake Huron	Sheshegwaning	Other (please specify)	Whenever I can get my hands on them. I order wild rice from Alberta. It should be easier to find locally. I want to support Indigenous owned business.	Yes
Lake Huron	Moose Deer Point	Only at Traditional Feasts		Not Sure
Lake Huron	Ojibways of Garden River	Daily		Yes
Lake Huron	Aundeck Omni Kaning	No answer		No answer
Lake Huron	Ojibways of Garden River	Monthly		Yes
Lake Huron	Wiikwemkoong Unceded Territory	Weekly		Yes
Southeast	Curve Lake	Monthly		Yes

Anishinabek Nation Region	First Nation	17. How many hunters are there in your community?	18. How many fishermen are there in your community?	19. Do the hunters and fishermen sell their catch to your community?	20. Does your community have an annual hunt or fishing camp?	21. How many large game are usually harvested each year at the annual hunt?
Lake Huron	Aundeck Omni Kaning	12 to 24	Under 12	Yes	No	Under 12
Near Southwest Region	Walpole Island First Nation	Not Sure	Not Sure	Yes	No	None / Not Applicable
Lake Huron	Nipissing	Over 50	Over 50	Not Sure	No	None / Not Applicable
Southwest	Aamjiwnaang	None	Not Sure	Yes	No	None / Not Applicable
Southwest	Aamjiwnaang	12 to 24	25 to 50	Not Sure	Yes	Under 12
Southwest	Chippewas of the Thames	Not Sure	Over 50	Yes	Not Sure	None / Not Applicable
Lake Huron	Mississaugi	25 to 50	25 to 50	Not Sure	Yes	Under 12
Lake Huron	Wahnapiatae	12 to 24	Over 50	Not Sure	No	None / Not Applicable
Southwest	Aamjiwnaang	25 to 50	25 to 50	No	No	None / Not Applicable
Lake Huron	Serpent River	Not Sure	Not Sure	Not Sure	Not Sure	None / Not Applicable
Lake Huron	Nipissing	12 to 24	Not Sure	Yes	No	25 or more
Lake Huron	Sheshegwaning	Under 12	Under 12	No	No	None / Not Applicable
Lake Huron	Moose Deer Point	Under 12	12 to 24	No	Yes	Under 12
Lake Huron	Ojibways of Garden River	Over 50	Over 50	Not Sure	No	None / Not Applicable
Lake Huron	Aundeck Omni Kaning	No Answer				
Lake Huron	Ojibways of Garden River	Not Sure	Not Sure	Not Sure	No	None / Not Applicable
Lake Huron	Wiikwemkoong Unceded Territory	Over 50	Over 50	Yes	Yes	25 or more
Southeast	Curve Lake	25 to 50	25 to 50	Not Sure	No	Under 12

Anishinabek Nation Region	First Nation	22. How much land is suitable for farming in your community?	23. What types of farmers or food producers do you have in your community?	24. Are there traditional rice harvesters in your community?	25. How many pounds of wild rice do your traditional harvesters gather for your community?
Lake Huron	Aundeck Omni Kaning	Over 100 Acres	Maple syrup, gardeners, commercial fishermen	No	None / Not Applicable
Near Southwest Region	Walpole Island First Nation	51 to 100 Acres	We have one main business that farms corn and soybeans for feed and fuel.	No	None / Not Applicable
Lake Huron	Nipissing	51 to 100 Acres	Some newly started businesses <10 years	Not Sure	None / Not Applicable
Southwest	Aamjiwnaang		Individual gardeners, one or two maple sugar makers	No	None / Not Applicable
Southwest	Aamjiwnaang	Under 5 Acres	mostly traditional plants and medicines, and some garden producers around the community	Not Sure	None / Not Applicable
Southwest	Chippewas of the Thames			No	None / Not Applicable
Lake Huron	Mississaugi	51 to 100 Acres	None	No	None / Not Applicable
Lake Huron	Wahnapiatae	None		Not Sure	None / Not Applicable
Southwest	Aamjiwnaang	None	0	No	None / Not Applicable
Lake Huron	Serpent River	None	Not sure	No	None / Not Applicable
Lake Huron	Nipissing	Over 100 Acres	Maple syrup, chickens, honey, vegetable gardening to some extent	No	None / Not Applicable

Lake Huron	Sheshegwaning		We have an aquaculture (fish farm) project. This fish goes down south and not much access to community members. We also have a hydroponic system that grows leafy greens and some herbs, as well as a farmers market bringing local farmers' produce to the community. Would be great if we could be self-sufficient and supply the farmers' market.	No	None / Not Applicable
Lake Huron	Moose Deer Point	None	hobby gardening	No	None / Not Applicable
Lake Huron	Ojibways of Garden River	11 to 50 Acres	No commercial producers of food. We do have many family gardens and apple trees.	No	None / Not Applicable
Lake Huron	Aundeck Omni Kaning	No answer	No answer	No answer	No answer
Lake Huron	Ojibways of Garden River	None	Farms are not the solution to the climate crisis. But many have their own vegetable gardens	Not Sure	None / Not Applicable
Lake Huron	Wiikwemkoon g Unceded Territory	Over 100 Acres	Beef and little farm gardens	Not Sure	None / Not Applicable
Southeast	Curve Lake	51 to 100 Acres	community garden	Yes	Over 50

Anishinabek Nation Region	First Nation	26. In the past 3 years, has your community experienced any food shortages?	27. How did your community respond to past food shortages?	28. What steps has your community taken to address a potential or existing food shortage?	29. What resources or tools does your community require to enhance your food self-sufficiency?
Lake Huron	Aundeck Omni Kaning	No	NA	Stockpiling and distribution, reliance on community organizations	More local food producers. A community food hub and butchery or a abattoir.
Near Southwest Region	Walpole Island First Nation	Yes	Not sure but would guess the asked the government for help.	We are in the works of trying to get the first of what we are hoping to be a series of Gutter Connect Greenhouses.	Funding and Training.
Lake Huron	Nipissing	Not Sure		None	Funding and for someone to take on this portfolio.
Southwest	Aamjiwnaang	Not Sure			Training in all aspects of gardening, instruction on soil enrichment, distribution of compost, community hot house, community Mandaumin farm. Instruction on soil enrichment. A couple years ago they came by with 'topsoil' however it was 3/4 clay pieces that could not be broken down and included plastics, glass, puppy poo. It was a gift and I'm grateful but I had to move it all behind the garage by hand.
Southwest	Aamjiwnaang	Not Sure	I'm not sure how they responded in the past	I am not certain	Education, leaders, funding, and guidance
Southwest	Chippewas of the Thames	No		Delivered water	
Lake Huron	Mississauga	Yes	Members rely on food pantry to fill the need	Started community garden, plan to build growing dome	Community garden, education
Lake Huron	Wahnapiatae	Not Sure	Giveaways, community	Attempting to install greenhouses, failing at	Motivation

			feasts, good food boxes	keeping the existing one producing	
Southwest	Aamjiwnaang	No	Unknown N/A	We have a food bank.	Unsure
Lake Huron	Serpent River	Not Sure	N/A	N/A	Not sure
Lake Huron	Nipissing	Yes	Food Bank		Education around implementation of greenhouse crops
Lake Huron	Sheshegwaning	Not Sure	I'm not too sure	It seems like not much. It's something on the radar Now, we are looking into agriculture ideas. There is a lot of work to be done.	Knowledge, unlearning, relearning, storage, tradition, stories, canning, preserving and more.
Lake Huron	Moose Deer Point	No	Don't know	Bulk purchasing from local stores and markets purchasing more fridges and freezers	Refrigerated truck
Lake Huron	Ojibways of Garden River	Not Sure			We need to hire a food sovereignty coordinator for our community.
Lake Huron	Aundeck Omni Kaning				
Lake Huron	Ojibways of Garden River	Not Sure	Not sure	Not sure	Not sure
Lake Huron	Wiikwemkoong Unceded Territory	Not Sure	Not sure	Food bank	Seed banks in all households. Just like a mail file cabinet like your important paperwork. Seeds are your insurance policy
Southeast	Curve Lake	Yes	Nonperishable food cache, food hamper delivery to community	Building a cache of non-perishable food storage, seeking more funding, and promoting the food bank	Funding and education

Anishinabek Region	Nation	First Nation	30. What unique problems does your community face around food security?
Lake Huron		Aundeck Omni Kaning	One local grocery store, 5kms outside of the community. High prices.
Near Southwest Region		Walpole Island First Nation	We are a 15-minute drive to the nearest town, which is a huge issue for those that do not have transportation. Also, it is not easy to get affordable healthy food.
Lake Huron		Nipissing	We need to become a player in the agri-food sector. No farms currently exist, only sustenance harvest.
Southwest		Aamjiwnaang	A false security in access to grocery stores... we're an urban Rez.
Southwest		Aamjiwnaang	Being in chemical valley, pollution is a huge problem that my community faces
Southwest		Chippewas of the Thames	
Lake Huron		Mississaugi	Access to affordable foods
Lake Huron		Wahnapiatae	Lack of motivation, community engagement
Southwest		Aamjiwnaang	N/A we help each other
Lake Huron		Serpent River	Not sure
Lake Huron		Nipissing	Lack of awareness, loss of traditional skills & practices
Lake Huron		Sheshegwaning	We are semi remote, so we have a convenience store but the grocery store is a 45 min drive away. This means access to food is a journey and gas costs money as well. It would be great to have our own little food system over here.
Lake Huron		Moose Deer Point	If the one road in is closed, no way out to get supplies
Lake Huron		Ojibways of Garden River	
Lake Huron		Aundeck Omni Kaning	
Lake Huron		Ojibways of Garden River	We can't harvest as much traditional foods
Lake Huron		Wiikwemkoong Unceded Territory	I would think more money for food and lower prices from local grocery stores
Southeast		Curve Lake	Lack of storage both dry and cold. lack capacity and funding for community garden resources and workers

## APPENDIX B: Detailed notes from interviews with Elders

### Interview 1:

March 11, 2022

#### Questions:

1. Have you noticed any changes with the climate since you were a child?
  - Seems like it didn't change until the last 10-12 years.
  - Every day I watch sunrise and sunset. 10 years ago I noticed the sun coming up in a different spot. Assumed that the earth shifted or tilted.
  - Back in the day you could predict the weather. Right after Halloween you could predict within a week you would get snow. We used to get a lot of snow.
  - We were always out in the snow when young. Got a lot warmer in the last 10 or 12 years
  - [Climate] is affecting everything. We are a bit lucky because we have more bush and the weather kind of goes around us, unlike the land off reserve which has been cleared for farms.
  - In my early teens, there was so much snow that deer declined until there was no deer. Probably 2-3 years before they rebounded back. When I was a kid you could drink water from the springs, we used to gather water from the springs. You could also eat snow. There is so much pollution in the air now we can't do this
  - The weather that has changed a lot and comes from the south.
  - A lot of our people don't go out in the bush Like we used to when we were children. Kids don't play outside in the winter now.
  - Human nature changed for us
  - Happy that Anishinabek Nation is working on environmental stuff because this is an area I can see to work on to preserve our territories
  - I was lucky, being a kid back in the day, everybody, uncles, grandfathers, fathers, would take you out to the bush and they'd show you the plants to eat, which ones to avoid, which animals, etc.
  - I was raised on wild food. Then hamburger came.
  - I live 4-5miles from the 401. In 1985 when I moved there you couldn't hear the 401. Since then, they have cleared the majority of the bush (between me and the 401) and now I get the sounds from 401 all the time.
2. Have you observed any new species of plants, animals, birds or insects that you think might be linked to climate change?
  - Yes, all of the above.
  - I have noticed the insects are changing in the last little while. Small black and red bug, showed up 3-4 years ago. Hangs around the house (not a ladybug).
  - Two years ago there was no wild birds that are normally around

- Probably 10-15 years ago possums came up from the south. They were never around before.
  - We have people seeing bear scat- bears are moving south. [there are also] Cougar tracks and wolf tracks.
  - The beavers moved back down
3. Have you noticed any changes in any traditional activities that you might be conducting like ice fishing or other types of fishing. Has climate change changed the way you conduct your traditional activities?
- There are not as many people fishing. There used to be people galore along the river. Snowing and blowing and raining we would always be down there fishing no matter what kind of weather.
  - Back in the day we used to eat every type of fish. Now people just eat pickerel.
  - A lot of people won't eat fish from the river because they say it's too polluted.
  - When I was a kid, we would stay in the bush all day. We naturally learned to be safe, and the medicines and the animals there to cook. We used to cook right at the river. We wouldn't need a frying pan. Just crack it in clay. My brother would pack the whole fishing clay and throw it in the coals and you'd always have something eat down the river.
    - The clay was the cooking vessel. Pack the fish in clay, have a good fire, add the coals, and throw the whole clay in the fire. When it got hard and packed you would peel the skin off and the meat was ready to eat.
4. Have you noticed any new plants or trees in the bush?
- I haven't bene out for a while, but not really, but there probably is.
5. What about things like berry picking, hunting, fishing, has climate change affected those?
- Yes, I think a great deal
  - Down my road, there used to be a lot of berries and the birds they carry the berries.
  - But you notice with our gardens that sometimes you have a good garden, then it will rain and suddenly, the plants are wilted. Pollution is in the rain, I think.
  - Last year blight came and killed all the cucumber plants.
  - A lot of us are starting to talk about building greenhouses to protect our foods. This would protect from the rain because it is contaminated.
  - We have a boil water advisory on now. When we were kids, we could go to a spring and drink water or drink it out of a stream. There is a lot of agricultural pollution now. I have noticed trees falling over (mostly off reserve). You will see them where the roots are hanging out. They will just fall over like there's no root system. Nearly every bush you go by is like that.
  - Around here we are surrounded by farms, and we got a small little bush. White ash fell first, after other trees randomly laying down. In the swamps you see them falling probably because the chemicals graduate towards the swamp.
  - There's a shortage of rabbits (waabooz). You'd see probably 10 rabbits from the corner to my place, but now you barely see one. Just in the last 4 years. We got a big population of coyotes now, so rabbits are probably part of their diet.

6. Does your family eat as much wild food as you used to? How much wild food would you eat in like a week or in a month?
  - I do.
  - The guys bring me moose, deer, fish. I eat fish all the time. Full time in the summertime I eat the greens, and I usually grow a garden. We pick berries- but not so much anymore.
7. Have you noticed a change in the quality of the wild foods that you are eating?
  - You can't really tell.
  - There is a brain disease that deer can get (brain worm)
  - The fish we softer than about 10 years ago. It is softer to the touch. Used to be more firm.
  - Last year I caught a fish and it had a different kind of scale.
8. Have you noticed a change in the rivers and the lakes and the waterways in terms of water level changes or freezing and thawing cycles, the colour of the water or anything with the water level changes or freeze-thaw cycles?
  - Yeah, the water in the Thames River has been up all year. Two years it was the shallowest I have ever seen. This past year it is the highest I have ever seen it. When the river comes up like that it washes the banks away so you have to be careful going down the river
  - We noticed this years ago when we were kids and his brother noticed the ground almost caved in.
  - Floods change the banks.
  - Ice dam down the road. When the ice goes down the river changes a lot- lots of erosion when the river goes from low to high.
9. Does the Thames River freeze over?
  - Now and again. Probably twice - it hasn't been as cold as it used to be.
  - Back in the day it used to freeze over for a longer period. It was colder back when I was a kid. It's not as cold and it doesn't stay as long. Less freezing over.
  - Four years ago, I could feel [a change] it sitting in the sun. I don't know if it's the ozone, but it was like an instant heat. It was like a microwave was turned on.
  - In southern Ontario it's humid all the time but it's like someone turned the switch on the heat.
10. Are there more drier or drought periods compared to what there used to be?
  - 3-4 years ago it was really dry.
11. Have you noticed any changes in winds or rainstorm patterns or on air quality?
  - Yes, all of the above
  - Rain comes down like a monsoon now. It will come straight down like somebody is throwing a pail down. It will knock your plants over and it's intense.
  - I used to show people the wild plants, but I have quit showing them because of the farmland and I don't know what's in the wild plants down by the river so I try to stay away from them.
  - We have wild onions. I used to eat clover.

- There's plantain, and we use plantain for greens, or we used it if you have a cut or abrasion, mash it up and put it on there to draw it out and take the pain away.
  - When you have an earthquake or volcano in the middle of the ocean if the chemicals that come out of there if they come our way through the atmosphere. You can't really predict what's going to be in the rain nowadays.
12. You think that the plants that you used to collect, you're concerned about the quality of them now, not only because of the water quality, but also because of the agricultural contaminants?
- Yes
13. What about fires, have you noticed any more fires than you would have years ago?
- We have fire bugs that go through the bush and set fires
  - Our people long ago they knew when to set a fire. We used to use them to clear as well. It was a specific temperature that we used to set the fires. When I first built my house, I lit some dry grass and I burn bush down. We used to light them in the evening when the temperature changed and there was a little bit more dampness - it would burn lower. You would never start a fire at about 2pm when temperature is at its highest peak and it's a little dry. Sometimes we'd start them in the morning when there was still dew. We lost a lot of that knowledge about when to start a fire. Used the burns to rejuvenate the bush.
  - There used to be a lot of farms back about 3-4 generations ago. Our farmer people had orchards. Those trees moved around, and now the orchards are gone about 150 years ago or so. We used to go and gather in the winter certain apples. Like the russet (apple), it would be a hard apple, and it would fall off the tree and be covered by snow, but we could still go grab it. It would be like eating a popsicle.
  - We've noticed the nuts have bugs in them- the hickory nuts- around 3-4 years ago. Small little holes in them. We used to gather those all the time. Walnuts, hickory nuts, we've got hazelnuts, but you've got to compete with the squirrels and the deer to get those and it's just like our berries. Birds move in and clean them out quick.
  - We had hickory nuts. Hickory can grow all through, but they built a road through, and we noticed there aren't as many. Hickory is what we used a lot for high heat cooking and smoking our food way back in the day.
  - We used to be able to survive when nobody else would. We used to eat beans. We used to eat wild food, we'd gather the hickory nuts and walnuts every fall and those would keep us going through the winter and now they're fading away too.
  - There were walnut trees in their area.
  - We noticed the holes in the hickory nuts. They may have come from the south because the wind comes from the south now, whereas it used to come from the west.
  - You used to be able to predict the weather. I could watch the weather come across (from the west). It was predictable back then. Now the weather comes from the south, southwest, and it curls around.

- Back in 1994 (approximately) the south got snow the east coast and states got snow, we got the tail end. You could probably google when that storm came through. First noticed the change back in that time.
14. What actions could Anishinabek Nation take to protect the land from climate change?
- What you are doing right now, finding things out from someone who has been out in the bush.
  - For Anishinaabe ppl, the earth is our mother. And as a woman you provide, you build a human being, and that is what the earth does. When we pass on, we go back to the earth. And that's why we respect the Earth, because it's a part of us. That's what most people don't understand.
  - It has been a couple 100 years where our people didn't teach us the respect for a tree when we cut it put the tobacco down or when we go fishing put the tobacco down. So, it's our mother. If we don't protect her, we're all gone. Whatever you see, comes from our mother, metal ductwork comes from a rock, and this coffee cup comes from a tree. If we don't protect it the next generation isn't going to see it, and we aren't going to be able to survive. It provides us food. We are talking about food, but in this short time, since the covid came along, the food has tripled (in price). The cost of living has gone up so much in the last two years. How are people going to adapt to that? I think with the environment, this is the only way we can get the word out. Not just us Anishinaabe.
  - We have to teach the non-Indigenous people that the earth is what you must take care of and they should be providing jobs planting trees. Because the trees are providing all the nutrients that go to the oceans and protect the water. Without water you're not surviving. I've been a water drinker right since I was a kid. I used to carry a bottle of water around with me when I'd go to the bush, or I'd go to where the springs are, but you don't know what's going to come out of the springs now cause they're mass producing.
  - There are not really any farmers here now, they just rent their land out for cash crops- it's not for sustenance. We are surrounded by non-Indigenous farmers. They've been doing it as long as I can remember, polluting the land. And it flows into the watershed - the Thames is a watershed area. A lot of our leadership has assimilated into that world. And they don't like to hear things like that, so that's why I share this about the environment.
  - Maybe it will get out there that this is our Mother that we are walking on.
15. Maybe protecting some land on reserve for ppl to grow gardens and grow their own food would be helpful too?
- Yes. That's what we have been doing for the last little bit. I've always been a gardener and getting older so I better make a raised bed.
  - When I was a kid everybody had a garden and everybody canned their own food. There wasn't as much social services help back then. You don't really have to ration food now. You can go to the store. But back in the day everybody grew their food and they'd have root cellars.

- We also smoked fish. I am going to make a smoker this year. We are relearning to do our stuff that we forgot. Like smoking fish, smoking meat. We have a young man who did jerky out of venison. Some of the younger guys are getting back at it but very few. Not many (youth are doing this sort of thing).
  - Back when I was kid a lot of the hunters would bring the older ppl eat. But they lots them teachings now.
16. Is there a community hunt camp or anything like this
- No
17. Are there any other land-based type programs- teach ppl about the different types of plants etc.
- I don't really know, but that was the responsibility of our fathers and uncles when I learned.
  - We got dependent on the system. Example: when we want to go fishing we ask the band for rods. Back in the day we were taught to prepare. We lost that because we became dependent. We don't have the older guys teaching anymore.
  - My dad taught me always go see the Elders. Since I was about 8 years old and asked them questions. One of the traits that we lost was going to ask and Elder. I spent a lot of time growing up and a lot of the ppl I hang with today went and visited and asked those Elders about this and that. Plants, life, etc. we lost this.
  - I noticed that there was a generation that just pretended they knew instead of going to ask. We lost a lot of cultural stuff that was natural to us.
  - It's the same with cooking. You spend your time teach your little ones to cook and be safe around the stove.
  - My Dad used to tell me: the garden is a place to go for peace in there. He got me to like gardening. My Dad told me when I was twelve: I don't have to worry about you. You go out there in the garden you know how to provide for the family. You know how to bring in wood, water. All that stuff that my dad taught. He'd always be naming stuff off in the bush, naming al the plants and I probably forgot half what he taught me already.
  - The main thing is if we don't start looking after our mother, the younger generation isn't going to survive. What makes you as a person is what you put past your lips. The food. I am older now, doctor told me I've slowed down. I realized I'm eating a lot of starches (potato, pasta, rice) a lot of this stuff is not good for you when you're older. I am going through a stage where IM trying to find more greens. I am so used to eating goulash growing up, then people started eating hamburger, potatoes, and stuff you got from the store.
18. That about it for my questions. The only other one is about language.
- I will talk to my sister in the language, but it's just passing it on, and we've forgotten all about it. It's like we grew up in a vacuum. When I grew up there was no cultural teachings, in the 70s when AIM went to Lakota that's when everybody kind of woke up and started looking at their culture now. That rejuvenated our culture. A lot of ppl seen what was happening there.

- There were a lot of traditional people. One was old guy (unnamed) he used to do Native crafts, carving. He would go gather orange berries. They used to sell those in the market, beadwork, elm bark canoes. A lot of our people back when I was little were good at carving. Carve axe handles etc. wouldn't go out to buy anything.
- The garden is the one of the main things that I am going to share. There are young ppl who want to talk to me too. Grow your own gardens, grow your own food. Because they are depending on the stores. You can go to the store in a catastrophe, and it will be empty. When you don't have food you start going into a panic
- One of the things that I noticed most of our people, 20-30 years ago you would say make a fire. And they would be running around looking for paper because they weren't taught how to make a fire without paper. Our people never had paper back in the day. They knew how to carry their own tinder and make a fire from scratch.
- Cooking is a good activity for learning. I was thinking about doing a thing at my house and showing my nephews and nieces how to make a fire and how to cook on a fire. I think up north they have a fire making thing where you see who can make their water boil first
- You got to start the teachings when they are young. Most of the ppl depend on the band office and they are held back.
- Residential school has an impact on it too A lot of us are lucky to be still living today to pass the teachings on.
- Springtime is a good time to go out in the bush and learn about the waters.
- One thing I am showing the young people is where the springs are in case we do run out of water. The ones far away from the fields. Because we need water. It gives us life. Everything comes from the mother. This is why I put my tobacco down: the Earth is our mother.
- I don't know whether we are too late or not. Hopefully the younger generation can enjoy, but they can if they take care of her. And we teach those ones out there (non-Indigenous) . Have to pass on those teachings. They are going to steal them anyways.

**Interview 2:**

March 23, 2022 2:30 – 3:30 pm via Zoom

**Questions:**

1. Have you seen any new species of plants, animals, birds, or insects that you think may be linked to climate change in your area?
  - A few years ago, I saw a meadowlark that was brown with beige spots on it that was not seen here before.
  - Bald eagles are coming back. Golden eagles were wiped out by DDT years ago, there are now 4 to 5 nests in our area now.
  - The Ash borer attacks the white ash and oak leaves and spreads to other trees. It eats all the leaves off in certain areas about 10 years since they have returned.
  
2. Can you tell me about your farm?
  - Born on the reserve and we had cattle, pigs, beef, chicken, and we grew potatoes, blackberry, strawberries, raspberries, and we lived well. We had no telephone, hydro, running water – but we had a well, we also had to cut the wood for heating, where I had to go in the bush when I was about 12. My father was a farmer, hunter, and a fisherman. We grew our corn, wheat and other stuff. We had to shock the corn and have a harvester come in to harvest the wheat and blow the straw in a big pile, we did not have the bales at that time. The hardest job was bagging the loose hay with a fork and put in a bundle; take it up to the track and trace it up to about 20 feet, hit a track and roll it back to the barn. My job was to dump it and bring it back to put more hay in there, it was a hard way to farm back then.
  
3. Do you still farm now?
  - No, I cash crop for corn and soybean (land rental) - no hard labor. Everything is modern, it takes couple of days all is planted – later harvested and combine the wheat and they chuck the corn out. It is fast: about 20 acres in 2 hours. I have about 250 acres with 100 of timber (harvest for firewood) the dry oak tops sell good. They will probably grow soybeans this year due to price increase from the COVID.
  - The local farmers down the road rent our land out by the acre, due to them having hard clay land. There is different prices depending on the quality of the land. The Holland marsh or St Mary's for growing vegetables, you get \$400 per acre. Around here on the flats it is about \$260.00 per acre, and the regular land here is about \$150.00- 200,00. Farmers will have to pay more money. Wheat has gone up to \$7.00 per bushel now. You can set your own prices.
  
4. If you are a fisherman or a hunter, have you had to change any of your traditional activities as a result of climate change?
  - We can no longer drink or swim in the Thames River. In the 1950's we were able to drink the water. The principal of Mount Elgin School told us that we could no longer

swim there due to pollution. This was the first time we knew there was pollution in 1954. No one can take a chance on eating the pickerel or any fish there now. Twenty years ago, we used to have pickerel fish fry's. Now we have to fish at Kettle Point on Lake Huron.

5. Have you noticed changes in the rain or snow compared to 20 years ago?
  - In 1941 there was about 10 feet of snow. My uncles went to get the doctor by sleigh and horse to aid my mom in delivery of me. Nowadays there is no longer 10 feet of snow. There seems to be more rain and milder weather.
6. Have you noticed anything in terms of the taste, appearance or quality of wild foods that you might be eating?
  - We used to eat black squirrel, venison, wild turkeys, and the deer (they drink water from polluted river) so I don't eat any of these wild foods anymore. I eat a lot of white corn made for corn soup, rather than meats. Fishing is only recreation.
7. Do you do any medicine or berry picking?
  - I pick my medicines every spring from the ravine for my chest colds.
  - I pick berries, strawberries grow wild, black caps are picked for canning – similar to black berries. We used to have elderberries here and I don't see them anymore. The wild plums and wild apples are hard to find. We never had coyotes here, but they are here now.
  - When I cut wood, the deer are curious and will walk towards me.
8. Have you noticed any changes with the waterways such as the temperature, freezing or thawing cycles, any water level changes, compared to what it used to be?
  - It changed about 15 few years ago. We used to have a good water table. Our offices used to run off the wells, but they dried up. Now we are hooked up to Chippewas of the Thames. The ground otters dried up because there wasn't enough rain and it fills up the swamps and it goes through the aquifers under the river, so this is a change there.
  - The aquifers are coming back. I think the Chippewas of the Thames will encounter difficulties because of the aquifers because of the wells they have down there and are at their limit now because of the water supply. They have been on the boil water advisory for months and they are trying to figure it out. They had been running short of water.
9. Have you seen any changes in the place or times of fish spawning?
  - The walley come up about March 15 and April 15 is when they come up and depends on the water level. Salmon comes up in the spring sometimes in the Thames. There is a lot of carp there too from the London area.
10. Has there been any changes over the years, with the amounts of fish that you have seen spawning?
  - It has decreased. According to Moravian Town, as they used to net a lot of fish. There used to be pike, small mouth bass, pickerel, suckers, cat fish, and muskies. We have a lot

of pike come up in the creeks and up to 3 feet long. Fishing used to be good, but now it's dangerous to consume and has changed our lifestyle. With COVID now, we are going back to the old ways of traditional cooking.

11. Have you seen any changes with the migration of birds, or the movement of animals on the land?
  - They have been the same this year. Robins are healthy and back in February and on time. The redwing blackbirds and the \_\_\_ are back. There was less birds at the feeder this year, less cardinals now. There are less winter birds and the spring birds are healthy.
  
12. Have the summers changed compared to years ago (hotter, wetter, dryer, or drought)?
  - It seems to be hotter for a day or so, spotty. More storms, tornadoes and winds now.
  - The winds go in a circle like a tornado; it used to either come from a direction and straight across. The weather reporter is not always right due to fast changes.
  
13. Is the air quality the same or different than it used to be?
  - Sarnia known as chemical valley. How much of the pollution gets here.
  - In Six Nations when you park your car the soot builds up on it. Six Nations is 300 km from Sarnia, but they have Hamilton factories there. There are girls born in Sarnia, no boys.
  
14. Have you had many wildfires in your area?
  - 25 years ago we had wildfires that burnt the roots and the trees
  - There is wildfires in B.C. and the states. We probably get the pollution from that. The moose, bear, wolves, and coyotes are looking for new habitat and moving this way.
  
15. What about your cultural experiences, what actions you think that we can take to help protect the land. Whether it be at a personal, community, national, or political level. What actions do you think the Anishinabek Nation could take to help with climate change?
  - Anishinabek Nation Grand Council Chief should issue statements to create awareness.
  
16. How can we better create awareness around climate change and education?
  - Create awareness in the education system.
  - The greed takes over when it comes to pipelines and no regard for the environment.
  
17. Do you think that climate change has affected First Nations languages in any way?
  - COVID has set us back from our history and language classes for the past two years.
  - There is an increase in the traditional funerals with more of the language, and more people and children are going towards the culture and tradition here.
  - I see more advocacy in bringing back the language and culture in the schools.

18. Does your family have an emergency plan – for any occurrences that comes forth?

- A community plan is in place, we would gather at the community centre.

19. Does the community have a community garden?

- We had one in the recent past. No one wanted to work the garden, but we had a good 3 acres.
- They are thinking of a garden once again. I am a gardener, and others are as well individually.
- Increase in gardeners

20. Is there a library, daycare, or schools?

- No library
- Yes, there is a daycare
- There is a post secondary school called Anishinabek Education Institute

21. Work ethics

- I see the older generation who are good workers; the younger ones are on their phones and don't work like us
- Depends where you live will determine the length of life (high polluted areas)

22. Is there any other comments that you want to add about food security?

- Climate change is very bad and I don't know how they are going to control that.
- The forest fires out west are uncontrollable, and the pollution has doubled.
- The volcanoes are dangerous.
- Go back to canning and growing your own gardens. Educate about the canning system.

**Interview 3:**

May 2, 2022 10:00 a.m. – 11:00 p.m. via Zoom

**Questions:**

1. What changes have you seen with the climate since you were young compared to what things are like now?
  - Early 70's we moved in camps early March with good weather and trapping with muskrat, beaver, otter and mink. Last 10 years the spring was late in coming with strong winds quite often. It's been 35 years since last trapped, due to the weather and strong winds, not many have gone out.
  - Extreme temperatures from winter straight to summer weather, spring is less present, and affects the food security of trapping and fishing.
  - Spring pickerel season you could only go out one night, with the rest of the time is too windy.
  - Summer birds stay year round in the past 3-4 years now, less migration, about 30 miles south.
  - Last year, we had a killing frost in June that put out the gardens with everything freezing.
  
2. Have you observed any new species of plants, animals, birds or insects that you think may have been linked to climate change?
  - Emerald ash borer is the worst one right now; has invaded lots of trees and killed off most of the white ash trees here.
  - Gypsy moth came through and stripped off everything and mostly the oaks (defoliation)
  - Our wild rice beds are being destroyed by the overpopulation of Canada geese, they pull out the plants or clip them off steady in the summer with some of the beds totally destroyed.
  - Other invasive species is the starry stonewort it is an algae in the waterways and difficult to get through; frag mites has taken over on the edges of ponds/lakes;
  
3. Have you had to change any of your travel methods when conducting traditional activities such as fishing and hunting because of climate change?
  - The spring trapping last few years, we couldn't go anywhere due to the bad weather and winds
  - Spring seems to be non existent
  
4. Have you noticed changes in the amount of rain or snow?
  - Less snow, normal rains, with dry months in July and August with drought conditions is concerning
  
5. Has climate change affected the traditional activities, fishing, hunting, or berry picking?

- It has affected trapping, muskrat trapping
  - Deer population is good
  - Berry picking – there is not much left for berry picking, they go to the commercial farms
  - Traditional medicines – unsure if anyone is doing this anymore.
6. Have you noticed changes in taste/appearance or quality of the wild foods that you are eating?
- We are keeping watch on the deer population and the diseases we heard of.
  - The deer and most animals seem to be okay, fish is okay, everything here is edible still.
7. Have you noticed any changes in the places or times the fish spawning?
- Yes, people are altering the shore lines and the fish don't come in there anymore
  - Fish go in the gaps where there is some room, but the new mansions and cottagers harden up the shoreline and disrupt the fish spawn.
8. Have you noticed any changes in the air quality?
- You could see the big brown dome of air pollution over Toronto, have not noticed here.
9. Have you noticed any traditional routes changing because of unsafe ice in winter or low water in summer?
- The ice comes in about one month later, end of January
  - Ice thickness is okay and stays a bit later too.
10. Has your family had changes in your amounts of eating patterns of wild foods.
- It has been less lately, due to weather changes there is less harvest as well as the shore lines
  - Starts off good, within one hour the wind picks up and is too rough for a canoe on the Rice lake which is 26 miles long and a mile or two wide, winds make it very wavy.
11. When you do trapping, do you eat the meat?
- We do save the whole muskrat and beaver for consumption.
  - We have 2 or 3 meals per week of wild foods: deer, muskrat, beaver, fish, and wild rice
12. How did the pandemic affect your ability to access grocery stores and anything like the local foods in the area?
- Longer line ups
  - There was enough foods stocked in shelves

13. Any changes to the wild fires in your territory – size, time of year and how close they are to community?
  - We have prescribed burns in different areas
  - Bush fires here are not a big problem
14. How do you think climate change affects your responsibilities and role as stewards of the land?
  - Unable to get out like I used to, weather related.
  - The climate seems to be more extreme
15. What actions do you think we can take to protect our land from climate change?
  - A global issue, I think we are so far gone now and I do not think that there will be a difference
  - Time will tell and I do not believe that humans can turn this around, the extreme fires are disastrous and once the tundra thaws out this will be a big contributor to greenhouse gas
16. How can we best create awareness and education about climate change at the AN?
  - Keep everything running efficiently with small engines and vehicles
  - Keep monitoring the waters and the pollution created there
17. Do you have a family emergency plan (contacts, medications, home base)?
  - Our community centre is available for members
  - We have generators and enough food and hotel rooms if required
18. Does the Alderville First Nation have a land use plan, and is there a food bank?
  - They are developing one now, newly hired employee
  - Yes, there is a food bank here.
19. Is there any land claims pending?
  - Not that I am aware of, to the east of us there may be a land claim or compensated for land that was sold off and became provincial land
20. Does anyone have livestock?
  - One person has horses and no one here that is raising cattle
  - One person may have cattle, but mostly horses
  - A lot of our land is rented out for corn and soybeans
  - Shades of Gray: raise rabbits at the east end of the reserve
21. In terms of food stores and coffee shops
  - There is a coffee shop and drive through, Medicine Healing House is a drive through

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- Trading Post has miscellaneous items
- Butter tart empire bakery and Dream Catcher Convenience and End of the Trail
- Alderville Indian Crafts sells a bit of wild rice based on supply harvest.

**Interview 4:**

December 10, 2021 11:00 – 12:00 pm via Zoom

**Questions:**

1. Tell me about yourself and your experience on the land.
  - My experience with the land was summed up in the youtube video that I sent to you. The topics and issues were around “Idle No More” that inspired me to find out more about what is going on, not with just legislation, but the bills that were passed for industry to come in and do harm to our lands.
  - The aerial spraying and the harm that it’s doing to the environment. How some of the companies are monopolizing the seed industry. Concerned about GMO’s and Monsanto; I researched further to learn about the harm being done in the Wahnapiatae area.
  - My youtube led me to permaculture and indigenous techniques and I started applying that with my skills and tools (ceremony). I didn’t get support from leadership, but it didn’t stop me and I learned that the issues still exist and it can’t stop me to continue to help with the land.
  - Our waterways was used to transport the logs down south and caused harm. The soil is exposed to disease, if trees are not replanted with various kinds of trees. More trees had to be cut down and burn the ore for days, and the ore particulates would drop in the soil and cause acidity to rise in the soil. (Sudbury area).
2. In terms of climate change, have you observed new plants/species, animals, birds or insects coming into your region that you haven’t seen before?
  - Shad flies were not here before, and I have seen them in the North Bay area.
  - A species of a housefly and they bite.
  - Increase of seagulls.
  - The bears are present more, increased forestry.
  - Lots of poplar and birch is new growth. Acid was leaking out of the birch trees, when the trees are burnt, the acidity is resulting in acid rain.
  - The astronauts came to train here because the landscape was dead.
  - There is less snow, the ice usually freezes earlier but doesn’t now.
3. Has climate change affected (taste/appearance/quality) any of the harvesting activities by members of your communities such as berry picking, fishing, hunting, medicine picking, or other traditional activities?
  - Blueberries have been decreasing and not growing very well, they are smaller.
  - Raspberries are not as favorable as before; they don’t look as healthy
  - Trees look like they are burnt, they don’t look as vibrant.
4. Have you noticed any changes in rivers, lakes, waterways, such as: water level, color, temperature or freeze/thaw cycles?
  - Lake Wahnapiatae: lake warmed up with algae blooms; rashes have developed after swimming.
  - Levels go down due to the dam that was built in the 70’s

5. Are there any changes in places/timing for fish spawning?
  - Unsure if the fish changes have anything to do with climate change; yet noticeable big fish come closer to the shore due to less people around the lake during Covid.
6. What about changes to wetlands, bogs, marshes or fens?
  - I haven't noticed.
7. How much traditional food do you eat now as compared to years ago?
  - I was not fishing or living off the lands; but years ago we did eat more fish.
8. In regards to the weather: winter, snow or rain, what are the changes?
  - Spring – we plant after frost (no changes)
  - Indian summer went to mid-November – that is longer than usual
  - The atmospheric protection may be diminishing, the sun seems to be affecting the trees and our skin. The ozone layer is depleting and affecting the planet/sun
  - Sun seems to have a noticeable unnatural color
9. Changes in droughts or periods of dry weather, changes in temperature during the summer?
  - Previous years it was dry weather, lots of rain during the past summer
10. Changes in winds or rainstorm patterns, or air quality?
  - Winds were so strong, big trees were uprooted, increase of storms in past 2 summers
11. Changes in the wildfires: how often, size, time of year, and how close to the community?
  - Fire in Temagami area is across the lake from us
  - Spruce budworm killed a lot of the spruce trees in our area – dry bush area
12. What difference in change in weather has made in your life?
  - Less snow is beneficial to community infrastructure (plowing)
  - The community is too dry in the spring, potential fire risks
  - There was more snow in some years
13. What actions can be taken to protect our land: levels of personal, community, political?
  - Food forests minimizes the dangers of fires, lessens the wildlife coming too close to community and have an area for them to go – forest management
  - Cultivate the growth of our forests; we had an abundance of hardwoods at one time
14. Do you have any comments on climate change and food security?
  - By cultivating the forests, we are securing the food for ourselves and wildlife
  - Some plants are not producing the berries, with black stuff growing on the leaves
  - Take care of the lake, there is less fish in the lake
  - Noticeable different species of birds
  - When you take care of the land, the animals seem to be more present like an acknowledgement that we are doing the right thing in taking of the earth
  - Medicines start growing in abundance
15. How can we create awareness/education with climate change?

- Science based evidence
  - Take notice in your own communities in all aspects
  - Pre colonization knowledge for indigenous land care taking
  - Our identity in knowing who we are – healing ourselves /healing mother earth
16. Do you have a family emergency management plan?
- Not as of yet
17. Do you think climate change has affected the Anishinabek language?
- Climate change may be affected in how they use the language with the changes
18. Does your community have a food bank?
- They stored food and delivered every week, yet it wasn't a food bank
  - It is no longer in service
19. Is there a grocery store in your community?
- No, in Capreol which is 20 minutes away
  - When the road collapsed it was a 40 minute detour
20. Is there a landfill site?
- Yes
21. Does your community have an emergency food storage?
- Unaware of it
22. Does your community have a lot of fishers and hunters?
- Maybe about 100
23. Is there commercial fishermen?
- There is few, the information is not shared
24. Is there a community garden?
- We have one in our property and encouraged others to
  - The band office has a greenhouse, but unsure what they are doing with that
25. Does the community have a fish fry or hunt camp? Do they share wild meat harvest?
- None
26. Is there much suitable farming land?
- The soils are damaged
  - Have to use raised beds with soil brought in
27. Is there small animal farming?
- None
- Comment:* they have a huge marijuana dispensary, but as far as farming on the land or bush, I am unsure
28. Has the community experienced food shortages in the last few years?
- Concerned of the rising cost of food and gas
  - Financial struggles for our community, has everything to do with climate change
  - I get my seeds from indigenous resources, from seed banks
  - Seed industry is being monopolized so I am careful of where I get my seeds
29. Has your community taken any steps to increase your local food sovereignty?
- Greenhouse
  - Contact person: n/a

- More people are growing their food on their property
30. How can the Anishinabek Nation assist in your community?
- Companion planting information
  - We would like to be directed by an Elders Council on the board I am on
  - Living off the land, lots of healing to be done, awareness created for mother earth
  - Seeking support in this movement, education, healing ceremonies and programs

**Comments:**

It's about reclaiming what once was ours, traditions and culture.

Interviewer: are you interested in putting in your map to enhance networking? Let me know the details that you would like to be posted. A form will be forwarded to you to indicate what information you want posted.

Interviewee: I can ask others if it's okay to add it as well. It is not a community garden.

**Interview 5:**

December 13, 2021 3:30 – 4:30 pm via Zoom

**Questions:**

1. In terms of climate change, have you observed new plants/species, animals, birds or insects coming into your region that may be linked to climate change?
  - Birds and the emerald ash borer
  - Giant hogweed plant
2. Have you had to change any of your travel methods when conducting traditional activities such as fishing or hunting, because of climate change?
  - The water levels have changed, when canoeing we would have to portage more often
  - In winter, the snow levels fluctuate with rain and snow combined
  - It affects how we are setting snares, as the rabbits aren't acting the same way due to warmer weather, their tracks are not usual line pattern but they are all random
  - It is harder to snare them because they are going all over the place
  - Travelling up on the mine road, a 4 wheeler is required now, trucks can no longer get through because of road washed out by a sudden rush of rain and snow melt
3. Have you noticed changes in the duration that you can conduct traditional activities such as ice fishing?
  - Yes, definitely, it is now a shorter season
4. Have you noticed changes in animal migration or in the distribution or abundance of any animals?
  - The rabbit behavior has changed quite a bit
  - Water levels being low and fluctuating
  - Change in where the muskrats are located, they do have their homes but at times when you set the traps, their homes are totally immersed and they can't live in their home
  - Deer track patterns, they are coming in a different way
  - Deer must be swimming across the river, they don't usually do this at this time of year because it's too cold to stay in there for more than an hour
  - Increase in amount of eagles in area, unusual
  - Blue heron was spotted in area, when they are supposed to fly south this time of year
  - Ducks are more present this time of year, unusual
5. Have you noticed changes in the amount of rain or snow?
  - More snow, more rain
6. Have you noticed changes in animal migration or in the distribution or abundance of animals?
  - Yes

7. Have you noticed any differences in the plants or the trees?
  - St. Mary's river is really low
  - When it is time to harvest the water is too high and we can't harvest the medicine
  - It's really changed how we harvest in the swamp area, we can't reach the roots
  - Hunting is also affected, the weather is warmer and you have to work quickly to skin the moose and move it to the butcher
8. Have you noticed changes in the taste of carrots or quality or any of the wild foods that you are eating?
  - No, not really
9. Are there any changes in water plants such as algae and the waterways or have you seen any new water plants?
  - No, other than the ones in the loose rocks that tries to get into the swamps
  - Some of the harvesting areas that we used to go to, there is less plants due to water levels
10. Have you noticed any changes to the timing of any fish spawning?
  - During spawn harvest, the fish seem to be arriving sooner and staying longer, and some don't even seem to be leaving
  - Pulled out the \_\_\_\_\_ out of the river in April
11. Are the changes you have mentioned, good or bad and why?
  - The climate change is pushing us into change how we harvest and what our relationships with these different species
  - It seems like everything is moving further north, that's going to change what we harvest if there is less moose and more deer
  - We would have to go further north to harvest moose
  - Unsure if it is good or bad, but it is definitely changing how we harvest
12. Have you noticed any changes in the kinds of fish or their health?
  - There is less speckled trout
  - Less rainbow trout, noticeable where we harvest, the water is too warm now
13. Do you know how much traditional food is consumed and how has climate change affected this?
  - Had more traditional food in our youth, but now, we eat less of it as it is difficult to get
  - We had traditional food at least once per week
14. Have you noticed any changes in integration efforts or movement in animals, how warm or cold it is in the winter?
  - Warmer in the winter
  - It is a lot warmer in the summer
15. Have there been changes in periods of drought or dry weather and has this affected you or others in the community?
  - There has been droughts
  - We get flash rain and then we don't get rain for a long time
  - Everything dries up as well as the berries

- Berries are much smaller, raspberries are doing okay
16. Have you noticed changes in the winds or rain patterns?
- Yes, definitely in the rains
  - Less wind, not like before, notice in the clean up of pine needles is less
  - Less trees are falling down due to winds
17. Any changes to air quality?
- In winter it seems more like wet/moist air quality, instead of dry cold air
  - Summer time there is dryer air
18. What about the formation of ice over rivers and lakes, that has affected people in the community and have traditional routes changed because of unsafe ice in the winter or low water in the summer?
- The ice is thinner than it used to be, making it difficult to harvest beaver or muskrat
19. With all the changes and wildfires on the increase, how often do they occur and how close to your community to they happen?
- We have not had wildfires in our area
20. What difference has the changing weather made in your life?
- It changes our mental, social, physical, and spiritual being
  - When we are out there, we are able to have those relationships with the different species that affects us and even affects our language, all connections
  - It has affected my entirety of being less able to be out there
21. Does climate change affect our responsibilities and role as stewards of the land?
- I think that it changes our responsibilities to certain species because of everything moving around
22. What actions can be taken to protect our land from the fall like in terms of at a personal level or at a family level or more at a national or political?
- People need to be aware and get educated of what climate crisis is
  - Individually we partake in recycling and other thins
  - Big industry still polluting without making any changes, they get to negotiate on carbon credits, but that is not working. The COP 21 just took place with not much in negotiations
  - We need to push more in the political arena for industry to be more responsible on the damages that they are creating and clean up those damages they have done
23. How do you think we can best create awareness and educate about climate change?
- YouTube videos that can be posted to Facebook and Instagram or any social media
  - Youth pay a lot of attention, potential to create a climate crisis APP so you can gauge the activities of the industries; create a climate crisis game where youth can gain knowledge
  - Input in educational curriculum
24. Do you have a family emergency plan?
- Yes

25. How often does your community experience power outages?
  - We experience less power outages because of less snow accumulating on the power lines or the winds knocking over branches
26. Has the community experienced any major of the following: flooding, heat waves, ice storms, tornado, or severe storm activity or mudslides?
  - Heat waves
27. Environmental diseases such as asthma, allergies or any respiratory or waterborne diseases?
  - Asthma may be on the incline
  - *E.coli* waterborne bacteria has the beaches at French Bay- closing down more frequent
28. Has traditional ceremonies been affected by climate change?
  - I don't believe so, I still do the water ceremonies four times a year
  - Sweat lodges, shaking tent and moon ceremonies still take place
  - We make offerings to the species, plants and animals: may change due to the lack of abundance
29. What difference is the changing weather made for your trappers license?
  - I have mentioned it in most of the questions
30. What tools or infrastructure or resources would benefit your community and responding to emergence events that may occur, related to climate change?
  - Less use of bottle water, have alternative source to utilize water
  - Things that don't require batteries like axes, hatchets, bows/arrow
  - Canoes and kayaks with training safety lessons (evacuation – survivor items)
31. Has the community considered any local actions to mitigate climate change impacts such as carpooling or ride share?
  - Not aware of any
32. Is there any monitoring happening of the environment or the climate?
  - Not that I know of
33. Has any fish died off due to weather change?
  - Not aware of any
34. Have there been any impacts on local businesses that result of climate change?
  - Not aware
35. Does your community have a food bank?
  - yes

**Interview 6:**

February 7, 2022 3:00 pm – 4:00 pm via Zoom

**Introductory Remarks:**

Snowing, soft snowfall. My grandparents use to say the end of February it means the sugar is falling and time to get the sugar camp in order. I am a band member of Whitefish River FN. I am a mother of 4, grandmother to 5 and great grandmother to 1. I lived on reserve for most of my life, I am an outdoors person, fishing, maple sugar camp, and very active in community. I sit on many committees, boards. I am a language speaker, and lifelong learner.

**Questions:**

1. How was the climate today compared to how it was when you were a child?
  - I remember in November it used to get very cold with ice on the lake for about 2 weeks we could skate until the snow come, we used to shovel a lot of snow. People used to use the ice to travel. Ice huts is where we would cut out blocks of ice and save those for the summer and sell it to the tourists that came.
  - The ice and snow arrives later now. They used to get the horses out to snow plow the roads for us to go to school. The horses would get stuck up on the hill in the large snow drifts.
  - There were heavy storms, but not as severe as what we hear of now in the states and Europe.
2. Have you noticed any new species or plants or animals or any new birds in your area that may be linked to climate change?
  - We have seen migrating birds that were never here: snow geese and another kind of geese, they stayed about 2 weeks well into fall. The whippoorwill is no longer here, the whiskey jack bird is no longer seen here and there are others, smaller ones like a sparrow. The sparrow would arrive in droves to feed, but are no longer here. Rabbits were in abundance and now there is 1 every two years; the foxes are very rarely seen anymore.
  - Deer was in abundance, and with encroaching campers, they have moved on to other areas. There used to be huge deer yards and there aren't any left.
3. Have you had to change your travel methods when you are fishing or hunting because of climate change?
  - When the water levels are changing. One year it was low and we couldn't get the boat in, another year the water is too high. The water has changed and you can see the different levels by the markers. We had to find different places to park the boat.
4. Has climate change affected the berry and medicine picking, fishing, hunting, and other traditional activities?
  - It has affected the habitat of the animals because of the encroaching of their territory.
5. Have you noticed any changes in the taste, appearance or quality of any wild foods?

- We used to pick huge wild mushrooms. They were very scarce at one time, and now the mushrooms are very small now.
  - The fish are affected and have worms now because of the water quality. We used to fish in clear water and were able to see rocks. The rocks are now covered in vegetation.
  - The moose and deer have few reported cases, it is the fish that are noticeable.
6. Have you noticed any difference in the place or timing of fish spawning?
- They are keeping a good watch on the pickerel. There is way less pickerel and are trying to restock and let them grow. The pickerel were big long ago, now they are not as big.
7. Do you and your family eat as much fish as you used to?
- Yes, we do. The men would donate fish, moose, deer, beaver, rabbit. We are able to eat the wild meat.
8. Have you noticed any changes to the wetlands: swamps, bogs, and marshes?
- We did have a big swamp near our place and now it has dried up. There is another smaller marsh and this is completely dried up now. Those marshes we would watch the ducks and deer feed along the marshes, now there are no sightings.
9. Have you noticed any changes in the winter snow and the rain?
- There was a lot more snow years ago. The winter season is shorter, and the rain is less now. It will rain a lot and then there is a dry spell.
10. Is there changes for the summer temperatures?
- Yes, it is warmer. The water is warmer now where we used to fish, marshes have dried up.
11. Have you noticed any changes in the air quality?
- This summer we had a heat wave. When I was about 9 years old we did have a heat wave, and it is a different heat wave. Both are intense, but it is still warm at night these days. I see the leaves turning brown because of the heat.
12. Do you have a garden?
- We have a vegetable garden, and we kept it quite watered. The plants would wilt if we don't water them. We would have more rain long ago to water the gardens.
13. Have you noticed changes in the wildfires, how often and how close to community?
- We don't have as many fires as in other areas, we did have smaller fires under control.
14. Has the food security changed of time, access to grocery store etc.?
- The food quality is less, and the berries or veggies are less fresh
  - We don't rely too much on the grocery stores.
15. Has climate changed the culture in any way as stewards of the land, or the language?
- The language: the descriptive words we used long ago are no longer used. They governed everything by the seasons, when the birds would leave, would come by. There was a word that was used for gardening preparation. No one heard that word anymore, language is depleting.

- It is so interesting to listen to elders about things that have happened and how the change is coming, it affects our lives and how we bring up our children now. Things that were always present that was our staple for anishinabmowin is not there anymore.
16. How can the Anishinabek Nation help educate and create awareness in climate change?
- I enjoy the advocacy of Autumn Peltier
  - We need to share the knowledge. It begins at home. The language should be taught in the home, then later in school. It has to be done early. To have the curriculum and consistent for children to learn. To have activity based/land based language learning. Teaching the action.
  - The online hands on learning by making crafts or cook in the language. Have it consistent weekly or more. Speak the language today and we don't forget it tomorrow.
17. Have you noticed any changes in the maple syrup production?
- The trees have really suffered. The sap took a long time to come down the tree. Some trees are still not producing like it should be. The trees were drying up and dying out. Yet there is enough for us to open camp and do our maple syrup production.

**Interview 7:**

December 13, 2021 11:00 am – 12:00 pm via Zoom

**Questions:**

1. Pic River and the weather.
  - Normally at this time of year there would be deep snow, but we are seeing climate changes. In 1991 the snow was about 7 feet deep, declining since
  - Noticed a strange smell in the spring, unsure if it's the dogs that run loose or if it is due to construction
  - The snow is ankle high and it should be a lot deeper, there are not many animals around.
  - This time of year the beavers would be damming up the lakes, but the lakes and ponds keep melting and the animals are confused, so it is harder to find the beavers at this time
  - Traditionally he is to make holes in the ice to fish, but has not been able to in the past five years; now resorting to more processed foods which makes us sicker
  - The grocery store is about 25 to 30 km away, he stated that warm weather is nice but he knows that it is a problem for the environment
2. Invasive Species/Animals:
  - Lady slipper which comes in from the south; this was noticed while berry picking and was never there before
  - Very invasive and about a foot tall
  - Was informed that it is a medicine plant
  - Raccoons are seen in the area, they may have come in on the railway tracks
  - An area called Dead Horse Road where the land has been cut of all the trees
3. Land Erosion:
  - He used to work for the Band along the Pic River, there was a large case of erosion and was reported to the Ministry of Natural Resources
  - The gravel pits in the Heron Bay area, where the cutting of all the trees and taking the gravel and using it for quarry, it will lead to more erosion in the future
4. Animal and Fish Harvest:
  - They don't eat the animal harvest of livers, kidney or heart as they have noticed there seems to be contamination on the organs
  - This goes against the cultural teachings for our youth, because at one time they were told to utilize all parts of the animal
  - The location of the community – about 2.5 km up from the shore of Lake Superior is where they used to set nets, there is hardly any fish there now
  - They used to harvest Sturgeon in that area, and they were so large that they would have to pull them up onto the land to be able to take the fish out of the nest and they were 4 to 5 feet long

- The Black River area was a traditional area for the spawning of rainbow trout in April or May
  - He hasn't fished in 7 years and hasn't trapped in 5 years
  - He eats wild foods about once per week
5. Air Quality:
- Not allowed to have fires on the reserve because of the risk to other infrastructure
  - The weather can be very different from Marathon which is half hour away from them. There is a set of hills between the community and Marathon and when the mill was operating they could smell the mill, the air quality has improved since the mill has been shut down
6. Nuclear Waste:  
Was unclear on the recording
7. Landfill Site:
- There is a landfill site that the community operates with in partnership with Marathon and they try to recycle a lot
8. Climate Change:
- A good way to educate people about climate change is to do more land based learning and take people on the land
  - He also runs a longhouse and he said that since Covid, it has prevented a lot of traditional ceremonies from taking place in the community
  - They don't do any climate monitoring in the community, but they do test the water system regularly
9. Transporting Needs:
- In terms of climate change, what would assist them if they had to move, they would be moving on the water system
  - They would require boats and lifejackets
10. Food Bank:
- They don't have a food bank and there is no emergency food cash, there is only a corner store. They do have a fall camp and a spring fishing camp in April and he says that there are two people in the community that keep chickens, pigs, and sheep.

**Interview 8:**

February 3, 2022 2:00 – 3:00 pm via Zoom

**Introductory Remarks:**

I am from Rocky Bay First Nation located on the shores of Lake Nipigon. I was raised along the CN line east of Geraldton, squatters along the CN line. During the 40's we lived by Long Lake 58. With the residential schools we left there to go into the bush so that my sisters wouldn't have to go to residential school. We moved to Geraldton years later and then to Rocky Bay where I live now.

**Questions:**

1. What changes have you seen with climate change, in the animals, plants and climate?
  - Animals have cycles. Some years there would be lots of rabbits or moose and then another year there wouldn't be anything or less. Years ago we saw a lot of suckers and just the heads were eaten and we found out that the wolves had eaten them. The old people liked to eat the sucker heads in the spring. The wolves were eating this and they knew that this was nutrition. We got our knowledge from the animals, the moose would eat the roots from under the water, the medicines. Moose and fish are/were healthy to eat. We found yellow spots in the moose and we had to burn it because we didn't want other animals to eat it, we found spots on the meat of the fish too. The changes and contaminations of the fish are man made. The herbicide and aerial spraying have affected the land and the plant, and lakes. The lakes beside the highways are contaminated by the salt from the highways and it runs into the lake.
  - The MNR issue over 4k tags in a certain area to make way for the caribou. Our way, we do not mess with the ecosystem or their habitat. Industry comes into our traditional territories and they have to consult with FN's and the engagement should be meaningful to ensure the wellbeing of the land ecosystem and people are taken into consideration. If our people are unable to get the foods from the land, they will get sick, this food has been in our DNA for thousands of years. We have high risk diabetes due to changes in our diets now, the addictions, we have endured a lot through colonization.
  - In one community they used cyanide to extract the gold and the cyanide went down the river. The people got sick, many died, and babies were premature. They had to leave that area.
  - Climate change is all man made. Stricter regulations on companies are evolving. Southern Ontario there is all females being born. All the industry is surrounding them and affects them.
2. Have you noticed changes when you can conduct your traditional activities using the ice, any differences in the snow or the amounts of rain or snow?
  - The last few years the winters have been mild, you could sit outside in January to make a fire, then February there is a cold snap and not long after spring is here.

3. Have you noticed any new species, plants or animals in your area?
  - We have been seeing pelicans in the summer months now, raccoons are starting to move up to this area as it very rare to see them. Their habitat is being threatened that's why they are coming this way. We had lots of small owls that arrived one time, where they came from they had no food source so they came this way.
  - Last summer we hardly had any rain and the blueberries grew very small and there were not many. The bears really depend on that food source, in the fall we see the bears are very skinny and there may be less cubs in the spring. Last July and August there was hardly any rain.
4. Have you noticed any changes in any places, timing of the fish spawning?
  - I am unable to answer this question, my brother in law's name is [Redacted] is a commercial fisherman of Rocky Bay and he would be best to interview.
5. Do you eat less wild food than before?
  - I continue to eat wild food. When I was a child that is all we ate was wild food, that's all we had. We didn't have a fridge, we stored in an ice box or preserve the meat in jars. We stored the preservatives under our floor boards and we would smoke our meat, that was our diet, we had no chickens or pork.
  - We had a potato garden. We had the basics of flour, sugar, salt, baking powder, salt pork to make soups and dumplings.
  - Now its more convenient to go to the grocery still. Yes, diet has changed somewhat. Some families have freezers full of ducks, rabbit, geese and moose meat.
  - Rocky Bay are fish eaters, this is our main source of food. Right now they would be catching the link (poor mans lobster) the liver is so tasty. We used to eat this only in the winter.
6. Have you noticed any changes in the quality of the fish or the meats?
  - I find that the wild meat still tastes the same.
  - Lake Nipigon has many species like walleye, suckers, white fish, sturgeon, pike, speckled trout, lake trout, ling, splake (lake trout/speckled), tulabee. At one time there were never any smelts, this seems to be an imported invasive species.
7. Have you noticed any differences in the water, color, temperature of the freezing and thawing due to climate change?
  - Last year all the rivers were really low, hardly any rain and some of them were dried up, the Mackenzie River had hardly any water in it.
  - Globally, it was noticed that since COVID the factories and productions were cut down and the air got clearer. It's a global issue, and this is what is affecting our climate for their prosperity.
8. Have you noticed any changes to climate temperatures or the rains storms?
  - We had lots of really hot days, and the animals can swim in the same water and they wouldn't bother each other because they were cooling down. The bear and

moose could be cooling down nearby and they wouldn't bother. In the marsh the moose was there cooling down and did not run away, they have an understanding.

- The water was warm last summer and you have to go deeper to the cooler water.
9. Have any traditional routes have changed because of unsafe ice in the winter or low water in the summer.
- Two young men went through the ice and they may have gone to close to the open river
  - They fish for sustenance in the winters. Rocky Bay is a commercial fishing community with only a few left of fishermen. [Redacted] is a winter fisherman, but hasn't fished in the last 4-5 years. He doesn't fish because he relocated to Thunder Bay and with his family they went for opportunities in the city.
10. Have you noticed that there is more fires in your area?
- Last summer we had over 500 fires in northwestern Ontario, we had to get firefighters from the U.S., Germany and Australia.
  - Our community did not have to evacuate, we could smell the smoke, it was hard on my asthma and we couldn't be outdoors much, it was worse in the mornings. After 5pm you could walk around but it was still smoky.
  - Yes, there has been an increase in fires in the last few years.
11. What can the Anishinabek Nation do to help with the climate change situation?
- We all have to monitor and have more dialogue engagement with the province and feds on proposed industrial initiatives to be included from the beginning to the end.
  - Try to cut down on our own gas emissions, solar energy increase.
  - If they can put this on the agenda on the next Chiefs forum from region to region.
12. Have you noticed any changes that climate change has had on culture?
- Sometimes we couldn't have a sweat lodge due to it being hot outdoors and the risk of fires; our gatherings at pow wow, fire restrictions. Language revitalization is noticeable, I am a language teacher, and our ceremonies I wish that I had more knowledge from the elders. The knowledge is gone with them from the old people a long time ago. They used to live to the late 90's, now they don't live as long maybe 80's.
  - Lifespan is now shortened. They used to eat what the animals ate, surviving and moving around with the animals and being outdoors with no stress.

## **Interview 9:**

January 11, 2022 3:00 – 4:00 pm via Zoom

### **Introductory Remarks:**

I'm really connected to nature. I have been a trapper most of my life, I guess not knowing I was a trapper, I was just brought up with trapping. It was a way to sustain ourselves and I didn't know it at the time, I thought it was a way of life for us and how I learned and how I was brought up. My grandfather, parents, uncles taught me how to respect the land and what we should put back and how to treat everything, all insects and animals.

### **Questions:**

1. Have you noticed any changes in your area that you think might be caused by climate change?
  - Past 15 years I have seen the change, it was there before but I thought was a normal thing and then it got progressively worse. I noticed the winds got more prominent year after year, because I have to look after so many trails and the trees that blow over my trails to have to cut them to get through. At times it takes me two days to get through before I can attend to my traps.
  - I am in an old growth forest with trees from 80 to 90 years old. A very high productive area for fur, but the trees get damaged from the wind and the trees are twisted and the fibers are pulled apart. For years now, there has been nothing due to the marshes have dried up. The (Jack pine river) a major flow into the Lake Superior is completely dry most times. My cabin is close to the river and I do use it for cooking/wash and everything else. In other years it is so torrent that it washed out the CP rail and Trans CA highway in 1996 or 1998. I have photos of all of this.
  - There is good areas for moose and calving areas. I noticed they weren't calving in the area. The water has dried up there. Their staple food (new shoots) may not be there anymore, so that's why they moved.
  - Different birds are more noticeable.
  - The meat side where I skin is not as heavy or as thick and the hair is not as what it should be. I brought this up with the fur harvesters and they say they are getting the same results from other trappers.
  - The Martin's favourite food is the star nosed shrew, which was plentiful in the area and then over the years it slowly diminished. A different shrew came in there with a reddish nose, where I asked a biologist to identify.
  
2. What new species of birds have you seen, as mentioned earlier.
  - Black neck swans, turkey vultures, and more bald eagles in the last 4 years
  - 2 different types of ruff grouse and spruce hens are very abundant
  - Unsure of what brought all these species in
  - Cougar has been sighted here now, I put out trail cameras

- Wolverines have moved in on my line, north of me, they use the lakeshore to go to the islands (Jan. Feb) to go hunting or young ones are there
3. Medicinal plants
- We have a lot of medicinal plants there.
  - High bush cranberries are all along the river, the berries no longer bear fruit but the bushes are there.
  - Blueberries, it was too hot this year and we didn't get nothing. We had to get the berries from further west
4. How has the availability of wild foods in your area changed over time and how the change has been positive or negative?
- Herbicide spraying has a huge effect and detrimental to my trapping grounds
  - We used to eat the harvest of the moose - livers, kidneys, heart; and we no longer can eat them, the liver just became a goo and not good to eat
  - I saw this in the partridge and the rabbits, the internal organs are gooey and I would not eat them; pesticides may have played part of this yes. The animals are eating twigs where they sprayed. The blueberries were affected.
  - It has finally subsided this spray, with more people speaking up and it seems more people are eating off the land now
  - 3 hydro corridors that I go through, 1 went through my trap line
  - They made an agreement not to use herbicides and only use them where they have to – which is good. The other 2 hydro lines they use herbicide and the forest companies use a lot. Ever since the Lake Nipigon forest went to all the bands, they really cut back on herbicides, which is good to see
5. Have you noticed anything with the water and the fish?
- Lake Helen and other waters - fish have groats on them and we have documented them, we worked with Curtis and others to do surveys
  - The mercury levels are higher now in Lake Superior and the inland lakes, unsure if this from climate change or industry
  - There are concerns, I have taken the fish to the ministry and they said it is okay to eat, but they would not eat them. This is becoming more common now
  - At one time I used to cast here for the lake Trout on shore of lake Superior at the mouth of Jack Pine; there are no longer any lake Trout here. They may have moved out into deeper water because of temperature change for colder water, due to the climate change of hot summers. These tributaries are drying up along the north shore and you're not getting the inflow that you used to have into that big lake, the lake is warming up by the sun.

6. Have you had to change any travel methods due to impacts of climate change, when you are conducting any of your traditional activities ie: ice fishing?
  - I have travelled this route for years. Now, the ice is not safe anymore, as I went through the ice on my trap line.
  - I was taught to have my stove always prepared ready to light, and this is important (time wise for warmth) as I struggled to reach my cabin and then I lit up the kindling
  - Using the lakes, I used to travel extensively on the north end of the line and I won't go there anymore, I don't trust the ice. I've seen areas where the water has dropped and the ice just hangs and you break through but there is no water underneath. Limiting access to certain areas that I used to go to before, and I do still get there I have to drive out with a machine load up and drive up a road and go around, very much affecting the travel
  - The winds are so strong, where it picks up the water and turns into a funnel, where this was not happening before.
  
7. Do you see much change in the rain or snow?
  - Yes, we had rain in December this year and there still is not much snow
  - There is a snow belt on my trap line, but even that is low
  - Every year is different now, I was able to read the weather and now it is sporadic. I had an area where a tornado went through and put all the trees flat on the ground, like a microburst.
  
8. Have you noticed changes in places or timings of the fish spawning or similar?
  - I follow the lake trout here in the river, they spawn in November but this year they were early. There was work at the bridge at the time, as we have spawning grounds near.
  - Coaster brook trout used to come up regularly out from lake Superior and in the last 3 years I have not seen them. There is no water in the river, they may have gone to another river to go up, I haven't followed up on that. They are important huge fish for Lake Superior.
  
9. Any changes to wetlands, swamps, bogs, and marshes?
  - A lot of them are drying up
  
10. How many times a week would you eat wild food, are you eating more or less than you use to?
  - We eat lots of moose, partridge and rabbit.
  - We eat the same traditional food as when we grew up.
  - We process, package our own wild meats and fish
  - There's more mercury in the fish and I am now skeptic on this

- There was no mercury testing in the last few years, but now they will be starting to test this year. Lake Superior findings are way off the charts.
  - North on the Sturgeon River, flows to Lake Nipigon, they put a run in the river power plant. They did not do the proper vegetation extraction prior to flooding the area. The sampling results showed that you could not eat the fish. We had been fishing there. These fish are getting into Lake Nipigon.
11. What have your summers (drought/dry weather) been like compared to previous summers?
- The sun is way too hot, the summers are very extreme
  - I believe something is going on and we are not being told
12. Changes of warm or cold it is in the winter, or with the snowfall, the dates of the first and last snowfall.
- Weather is so unpredictable now, before you could predict forecast and the weather patterns are extreme
  - We go to Haidah Gaii for 13 years and have seen the change with the forest and saw how the pine beetle through the province when it first started there.
13. Decline in wildlife
- Porcupines were very prominent in our areas and now I have not seen one in 8 years
  - Blue Jays were once around, and in the last few years I have seen one
14. How often are wildfires in your area, the size, time of year, or how close do they come to your community?
- Our forests are getting dryer and the wetlands are drying up
  - The forests are not that close to community, on the hill behind our community is where there is lots of forest. The cloud of ash they are going to get from there will cause problems for those homes, and I would suggest that they get sprinklers for the roofs, especially the ones adjacent to the mountain.
  - The way climate change is going, it does not look good for us in my own views. National Geographic had interviewed me in 2020 December.
  - There is an increase in fires caused by thunderstorms and lightening.
  - There is an old growth forest and so dry in two areas of my trapline. There was a fire on the northwest of the trapline and burnt a large area. They are more prominent now than in the past.
15. If you could choose 3 priorities for how leadership could help the community respond to the changes, what would they be?
- They have to talk to the elders and the people who are on the land
  - Ask the questions and have tea and bannok session

- Know how to connect with our people and understand their stories at their comfort level
  - Our leaders should hold more of those tea and bannok sessions and be aware of what is going on around us, I worry about the children.
  - I am involved in creating awareness in the schools about the trapping and my stories on conservation and what we have out there. We have to look after what is left out there and is coming faster than we realize.
16. Have changes to the land or water or the availability of wild foods impacted your cultural our traditional practices, or those of your community?
- They have altered them a bit. People are becoming more aware in respect to that and there is a lot of supports from agencies.
  - The information that Lynn puts on line through the Anishinabek Nation is incredible and I think it will spin off here in our area with the garden and the green houses.
  - Awareness of what goes on brings change, and more people are out on the land and harvesting.
17. Do you think it has affected the Anishinaabe language?
- My wife teaches the language, so I hear it in my home.
  - I think there is an effect, yet unsure of what sense though.
  - Our youth are becoming more aware now of their language and culture.
18. How can the Anishinabek Nation help with tools to assist with the climate change for communities?
- Get elders together from different communities to share their traditions, and the changes that they see and what they feel in how we can help. Set up like forum or circle (tea and bannok)
  - I am still learning a lot in my travels and from the Haida in potlaches and the harvesting trips that I have been on.
  - I see the youth very interested in harvesting, trapping and getting out more.
  - Anishinabek Nation Lands department has been doing a great job over the years

**Comments:**

I will continue to work with the youth. I have been online since Covid started and it is not the same as going into the schools. In person, the youth can touch the furs and skulls and to show them different sets. I had them make boxes and take into the bush and there I would show them the plants and medicines. Online they are not truly connected. I received support from CORDA, working with MNR and Parks Canada.

*FINAL September 2022*

I get interested groups in all the time for the trap cabin. There is a trap cabin video on YouTube under Indigenous Foods (@10 minutes). You can get a visual of what it looks like up there. True Roots for Harvest is the group.

Also the major change for me on the trapline I would start setting in September/October and now I go out late November due to fur not being prime for harvest: my season starts later.

The warming weather changes are causing animals to adapt accordingly is what I have been seeing for a years now.

There are also invasive plants, phragmites, hogweed, purple loosestrife and more, in our waters which will affect our food supply, round goby, Zebra mussels, and heaven forbid if the asian carp adapt to northern Lake Superior.