Ezhi-Nisidotamang Ininaatigoog Miinawaa Anishinaabeg Maamawibimaadiziyang (a Cultural, Ethnographic and Scientific Framework for Understanding Maple and Human Relations)

Nathon Breu
University of Wisconsin-Milwaukee

Follow this and additional works at: https://dc.uwm.edu/etd

Part of the Indigenous Studies Commons

Recommended Citation
https://dc.uwm.edu/etd/3245

This Dissertation is brought to you for free and open access by UWM Digital Commons. It has been accepted for inclusion in Theses and Dissertations by an authorized administrator of UWM Digital Commons. For more information, please contact scholarlycommunicationteam-group@uwm.edu.
Ininaatigoog, Acer saccharum, or sugar maple trees have been around 66 million years providing sustenance for thousands of years for those who utilize it\textsuperscript{1}. They provide food and shelter, supplying necessary provisions for all. For Indigenous people when ininaatigoog sap starts to run, it is a sign of springtime, a celebration of life. In Spring the Anishinaabeg, specifically the Ojibwe, Potawatomi, and Odawa, go to their sugar camps, and start the rigorous process of harvesting the sap. In the past the Anishinaabeg moved from their winter camps into their spring sugar camps to transform the sap into maple sugar. Stories are told, and families enjoy mino-bimaadiziwin, the good life. This dissertation examines the relationship between sugar maples and humans, while examining multiple ways of communicating within a shared biome to provide a framework for integrating the experiences, messages, and knowledge of all members of the community. This framework allows all beings to have equal agency as they face the challenges of living within and stewarding their environment as climate change accelerates. This framework integrates contemporary global scientific practices, and Anishinaabe scientific traditions of observation - naanagadawaabandan (seeing data and things in the world), naanaagadawaabam (seeing living relationships). I focus on ininaatigoog and Anishinaabeg.

looking at their history, culture, and the integrated idea of naanagadawaabandan combined with naanagadawaabam of the ininaatigoog as an example of how to utilize this framework. To accurately represent the ininaatigoog, and the Anishinaabeg, and the specific relationships of practitioners in this biome, I have used Ojibwemowin throughout the text.

Chapter one discusses gaa-ezhiwebag (the history) of the ininaatigoog and Anishinaabeg in the Great Lakes watershed. Chapter two looks at the history of Anishinaabe iskigamizige (sugar bush practices). Chapter three examines ezhi-dibaadanawa iskigamizigewaad (the way specific people talk about sugar bush practices) through an ethnographic look at eight iskigamizigan (sugar camps) in the western Great Lakes. Chapter four explains ezhi-naanagadawendamowaad (the way people seek to understand) an Indigenous framework for scientific observation. My conclusion suggests the knowledge and ideas of this framework, based on the relationship between the ininaatigoog and humans, can be used to understand this and other biomes so we can all attain mino-bimaadiziwin (good life) and improve our relationship with our planet.
To

my wife

my family

and especially my community
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>ii</td>
</tr>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>ix</td>
</tr>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Chapter One: <em>Gaa-ezhiwebag Gichigami Wayekwaajiwan: History of Anishinaabeg and Ininaatigoog in the Great Lakes</em></td>
<td>19</td>
</tr>
<tr>
<td>Chapter Two: Iskigamizige Gaa-ezhiwebag: History of Sugarbushing</td>
<td>71</td>
</tr>
<tr>
<td>Chapter Three: Ezhi-dibaadanawaa Iskigamizigewaad: An Ethnographic Perspective of Sugarbush</td>
<td>114</td>
</tr>
<tr>
<td>Chapter Four: Ezhi-nanagadawendamowaad Iskigamizigewaad: An Indigenous Framework for Scientific Observation</td>
<td>157</td>
</tr>
<tr>
<td>Conclusion</td>
<td>186</td>
</tr>
<tr>
<td>Bibliography</td>
<td>190</td>
</tr>
<tr>
<td>Appendix A: Ethnographic Questions</td>
<td>202</td>
</tr>
<tr>
<td>Appendix B: Letter with Questionnaire</td>
<td>203</td>
</tr>
<tr>
<td>Appendix C: Ojibwemowin Glossary</td>
<td>211</td>
</tr>
</tbody>
</table>
# TABLE OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cross-section of the continental shelf. The slant numbers represent the</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>shoreline during the past 15,000 years.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Location of Milwaukee in 1834</td>
<td>42</td>
</tr>
<tr>
<td>3</td>
<td>Map of the Five Nations</td>
<td>48</td>
</tr>
<tr>
<td>4</td>
<td>Map of the Glaize community</td>
<td>50</td>
</tr>
<tr>
<td>5</td>
<td>Map of the Indigenous communities in Wisconsin</td>
<td>52</td>
</tr>
<tr>
<td>6</td>
<td>Map of the Range of ininaatigoog in the United States.</td>
<td>73</td>
</tr>
<tr>
<td>7</td>
<td>Ojibwe Giizhig Anung Masinaaigan</td>
<td>76</td>
</tr>
<tr>
<td>8</td>
<td>Photo of transpiration of the trees creating clouds of moisture,</td>
<td>81</td>
</tr>
<tr>
<td>9</td>
<td>Picture Lake Mead Keeps Dropping</td>
<td>103</td>
</tr>
<tr>
<td>10</td>
<td>A tree system collecting nutrients in the seasons.</td>
<td>105</td>
</tr>
<tr>
<td>11</td>
<td>Water system is like a trees</td>
<td>106</td>
</tr>
<tr>
<td>12</td>
<td>Map locations of where the iskigamiziganan for this study</td>
<td>119</td>
</tr>
<tr>
<td>13</td>
<td>Composite Map of Green Bay area showing the different areas of iskigamizigan</td>
<td>120</td>
</tr>
<tr>
<td>14</td>
<td>Cedarburg Bog UWM Field Station 2022.</td>
<td>127</td>
</tr>
<tr>
<td>15</td>
<td>An aerial photo of the Schultzes sugar grove</td>
<td>133</td>
</tr>
<tr>
<td>16</td>
<td>The Schultz's iskigamizigan from Sneed County Road.</td>
<td>133</td>
</tr>
<tr>
<td>17</td>
<td>Schultz’s iskigamizigan, sap collection</td>
<td>134</td>
</tr>
<tr>
<td>18</td>
<td>Front view of boiler set up</td>
<td>135</td>
</tr>
<tr>
<td>19</td>
<td>Top view of boiler and Boiler emptied</td>
<td>136</td>
</tr>
<tr>
<td>20</td>
<td>Holding pan with spoons and paddle.</td>
<td>137</td>
</tr>
<tr>
<td>21</td>
<td>Boiler in operation. Photo by Nathan Breu.</td>
<td>138</td>
</tr>
<tr>
<td>22</td>
<td>Ogema evaporator.</td>
<td>141</td>
</tr>
<tr>
<td>23</td>
<td>Rich’s ininaatigoog and taps</td>
<td>143</td>
</tr>
<tr>
<td>24</td>
<td>Picture of the ininaatig being tapped.</td>
<td>147</td>
</tr>
<tr>
<td>25</td>
<td>The Ininaatigoog in Detroit.</td>
<td>147</td>
</tr>
<tr>
<td>26</td>
<td>Detroit evaporator used at the iskigamizigan.</td>
<td>148</td>
</tr>
<tr>
<td>27</td>
<td>Evaporator at Detroit iskigamizigan.</td>
<td>149</td>
</tr>
<tr>
<td>28</td>
<td>Photo of youth from Detroit.</td>
<td>150</td>
</tr>
<tr>
<td>29</td>
<td>Photo of the closed system of the Lumberjack Maple Syrup Company.</td>
<td>153</td>
</tr>
<tr>
<td>30</td>
<td>Location of Wisconsin sand mines.</td>
<td>160</td>
</tr>
<tr>
<td>31</td>
<td>Data from 2023 sap collected</td>
<td>181</td>
</tr>
<tr>
<td>32</td>
<td>Map of current sugar maple region along with the projected region as impact from climate change.</td>
<td>184</td>
</tr>
<tr>
<td>Chart 1: Money the United States has spent on natural disasters since 1980</td>
<td>109</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Chart 2: Extent of ininaatigoog dieback from 2009-2010</td>
<td>175</td>
<td></td>
</tr>
<tr>
<td>Chart 3: The Nitrogen to Phosphorus ratio in the soil affecting the sweetness of the sap</td>
<td>176</td>
<td></td>
</tr>
<tr>
<td>Chart 4: Table SapChem, Nitrogen and phosphorus nutrients in first 2021 sap from Midwest Sugarbush measured at the School of Freshwater Sciences</td>
<td>179</td>
<td></td>
</tr>
</tbody>
</table>
ACKNOWLEDGMENTS

I would like to give a special thanks to Cary Miller who was the director of the American Indian Studies program at UWM when I started my academic career. Cary guided me with expert tutelage in Indigenous history and understanding of the treaty rights and ceremonies.

Margaret Noodin for her unrelenting support of not just me but my family. Her understanding of the time and energy it takes to raise a family while a full-time student helped me feel not alone while I struggled trying to balance the two. Her knowledge of the Ojibwemowin, Indigenous history, culture, and ceremonies encouraged me to continue with the struggle to further my understanding of my own people and to spread that knowledge to all that would listen. She guided me to explore new ideas and concepts even pushing back at the knowledge that was given to me from my uncle and father so I can better understand Indigenous framework, ideology, that way of life. She has been a great mentor, educator, and most of all my friend.

Marcus Filippello for guiding me through my academic career helping understand how to be a better historian and instructor of history.

Nigel Rothfels from my undergrad work with the McNair Program and undergrad research you and your team at SURF have always encouraged me to do my research, even when I was ready to give up on my research, our coffee talks were always encouraging and helpful.

Ryan Holifield, your feedback on my dissertation was extremely helpful. I appreciate you assisting in this process and look forward to working with you more in the future.

Carmen Aguilar-Diaz it has been a privilege to work with you and Dr. Cuhel starting with the McNair program. You both have pushed me to better understand science while encouraging me to combine my Indigenous knowledge with the science field. Our trips out on the Neeskay
will always be remembered fondly. Learning the processes of the lab was very educational and I look forward to continuing to work with you and Dr. Cuhel. Cuhel-Agular lab for all the hard work you have put into my research. Michigan Tech Labs (LEAF) for analyzing the sap in 2023. Tara Bal, Shelby Lane-Clark, and Valorie Gagon thanks for your help and guidance in my research and helping me with my questionnaire and introducing me to the LEAF Lab and Michigan Tech.

Mike Zimmerman, Jr for your plethora of knowledge that you are always willing to share and your constant push to use Ojibwemowin. Angela Mesic who has been at UWM during my undergraduate studies, thank you for your constant support, shoulder, and help. Susan Wade our long hours of sitting on the computer talking through what I am trying to say in my dissertation. The early morning hours, while our loved ones were still sleeping, and we were writing. Over six hours a week from just you and I working on writing. What will we do with our time now.

Maurina Paradise, you have guided me through my undergraduate work and watched me come full circle in my academic career. You have supported me through it all. You have helped me find funding and encouraged me on my writing. Thanks to your vast knowledge and your excellent editing skills this dissertation turned out even better than I thought possible.

The Electa Quinney Institute and all the staff for being so kind, patient, and supporting me through my journey.

Zhingos, and Bobby Bullet St. Germaine, thank you for all your hard working in teaching the language, culture, and ceremonies. Giniw Makwabun and you guided me through life and showed the path of minobimaadiz. The 27-hour car rides to northern Manitoba for ceremonies and going to other communities for healing taught me a lot. I love you both.
My mother Barb Stucki brought me into this world and always reminded me that she could take me out of this world. Thank you for your constant support and continuous love. My mother-in-law Pam White and Diane Jenkins continually love and support me from the confines of their warm sunny place in Florida. My brother-in-law and sister Kevin and Julie Brown, while the rest of that family laughed and snickered you both stood by and supported me and my family throughout the process. All my friends and family that I know I missed, have been supportive of my endeavors. Shane and Neil, my closest brothers, who were with me before my injury and helped me heal and find myself again. Nick Reo for the constant support and encouragement for me to finish and the relentlessness on speaking Ojibwemowin.

Finally, my family. For my children dealing with my moodiness while I was trying to meet deadlines, write papers, and read all those books. For all the school events I missed or family time that I was distracted with school to enjoy. Thank you all for being there and supporting me through this journey. I love each and every one of you! My beautiful wife. I know we have been to hell and back a couple times on this journey. I could not have done this without your love and support. Pushing me to go back to school and encouraging me to continue when I wanted to give up. This would not have been possible without you! Thank you. I love you, always have and always will.

To all my ancestors, ceremonies, the ininaatigoog, thank you for guiding me through life and helping me search for minobimaadiz.
Introduction

Daniel Richter, an Early American Historian, who spent years working with colonial records to reconstruct a history of the Iroquois, states:

As a Euro-American of the late twentieth century, I do not pretend to have plumbed the mind of seventeenth-century native Americans, for most of the mental world of the men and women who populate these pages is irrevocably lost. Neither historians who study documents produced by the colonizers, nor anthropologists who make inferences from their knowledge of later culture patterns, nor contemporary Iroquois who heirs to a rich oral tradition but who live in a profoundly changed material circumstances can do more than partially recover it…In more ways than one, we must all remain outsiders to a long-gone Iroquois world because of the inadequacies of the source material available2.

Documents of the past and ethnographies that were written in the past, such as Francis Densmore’s work, cannot truly capture what it was like for the Ojibwe to cohabitate with the maple sugar trees and participate in the process of sap rendering. Although we are, as Richter explains, “outsiders,” these methodologies are important but so too is the importance of oral history being passed down and the continued practice of the knowledge, as well current ethnographies, and scientific analysis of the biome and the tree. These all are necessary to understand the history of the trees and how the environment was and is continuing to be affected; whatever affects the biome affects the tree, humans, and other beings.

Ininaatigoog, Acer saccharum, or sugar maples have been around for about 66 million years providing sustenance for lives around them3. They provide food and shelter for various beings and exchange gas in earth’s atmosphere. For many Indigenous communities, when sap starts to run, it is a sign of springtime, a celebration of life. This dissertation focuses on people

---


living with the *Ininaatigoog* in the *Anishinaabewaakiing* in an example of an integrated relationship. This relationship along with scientific analysis of the biome and the *Ininaatigoog* suggests a framework for conducting a more holistic approach to research. In this text, I have deployed a framework to better understand biomes in the Great Lakes where *izhi-iskigamizige* (the place of tapping maple sap) takes place. This framework is based on relational agency between humans and non-humans, showing them both as striving for *mino-bimaadiziwin*, the practice of living as the Creator intended. It is unlike other methodological frameworks for scientific inquiry which view trees, animals, land, and water as inanimate resources, because it integrates multiple ways of understanding the relationship between members of a biome as a community, so that all forms of life within a biome have equal agency and are engaged in protecting these environments as climate change accelerates. To provide a more holistic analysis, this framework integrates western science, Traditional Ecological Knowledge (TEK), and Indigenous knowledge by looking at the history and relationships of the *Anishinaabeg* and the *Ininaatigoog*.

Researchers who identify personally as Indigenous and follow a set of land-based practices, have an intimate and interconnected relationship with the land. Daniel R. Wildcat⁴ confirms this when he says, “Anyone who spends enough time outside the man-made walls, if willing, will be able to communicate with the animals.”⁵ One definition of being Indigenous is to carry the imprint of the land in language and culture through living with the land and respecting it as a being with feelings and gifts to exchange. The earth and its systems are tied to every aspect of being and activity for those who live closely with it. For example, in Ojibwemowin,

---

⁴ Wildcat is a Yuchi member of the Muscogee Nation of Oklahoma, director of the Haskell Environmental Research Studies Center, and professor of the Indigenous & American Indian Studies Program at Haskell Indian Nations University in Lawrence, Kansas.

like many other global Indigenous languages, name the months after the practices and beliefs associated with a particular cycle of the moon as it moves around the earth. In this dissertation I highlight the month *Iskigamizige-giizis* (Sugar Bushing Month), the timing of which varies depending on location, but is known as April in English. Like April’s Latin base, *aperire*, means 'to open,' *Iskigamizige* indicates an action of opening, and takes place around the time of the spring equinox.

Indigenous people have been oppressed, mystified, judged, and stereotyped for so long and so frequently that most people do not know what the truth is anymore. In recent centuries the history of Indigenous people has been retold and put through a western lens by numerous prominent historians and philosophers. Michel Foucault explains how knowledge and power are joined together. Those in positions of power control knowledge and the institutions that disseminate knowledge, including what history is taught, and in some cases, they rewrite history. Within communities, determining what is right, wrong, traditional, or nontraditional are modern problems that are constantly being negotiated. Some say those of us who identify as Indigenous are our own worst enemies. Instead of working together and making changes together, infighting creates more anger and animosity while isolating many of our relatives. One result is continuing to give the United States the upper hand, while Indigenous communities enforce a national language, ideology, culture, and system of government, education, and agriculture under the guise of preserving an American traditionalism.

As an Indigenous person, one of the many challenges that I faced researching and writing this dissertation was including myself as a person of knowledge while discussing the history and culture of my people. It was hard to compare my knowledge which was passed down over

---

generations, and through my lived experiences, to that of a researcher. Even the terms I chose to use are influenced by oral teachings and ceremonies I attended with elders who sustain generations of traditional knowledge. Some Indigenous people will not appreciate or agree with my work and my interpretation, but this is my work and is based on my teachings, my research, and my conversations with elders and teachers. Some of my knowledge comes from my life experiences. Traveling throughout Anishinaabewakiing in the United States and Canada with my Uncle, Sam Musquabun, Northern Wisconsin and Minnesota with Bob Bullet St. Germain and participating in ceremonies with Mary Ellen Baker, just to name a few people who were influential in my life, I have come to appreciate the different communities and the variation on how ceremonies are done.

To be Indigenous today means you must have a thick skin and a high tolerance for negative stereotypes, misunderstanding, and misinformation. Many Americans tend to think Indians are all dead, a thing of the past.7 Very few college students have heard of the “Trail of Tears” let alone the Sandy Lake massacre of 1855, unless they enroll in a history course focused on Indigenous history. Individuals that do have knowledge of Indigenous people often know only the national myths about Christopher Columbus discovering America or Pilgrims and Indians sharing a meal at the first Thanksgiving8. Jean O’Brien, an American Historian at the University of Minnesota, discusses the myth of Plymouth Rock being invented by New Englanders in the 1770's as the mythic site of origin so they could organize and proliferate throughout the nation.9 United States citizens who do know American Indians are still alive typically have never been

given a chance to become informed allies and frequently believe numerous misconceptions, some of which can lead them to hate Indigenous people. An Anti-Indian phenomenon is at the core of the United States of America. This hate can be so all-consuming that it led the State of Wisconsin to pass Act 31 in an attempt to eliminate the ignorance and get rid of some of the hate. This law was passed in response to “the societal problems surrounding the 1983 Voigt Decision, which recognized the Chippewa or Ojibwe rights to hunt, fish, and gather under the treaties of 1837, 1842 and 1854, and demonstrated the serious consequences that result from a lack of accurate and authentic information about tribal histories, cultures, and tribal sovereignty or political status.” Wisconsin Act 31 requires that all public-school districts and pre-service education programs provide instruction on the history, culture, and tribal sovereignty of Wisconsin’s eleven federally recognized American Indian nations and tribal communities.

Even with Act 31 in place, many misconceptions live on, reinforced by the education system and the anti-Indian phenomenon of America. Too many times, I have heard my own children come home from school telling stories of teachers saying, “All Indians get their education for free” or “They smoke pot in their peace pipes,” “are lazy,” “are just looking for handouts,” or are only “part of the past.” If this is happening in a state that has a law, Act 31, requiring that educators become trained, and students educated about the Indigenous people of Wisconsin, can you imagine what is happening in some of these other states school’s that do not have anything like Act 31? Clearly Act 31 is not sufficient in preventing Wisconsin educators

---

from teaching inaccurate depictions of Indigenous communities including the inaccurate
depictions of Thanksgiving. J.P. Leary, Associate Professor in First Nation Studies and author of
The Story of Act 31: How Native History Came to Wisconsin Classrooms, discusses the many
issues of Act 31, including forcing school districts to teach Indigenous history.\textsuperscript{13}

My life experiences in trying to obtain work have often been met with great difficulty.
My darker complexion does not help, and then having long hair, or having my hair in two braids
presents the challenge for me to be taken seriously. Most employers take issue with the hair, no
matter how I wear it. Once I am hired, I am scrutinized more, and I still must prove myself.
Many times, supervisors and colleagues make inappropriate statements or look in the other
direction when racially based comments are made. Some employees become creative when
coming up with new racial slurs. I have had to learn to be like Teflon and let the idiocracy slide
off and continue to go about my day as if nothing has happened.

Worse than being scrutinized at work, is being judged by my own Indigenous people;
having them analyze if my hair is “long enough”, if my skin is “dark enough”, if my cheekbones
are “high enough”, asking if I am tribally enrolled or can speak my heritage language. If you are
not a “card carrying, federally recognized Indian,” then you must not be “Indian” at all, or not
“Indian” enough. In the world of academia, scholars who should know better, still participate in
the conversation of asking if I am a “card carrying Indian.” This reinforces the idea of pedigree,
blood quantum, and eugenics, as though the Indigenous person is a horse, a resource, or a prized
possession to collect, given the pedigree is “right.” Having enrollment status and a higher blood
quantum perpetuates the concept of being “full blood Indian.” The term “full blood” does not

\textsuperscript{13} J. P. Leary, The Story of Act 31: How Native History Came to Wisconsin Classrooms (Madison, WI:
refer to the actual hemoglobin that all humans and animals carry; it is a system of control and erasure used as a means of determining a racial identity which is intended to indicate whether or not you are Indigenous, have traditional knowledge, memory of a heritage language or the right to practice ceremonies of Indigenous people.

As a result of these systems of control and erasure many Indigenous teachings are forgotten, and acceptance and understanding are often a thing of the past. We can be our own oppressor, which would be a self-fulfilling prophecy in which we provide the dominant culture evidence to support our continued objectification, disempowerment, and exploitation. The definition of Indigenous is too frequently dictated by the government. This ideology was put in place by the government to eliminate native people from their land and resources to free the government of the responsibilities of the treaties they signed, the financial obligation of these treaties, and freeing up land to be sold for revenue. Finally liberating the United States from the “Indian Problem.”

Society normally does not ask, let alone require people to discuss their past, where they grew up, or any other aspect of their lineage. Most people would be offended or at least feel violated being asked questions about their lineage by anyone other than a close friend. When it comes to the Indigenous population it is the first question out of people's mouths, “So, just how Indian are you?” Even Indigenous people will ask and sit in judgment. Some Indigenous people make it their life's work to judge other Indigenous people, ridiculing them for the color of their skin or lack of being on any rolls.

Somehow the more “Indian” you are the more you know “about Indians.” We Indigenous people are even worse and judge those who do not have dark skin or carry an enrollment card,

---

quickly dismissing anyone who does not carry a card as Indian. Gone in many communities are
the traditions that our people once practiced. Always asking proof of lineage, no longer
following the ways of the *opwaagan* (sacred pipe). To save people time and the effort, I include
a short autobiography. This will also help readers understand the lens through which I view the
world.

Though it is not required for scholars to share their background, I offer up mine knowing
that there will be people out there who will look for information on me. I am not hiding from my
past or who I am. I am not on tribal rolls anywhere. I do ceremonies and help my father,
Zhingos, out as much as I can. I carry with me the teachings from the elders I have sweated,
danced, sung, and hung out with. I try to live *minobimaadiz*, which is how I am now taking care
of my family.

I was born in the city of Omro, Wisconsin, about 8 miles West of Oshkosh. I was one of
only a handful of minorities who lived in that city. I was born to Barbara Rudy and Robert Breu.
My biological mother is where I get my lineage though. I include biological because I am
fortunate enough to have a couple of mothers, along with a couple of fathers. My biological
mother was adopted into the Rudy house and all records show her parents as the Rudy family. It
was known in the Rudy house that she was not a blood relative. Some of my earliest memories of
visiting with my mother’s side of the family were of us going to visit my grandmother, a small
frail old lady. She always told me not to forget that I am Chickasaw and to be proud of who I am.
My biological father is of German descent. About 3 months after I was born my parents got
divorced.

I lived with my father in Omro until I was 16 years old. I grew up in a Catholic house
going to religion class on Wednesdays and mass on Saturdays or Sundays. I was baptized and
confirmed in the Catholic church. I was an altar boy, assisting Pastor John at St. Mary’s Church in Omro. I went to Omro Public Schools until my senior year of high school when I transferred to and graduated from Oshkosh North High in Oshkosh.

Unfortunately, I was drinking by the time I was in third grade, so my mother took me to a conference called “The Anishinaabe Way on Drug and Alcohol Abuse.” This conference was held on the Lac Courte Oreilles Band of Lake Superior Chippewa Indian reservation, near Hayward, Wisconsin by Mary Ellen Baker. It was at this conference my life took a drastic turn. I met my adopted father, Zhingsos, Bobby “Bullet” Hollis St. Germain, and GiniwMakwabun (Sam Musqua). Zhingsos is from Lac Du Flambeau Band of Lake Superior Chippewa Indian (and before anyone asks yes, he is a descendant and yes, he does have his card). GiniwMakwabun is from the Keeseekosse First Nation located in Kamsack, Saskatchewan (again, yes he is a descendant with his card). Both men adopted me and took me under their wings to teach me what they knew about the Anishinaabeg ways. My uncle, being Saulteaux, and what he calls a windigokan\textsuperscript{15}, a backwards person, did things a little differently but always with the same intent and result. I have gone to sun dances, sweat lodges, naming ceremonies, weddings, shake tents and other ceremonies. I traveled with my uncle, GiniwMakwabun, being his oshkaabewis,\textsuperscript{16} traveling with him all over Canada and the northern United States, doing ceremonies and doctoring people. I was fortunate to be given two spiritual names. Maang is my Anishinaabeg name and was given to me by GiniwMakwabun, and Tutsiu, my Chickasaw name, was given to me by Jay WhiteCrow.


Through many twists and turns and life lessons, I ended up in academia studying Indigenous history, culture, and language. I have done this while raising seven (yes, seven) wonderful children. I am not a conventional student nor am I a conventional person, so why should my dissertation be conventional? I am going to break some rules in my paper. I have combined ethnographic history and scientific observation techniques, and I have given the *Ininaatigoog* some much deserved agency. I will also occasionally cite myself as a person of knowledge of *Anishinaabeg* customs.

**Literature Review**

This dissertation relies on a lot of different stories and previous work. I begin by asserting there is a difference between Traditional Ecological Knowledge (TEK) and Indigenous knowledge. Indigenous groups practice “traditional ecological knowledge” however while these groups use this term, I argue that it is Indigenous knowledge because the term TEK has been co-opted by western groups. Traditional Ecological Knowledge is an umbrella term that is utilized to shield entities, businesses, and government agencies to justify their actions in addressing the disparities of the landscape even though these disparities continue. I use scholars Vine Deloria Jr., Nicholas James Reo, and Kyle Whyte to help support this theory. Deloria Jr’s *Custer Died for Your Sins*, shows the disparities given to Indigenous knowledge in favor of colonized western knowledge. Deloria Jr’s research is further supported by Nicholas Reo and Kyle Whyte’s research. Nick Reo’s article “The Importance of Belief Systems in Traditional Ecological Knowledge” and Kyle Whyte’s article “On the Role of Traditional Ecological Knowledge as a Collaborative Concept” both discuss how knowledge came from the traditional lifestyles of these Indigenous communities and the interconnectedness they have with their environment. Gregory Cajete’s *Native Science* employs the two terms interchangeably. I argue that Traditional
Ecological Knowledge (TEK) has been co-opted by western run organizations and therefore, Cajete misses the point that TEK has been co-opted.\textsuperscript{17}

When discussing history, I use Indigenous Anishinaabeg elders' teachings as sources including Eddie Beton-Benai, Basil Johnston, and Maude Kegg, and scholars such as LeAnn Simpson. Elizabeth Baird's memoirs and Henry Rowe Schoolcraft also informed my research. Eddie Benton-Benai's \textit{The Mishomis}\textsuperscript{18} influenced my research on analyzing \textit{aadizookaanag} and the ideology of the \textit{Anishinaabeg}. From Lac Courte Oreilles Chippewa Indian reservation, he writes of his knowledge and stories. His explanation of how the \textit{Anishinaabeg} came to be is thorough. His stories start with the origin of the \textit{Anishinaabe} people and go through their migration to the Great Lakes where they currently reside. Basil Johnston’s scholarship on the Ojibwe people, along with the traditional stories he writes are incorporated in my research as knowledge of the \textit{aadizookaanag}, the oral stories, of the \textit{Anishinaabe} people. \textit{Aadizookaanag} include origin stories about the \textit{Anishinaabe} and other spiritual beings that are influential to the Anishinaabe. Johnston also tells historical information on how the \textit{Anishinaabe} interact in their biome and with these other beings. Johnston, being Ojibwe from Parry Island Reservation, has an intimate knowledge and understanding of what he writes. In his work’s \textit{The Manitou}\textsuperscript{19} and \textit{Ojibwe Heritage}\textsuperscript{20} Johnston retells numerous \textit{aadizookaanag} of the Anishinaabe. He shares his stories educating of the knowledge once only handed down through oral traditions.


Johnston does not include is the origin stories or the migration stories of the Anishinaabeg. Maude Kegg's memoirs gave intimate knowledge of the sugarbush. Leanne Simpson’s *Dancing on Our Turtle’s Back*\(^{21}\), discusses the awakening of the aadizookaanag teachings and bringing the Indigenous knowledge and philosophy through the art of the aadizookaanag. She explores the philosophies and knowledge embedded in aadizookaanag, language, and ceremonies stressing the importance of Indigenous knowledge. These three scholars are elders and from an Indigenous perspective, important for the integrated framework I propose in this work. Elizabeth Baird, a woman of mixed heritage living in the Green Bay area in the mid 1800’s, gave accounts of her life in the area, including stories of sugarbushing. Another work from the nineteenth century, Henry Schoolcraft’s multi-volume work *Historical and Statistical Information*, discusses the cultural aspect of the Ojibwe, from a western perspective, that took place during colonization and miss some of the teachings that are in the aadizookaanag and miss the ramifications of the colonization that has already taken place prior to his arrival.\(^{22}\)

I also incorporate such non-Indigenous historians as Richard White and Colin Calloway even though they are not from an Indigenous perspective. These two scholars approach history from a different more Indigenous focused lens and represent the contemporary historiographical literature used in my dissertation. White’s *The Middle Ground*\(^{23}\) discusses the middle ground as both a place and metaphor for how the Indigenous communities and the colonizers interacted. Calloway’s *First Peoples*\(^{24}\) gives a broader history of the Indigenous communities from contact

\[\text{\footnotesize 21 Leanne Betasamosake Simpson, *Dancing on Our Turtle's Back: Stories of Nishnaabeg Re-Creation, Resurgence and a New Emergence* (Simon Fraser University Library, 2016).}\]


\[\text{\footnotesize 24 Colin G. Calloway, *First Peoples: A Documentary Survey of American Indian History* (Bedford/St. Martin's, Macmillan Learning, 2019).}\]
to present. Calloway also discusses the policies that the United States government had for dealing with what is called the “Indian Problem.”

These scholars guided my understanding of the treaties and the laws of the Great Lakes region. In the Court of the Conqueror, by Walter Echo-Hawk and Chippewa Treaty Rights by Ronald Satz, both discuss treaties and the formation of the reservation system and the land now known as the United States. Echo-Hawk as a former Native American attorney, tribal judge, author, activist, and law professor gives an Indigenous perspective on the United States court system and subsequent rulings on treaties and “Indian” law. Satz focus is from a historical perspective looking specifically at the Ojibwe people located in the Great Lakes region.25

Besides gaining knowledge on the ininaatigoog firsthand and by speaking with elders and other community members who sugar bush, the work of Adam Wild and Ruth Yanai informed my research. Adam Wild and Ruth Yanai’s article, “Soil Nutrients Affect Sweetness of Sugar Maple Sap,” discuss how different nutrients affect the overall health of the tree.26 Martha Carlson’s article, “Monitoring the Health of the Sugar Maple,” highlights what to look at when monitoring the ininaatigoog and how to project declining population of sugar maples with the rising temperature of climate change.27 These scholars did not use TEK or Indigenous knowledge with data analysis. Tara Bal dissertation on “Evaluation of Sugar Maple Dieback in the Upper Great Lakes Region and Development of a Forest Health Youth Education” added a

---

better understanding of the extent of the ininaatigoog dieback in the Great Lakes region.28 Bal’s research guided some of the questions I asked the participants about their ininaatigoog. Bal approaches the analysis using TEK from a western lens.

The scholarship about how Indigenous people live in their biome and interact within the environment they live in comes from numerous sources. *Changes in the Land* by William Cronon informed my research of how the landscape and ecology was colonized as much as the people. 29 Robin Kimmerer in *Braiding Sweetgrass*, gives an account of the honorable harvest as a way to respect the environment.30 In *Native Science: Natural Laws of Interdependence* Gregory Cajete discusses what he calls Native science as a continual relationship that relates to and speaks of the world as full of active entities with which people engage in daily. 31 None of these scholars utilize Indigenous languages as the forefront of their research. Instead, their research uses TEK with a western lens.

These scholars helped inform my scholarship but also highlighted the fact there is little Indigenous knowledge utilized in TEK. In order for me to center my work on Indigenous knowledge and the importance of an integrated framework that includes Indigenous knowledge and scientific data analysis, I have relied on five specific methodologies to shape a new framework for understanding the relationships we have with the ininaatigoog, with the intent that this framework is an example that would be used for understanding the relationships between

---

31 Cajete, *Native Science*.  

14
humans and other biomes. Because this example is in the framework of *Anishinaabeg* I refer to the communities of the maple trees as *ininaatigoog*.

**Methodology**

The methodologies I use include oral knowledge, linguistic analysis, history, ethnography, and scientific observation. In this dissertation the five specific methodologies I use to shape a new framework for understanding the landscape that we live in begin with the oldest form of knowledge preservation. The oral tradition of passing on knowledge from generations has been employed by Indigenous communities since they have had a need to preserve collective memories and experiences. I utilize the oral stories both told to me and recorded by others, to appreciate how the *Anishinaabe* received and understood their knowledge. I analyze the language in the stories to find the knowledge that is embedded in their language giving a better understanding into the *Anishinaabe* worldview. To help with translations and understanding of *Anishinaabemowin* I employed the Ojibwe People's Dictionary and worked with elders who speak *Anishinaabemowin*.

History was also passed down through the oral tradition in Indigenous communities through the practice of storytelling that included *aadizookinaan* and *dibaajimwinan*. The *Anishinaabe* were able to adapt to the changes that were happening in the Great Lakes region even through colonization. While using contemporary historiographic literature and oral tradition of the *Anishinaabe* I was able to present an understanding of how the *Anishinaabe* and the land were able to adapt in their ever-changing environment.

Ethnographic methodology is a collaborative effort between me and the participants that allowed me to look at the relationships that are being maintained with the *ininaatigoog*. By asking questions and observing the utilization of an *ininaatig* there is a more thorough depiction
of the environment and how it is changing. This includes the process of how the sap is harvested and manufactured into a product that is consumed and how the relationship with the *ininaatigoog* is maintained.

Utilizing ethnography with scientific methodology affords the opportunity to monitor the *ininaatigoog* at the eight locations of the participants. Collecting samples of sap at each location and analyzing that sap in a lab will show the chemical makeup of the sap at each of the locations. Over a period of years, the data will show the environmental impact on the *ininaatigoog* that is taking place in each location. With further research and studies, the data would allow for mitigation of *ininaatigoog* dieback and help limit the negative impact of climate change.

I use the knowledge gained from language analysis and oral traditions to help formulate the Indigenous framework in my dissertation. This Indigenous framework is an amalgamation of Indigenous knowledge and worldview along with western science that creates a means to protect the environment and *minobimaadiz*. The dichotomy between western science and Indigenous knowledge shrinks when they are both utilized in an equal environment. Respecting both knowledge systems give a complete understanding of the world around us.

**Definition of Terms**

This dissertation includes a wide array of terminology in several languages utilizing Indigenous ideology and framework to better understand the environment and history of the landscape. Landscape as defined in this dissertation, is an inclusive entity that includes the land and all beings, human and non-human, that reside on it. I focus on the *Anishinaabe* language and ideology drawing from other Indigenous practices in the Great Lakes region along with western science and historiographic work.
I refer to Indians as Indigenous or Native, and use the the terms interchangeably. I avoid terms such as “Native-American” or “American-Indian” as these terms give ownership of the land to the colonizers and take away from the Indigenous knowledge and science. Our land is known as Anishinaabewaki, or Mikinaak Aki, not America, a name that colonizers gave it. I also incorporate Indigenous names of places and utilize the Ojibwe language throughout my dissertation to better understand the traditional knowledge that these Indigenous communities have. I concentrate on the Anishinaabeg but also allude to other Great Lakes Native nations such as the Menominee and Ho-chunk who also care for the Ininaatigoog and collect maple sap. The Anishinaabeg are the Ojibwe, Odawa, and Potawatomi people collectively.

I discuss Traditional Ecological Knowledge (TEK) and “western” science. TEK is supposed to reflect the combination of western science and Indigenous knowledge, however my dissertation contends that is not really a joining of knowledge but a way for western scientists to cloak themselves in “indigeneity” without actual application of that worldview. I define western science as any of the branches of science using colonized western thought of how the world should be categorized and does not have space for other views or ideologies of the world. I concentrate on the biology and chemistry of the ininaatigoog. Indigenous knowledge I define as the knowledge that has been acquired over time that is embedded in the stories and languages of the Indigenous people.

Summary of Chapters

Chapter one discusses gaa-ezhiewbag, the history of the Anishinaabeg and Ininaatigoog territory. I examine how the landscape of the Great Lakes has changed over time, specifically looking at Anishinaabewaki. Starting with a conversation on creation stories, I then move on to
discuss the migration of the *Anishinaabe* from the east coast to the Great Lakes region. Finally, I discuss colonization and its effect on *Anishinaabewaki* and the *ininaatigoog*.

Chapter two looks at *Ishkigamizige gaa-eziwебag*, the history of *Anishinaabeg* sugarbushing. This chapter reviews some of the stories of how the *Anishinaabeg* obtained the knowledge of the *ininaatigoog*. I explore how this knowledge has changed throughout time and colonization.

Chapter three *ezhi-dibaadanawaa Iskigamigewaada*, is an ethnographic look at eight *iskigamizigan* throughout the western Great Lakes. I interviewed six individuals who shared their knowledge and practices of their specific *iskigamizigan*. I reflect on how everyone cares for the *ininaatigoog* and the art of *iskigamizigan* in their own way.

Chapter four explains *ezhi-nanagadawendamowaad*, an Indigenous framework for scientific observation. This chapter dissects the shortcomings of western science and TEK, and asserts that Indigenous knowledge is needed for a framework to not only care for the *ininaatigoog* but also to be able to respond to the effects of colonization, including climate change.

My conclusion incorporates the knowledge and ideas of this study of the *ininaatigoog* creating a framework to use in other biomes so we can all attain *mino-bimaadiziwin*. 
Chapter One: *Gaa-ezhiwebag Gichigami Wayekwaajiwan: History of Anishinaabeg and Ininaatigoog in the Great Lakes*

This chapter discusses the history of the *Anishinaabeg* who lived east and then west of the Great Lakes and how colonization has impacted the relationship they have with their environment and the *ininaatigoog*. Before we discuss and try to understand the *Anishinaabeg* and the art of the *iskigamizigan* we first need to understand their history, and how colonization has altered the physical and social networks of the place known as *Anishinaabewakiing*, the home of the *Anishinaabeg* people. *Anishinaabe* ontology teaches that everything in the universe has an inter-related history. To understand the current relationship between the *Anishinaabeg* and *ininaatigoog*, we must examine the land that sustains them both. The Great Lakes biome has been the home for many species including humans. The *Anishinaabeg* migrated from the east coast thousands of years ago. Their migration affected the biome in the Great Lakes however western migration of Euro-Americans became so excessive that it caused severe imbalance. As Cronon discusses in *Changes in the Land*, settlers dominated and controlled the environment. This colonization caused injury to the land while making money for these settlers. Euro-Americans also took over the land to make nations and in the process they fooled themselves into believing that they had control over nature, a problem that continues today. Cronin and other historians have suggested that recent and rapid economic and political upheaval have permanently disrupted what Indigenous oral historians would call the "circle of life" and European historians have viewed as the "kingdom of nature."  

---

Colonization. Colonization had a permanent impact on the Anishinaabeg and Anishinaabewakiing including the ininaatigoog. As we examine creation stories as a basic understanding of the culture along with the Ojibwe language to help understand the precolonial history and effects of colonization.

Creation Stories

Globally people have stories of their origins. The Anishinaabeg have not only their creation story but their migration story. The story places the Anishinaabewakiing moving from the Atlantic coast to the western Great Lakes, around the time the ice receded 10,000 to 12,000 years ago, with the copper and ochre cultures preceding the modern nations. Each nation within the Anishinaabe has their own story of how they became part of the biome that was there. For the Haudenosaunee, their ancestors fell from the sky; the Diné emerged from under the earth after traveling through many underworlds; Kiowa entered the world through a hollow log. A common (and persistent) theory from anthropologist’s is that Indigenous people entered the American Contentens through the Bering Strait. This theory undermines not only the Indigenous people beliefs but also supports the notion that Westerns have just as much right to the land and to colonize it since Indigenous people just migrated to the land.

In Indigenous cultures, creation stories are quite different from Christian creations stories. In Indigenous creation stories everyone works together, animals and humans alike, to save the earth and support each other in the community. Creation is ongoing and like it or not we are all participants. The Anishinaabeg from Lac Courte Oreilles Band of Lake of Superior Chippewa Indians, (LCO), specifically Benton-Banai, told an addizokaan of the creation story. These teachings are passed down by word of mouth, sometimes recorded on birch bark scrolls.

---

Benton-Banai-ba discussed how the Anishinaabeg have a familial relationship with the earth. Earth comes from a family, Nee-ga-gee’-sis a grandmother and Gee’sis, the sun. The creator of this family is called Gi’-tchie Man-i-to’, the Great Mystery or as some call him/ her the Creator.  

The Earth is said to be a woman. In this way it is understood that women preceded men on the earth. She is called Mother Earth because from her all-living things come. Water is her life blood as it flows and nourishes her and purifies her. The earth is able to sustain life. Though Benton-Banai called Earth, Mother Earth, we can look at his background and see the impact that the boarding schools had on him. It was during the boarding school era that the term “Mother Earth” was adopted. 

The surface of earth is given the four sacred directions: north, south, east, and west. Each direction contributes a vital part to the wholeness of the earth. Each has their physical powers as well as spiritual powers as do all things. The Anishinaabeg honor each direction for their medicine or contributions that each direction has. Understanding the interconnectedness of all the beings that make up the land, Mikinaak Aki. 

The creator sent his singers in the forms of birds to the earth to carry the seeds of life in all four directions. In this way, life was spread across the earth. On the earth, the creator placed the swimming creatures of the water he gave life to all plant and insect worlds. He placed four legged crawlers on the land. All these parts of life lived in harmony with each other. 

37 *ibid.*
*Gitchie Manito* then took four parts of Mother Earth and blew on them using a sacred shell. From the union of the four sacred elements and his breath, man was created. It is said the Gitchie Manito then lowered man to the earth. Thus, man was the last form of life to be placed on earth. From this original man came the *A-nish-I-na-be* people.\(^{38}\)

This is just one of many creation stories. Each community has their own stories of creation. In Indigenous creation stories the animals are always helping the humans, showing us how to have a kinship relationship to the animals and the environment. Verna Fowler (a Menominee elder) tells a Menominee creation story in Kathleen Tiggerman’s book *Wisconsin Indian Literature: Anthology of Native Voices*. Fowler's story tells of the Menominee being direct descendants of the bear and the eagle.

*Maeq-Awaetok* (Great Spirit) made the sun, the stars, and the Earth. Mother Earth gave birth to *Keso* (the Moon). The Moon gave birth to twins, whose work was to finish the creation of the world. Before people came into the world, the land, rivers, mountains, and lakes were formed. After the plants and animals and other living things had all been made, a great bear with a copper tail arose from the ground beside the Menominee River. As the bear explored the land on which he lived, the Great Spirit changed him into a person. This bear became the first Menominee. Walking along the river, the bear noticed an eagle flying in the sky. He called out to the eagle, saying, “Come and join me and be my brother.” As the bird flew down, the Great Spirit changed him into Menominee as well. The two brothers, Bear and Eagle, were the elder brothers, and formed the tribe’s major groups or clans. The earliest Menominee chiefs came from the bear clan, while the great warriors came out of the eagle clan.\(^{39}\)

The Menominee believe the land, like the air, cannot be owned. They believe that the Land is their mother. She gave them all they needed to live. The land, air, water, plants, and animals are there for them to use. However, they must use all those gifts very carefully so that they would be there for the people born in the future.\(^{40}\)

---


\(^{40}\) Tigerman, *Wisconsin Indian Literature*, 12.
The Potawatomi have their version of the creation story as told by Potawatomi leader Wapuka:

In the beginning there was nothing but water everywhere. No land could be seen. On the waves there floated a canoe, and a man sat in it, and wept, for he had no idea what his gift would be. At length a muskrat clambered up on the canoe and said, “Hau, grandfather! What are you crying for?”

“Oh!” answered the man, “I have been there a long time and cannot find any land.”
“Can you get me some?” asked the man.

“Yes,” replied muskrat, and dove down and came up again with both paws full of mud. He dived again and brought up a ball of earth in his mouth.

“Are you alone?” asked the man.

“No,” answered the muskrat, and he called up to the canoe several animal chiefs. The first to come was the white muskrat.

“I hear that you want to see us,” he said to the man.

“Yes, I want you to bring me some earth so I can make the world, and I will also create on it a good place for you to stay.”

“Hau,” replied the animals, “We will start at once.”

So, they all began to dive; the beaver came and helped them also. They saw their grandfather kneading the mud that they brought to him and molding it into a long column that reached from the surface to the bottom of the water. It projected above the waves, and he kept adding to it. They kept on day after day, until it was finally solid. At last, there was considerable space there. It was big enough to walk on. Then the man planted a great tree there. He still added to his island.

As the man worked on the north end of the island, he noticed in traveling back and forth that the ground grew dry and dusty. He asked his animal helpers how they liked what he had made, and they told him it was a good place to sun themselves. He told them to persevere in bringing him earth, and he would make it still better. Thus, he kept on, until the world was completed. Then he told his animal friends that it would be covered with green grass and trees. He took a stick and marked out where he wanted the rivers to run, and then he had the muskrat dig out the channels.

At last the man built a wigwaam(sic). When he had it ready, the muskrats were close by in a lake, so he went over and planted rushes along the shore for their benefit. Then he got into his canoe and paddled out into the ocean and called on the muskrats to help him again while he built another world. He built it up until it met the first one.

“Now,” he said, “I have it the way that I want it.”
One day he walked up to the north end of his land and found some people there. He approached them and inquired of them where they came from and when. They were the Bodewadmi, and they asked in their turn who he was.

“I am Wi’saka,” he replied.

“Well, we have heard of you; you must have come from above as we did.”

“No,” answered Wi’saka, “I have always been here, and I made this earth and all that you see on it.”

“Well,” said one, “This must be the Great Spirit.”

“Yes,” answered Wi’saka, “That is who I am. Who can do any more than I have?”

“But, if you are the great spirit, why didn’t you put us here?”

“You came too soon, there were others to precede you,” he said to them, and they believed, and asked him what he ate. Wi’saka told them that he lived upon the muskrats and he ordered the muskrats to dive into the lake and fetch him yakepin roots. When he had plenty, he told them to stop, and then he gave the roots to the Indians. He showed them how to make clay kettles and how to cook their food.

Wi’saka likewise showed the people the forest he had made, and in the woods, he showed them how to peel bark and make household utensils. He showed them how to make string to tie their lodge poles together. He instructed them how to gather and prepare reed to weave mats, and how to make rush mat wigwams. The next day he told them that there would be animals in the world, and at his command deer, buffalo, and other game appeared.41

Conversely the creation story that informs much of American culture comes from the Bible. In the Book of Genesis, God created the earth and made man last to rule over everything else. Woman was made from the rib of a man. After God created man to rule over everything and created women out of man to be the companion of man, (but also for man to rule over) God told them they could eat any fruit from any tree except for the Tree of Knowledge of Good and Evil. A serpent convinces woman to eat the forbidden fruit and subsequently dooms man into sin. It is because of this sin that women are punished into delivering children and to be ruled over man.42

Religious scholars may understand more nuanced implications of the story of Genesis, but the story of Eve’s creation from Adam’s rib, and Adam being commanded to dominate over all is

41 Tigerman, Wisconsin Indian Literature, 155
42 Genesis 3:3-16, (King James Version).
inherently embedded in our social consciousness which can be seen throughout history, church or otherwise. Additionally, there is the original sin which Genesis blames on the women, giving men another excuse for why they feel the need to dominate over women.43

Stories of creation shape the way people behave and act in society or a community. These creation stories show us more about the thought process of the people along with the belief system of a community. Creation stories guide humans on how to behave and interact with their surroundings. Kimmerer states in her introduction to Braiding Sweetgrass that the mistreatment of the land is symptomatic of the abusive relationship rooted in the Genesis creation story.44 Anishinaabe stories guide the Anishinaabeg on how to interact with other beings and land. The retelling of the aadizookaanag in Anishinaabemowin passes the knowledge from generation to generation. This includes the knowledge of the land and the ininaatigoog. Embedded in Anishinaabemowin is an understanding of the history of their people, their role in society and how to interact with other beings like the ininaatigoog.

Language

Language influences how we think, how we think influences how we view life and everything around us. Anishinaabemowin holds the beauty and the inclusivity of all beings, understanding how everything works together as a community and is united by a common cause. Anishinaabemowin shows no ownership as it all consists of actions being done to animate or inanimate beings. This is unlike the English language, which is a noun-based language, where ownership of items plays a significant role. This is reflected throughout history as you see Westerns strive to obtain ownership of items that cannot be owned, including ownership of all creatures.

43 Genesis 1:2-24, Genesis 1:26, Genesis 2:26 (King James Version).
44 Robin Wall Kimmerer, Braiding Sweetgrass, (Langara College, 2022), 9.
In Anishinaabemowin there are four types of verbs; type 1-something is just happening (no pronouns are involved, e.g. It is raining), type-2 someone is doing something (only 1 pronoun involved, e.g. She is eating), type-3 someone is doing something to something (still only 1 pronoun, e.g. She is eating blueberries), type-4 someone is doing something to someone (there are two pronouns involved, e.g. She is watching the bear).

Anishinaabemowin is a verb-oriented language (vocabulary is approximately 80% verb based) that puts an emphasis on action and relationship; a pronoun (there are 7) is doing something to someone or something without defining gender. Beings are either “animate” or “inanimate” (sometimes understood as meaning they have a soul or do not have one). The whole concept of gender comes from a linguistic structure. Human behavior is ruled by the subconscious life of the community, which is defined by the mythologies of that community.

English has four verbs: intransitive, transitive, linking, and passive. Intransitive and transitive are active voice words and linking and passive verbs are linking thoughts while passive is for a passive voice. The English language also affords the opportunity to switch words around to sound less degrading and mean, depending on the intent of the speaker. A person can say that someone is “economically disadvantaged”, or a person can say another is “poor”. Federal United States policies were made under these same premises, “kill the Indian save the man” was Colonel Pratts phrase justifying the start of governmental the boarding schools in order to “save” them from their primitive, non-American ways. In Anishinaabemowin poor could be described as

---

46 Colin G Calloway, First Peoples: A Documentary Survey of American Indian History (Bedford/St. Martin's, Macmillan Learning, 2019), 379.
*gidimaagizi*\(^{47}\) coming from *gidimaag*; pity, pitiful, poor; *izi* she or he is in a state or condition.

Note this definition does not offer any indication of financial state.

The language used in the Bible is based on ownership of what belongs to who and who is ruling over who. Man was created first to rule over the land, women created as an afterthought from the rib of man.\(^ {48}\) This is an excellent example of not only the philosophy that is hidden in Christianity but also how English, like many other non-Indigenous languages, is noun-based thus having a strong emphasis on labeling and ownership.

*Anishinaabemowin* has a greater sense of being, one with the universe. Someone or something is always doing something opposed to a more noun-oriented language like English which has an emphasis on ownership. Indigenous people understand that plants are an animate being that take in nourishment and get rid of its waste. There is little difference between plants, animals, and even water. We all are living beings.

Hidden in languages is a uniqueness that must be looked at. For people to have a better understanding of messages being relayed, you must understand the language that is being spoken.

*Ziigwan* is the verb for “It is spring”, and the etymology gives us an understanding of a time with an abundance of water while *Zaagibagaa* (blooming) gives the sense of opening and love. *Zaagibagaa* is often referred to as the budding of the plants. *Zaag* (sprout/ opening) *bag* (leaf) *aa* (in that condition). If we just look at the morpheme *Zaag* we also see the morpheme *Zaagi* (to love/ treasure). This connection cannot be overlooked, it helps understand the perspective on how the *Anishinaabeg* live, view, and think of themselves and the world they

---


\(^{48}\) Genesis 2: 20-24, (King James Version).
lived. *Anishinaabemowin* has a greater sense of being a part of the world and the land, not owning it or trying to control it. *Iskigamizige-giizis*\(^{49}\) (April) translates into the month of boiling sap. *Iskigamizigan*\(^{50}\) (sugar camp) both have the morpheme of *isk* which means to lower liquid level; *gam*, body of water, liquid *iz*, act on it by heat.\(^{51}\)

*Ziigwan* is a morpheme of the word *Ziiginan*\(^{52}\), which means pour or spill out. It may not be specific where or what is spilling out of, but it is clear the *Anishinaabeg* understand that during spring, there will be an abundance of water flowing in various forms. *Ziigwan* the sap starts to rise from the roots in abundance. There is an abundance of carbon within the sap to help the tree start to bud. It is this sap that is harvested for its sweetness. This is also the time when the rain comes, the waterways have more water, and everything prepares to *zaagibagaa*\(^{53}\), bloom.

It is also important to understand that even a simple concept of spring is different in the eyes of the *Anishinaabeg*. *Ziigwan* (spring) is different from *Zaagibagaa-giizis*\(^{54}\) and different from *Iskigamizige-giizis*. *Iskigamizige giizis* refers to the time when the sap is running, which is also linked to spring. *Isk* (lower liquid level) *gam* (liquid, body of water) *iz* (act on it by heat)\(^{55}\). *Ziigwan* morphemes into *Ziig* (pour) and *wan* makes *Ziig* a noun, translating into “pour place,”

---


recollecting the amount of rain that is associated with spring. *Giizis* translates into month, sun, or moon, which can be derived by context.\(^{56}\)

*Niibin*\(^{57}\) (summer) starts around *ode'imini-giizis* \(^{58}\)(June). The morpheme of *niibin* is *nibi* (water) \(^{59}\). There is an understanding that this is a time of year when water is more plentiful. The waterways are not frozen and covered with snow, *ziigwan* filled them up with water. *Ode'imini-giizis* is the moon when the *ode'imini*\(^{60}\) (strawberries) are ready to be harvested. *Ode*\(^{61}\) means (heart) and the *min* means (berry). As it says in the name, that berry is good for the heart and is used as a heart medicine. *Niibin* the nutrients in the sap are collected in the canopy of the *Ininaatigoog*\(^{62}\) by use of the leaves and photosynthesis. In *Dagwaagin* (fall) the leaves start to turn colors and it is time to harvest *manoomin* (wild rice), typically around *manoominike-giizis* (September). *Dagwaagin* morphemes into *dagwaa* or *dakwaa* which breaks into *dakw* (short) and *aa*, (is in a state or condition). This seems to indicate that there is a condition where the day is shorter and the water, rain, is getting shorter. This is a period where everyone prepares for winter. Humans and animals are collecting food for storage or moving to a colder climate.\(^{63}\)


Plants are leaving seeds for their offspring to grow next season. The sap then flows back down the tree and is stored in the roots to be used throughout *biboon*. This is the time when the tree builds more wood. The more water is collected the more wood is produced.

*Biboon* (winter)\(^{64}\) comes around *manidoo-giizisoons*\(^{65}\) (December), little spirit moon. *Boon*\(^{66}\) (cease, quit) is a morpheme of *Biboon*. This gives the speaker an understanding of a time when things cease or quit. Another way to look at this is a time for hibernation. The water goes into hibernation, the top of the water freezes while the lower level keeps flowing with nutrients for the fish. The sap in the *ininaatigoog* slows and goes into the root system preparing for *Ziigwan*. *Manidoo-giizisoons* is the little spirit moons, a time when the *Anishinaabeg* tell our sacred stories of *Wenabozho*.\(^{67}\)

These stories teach the people lessons on life science and the environment. *Wenabozho* tells the *Anishinaabeg* why things are the way they are now. *Wenabozho* is a half man half spirit entity, known as a trickster, who has helped shape *Mikinaakakii* (Turtle Island) and all the beings that live on her. Only during the frozen months are we to speak of *Wenabozho*. Through his stories the *Anishinaabeg* are shown how to obtain the sap from the *Ininaatigoog*. The

---


\(^{66}\) “/Boon-/ Initial Cease, Quit Type: Initial Subtypes: Root Words That Use This Part: Boona'amaazo Vai s/He Stops Singing Boonaabam Vta Stop Looking at h/ Boonaabandan Vti Stop Looking at It Boonaabi Vai s/He Stops Looking Boonaanagidoon Vai [s] s/He Quits Talking, Stops Talking Boonaanagidoone Vai [n] s/He Quits Talking, Stops Talking Boonaanimad Vii the Wind Lets up, Dies down Boonaapi Vai s/He Stops Laughing Boonendam vai2 s/He Gives up, Ignores Something, Quits Thinking about Something Boonendan Vai Forget, Ignore It Boonenim Vta Quit Thinking or Worrying about h/; Forget, Ignore h/ Boombiisaa Vii It Stops Raining, the Rain Stops Boonigi Vai s/He Stops Growing, Quits Growing Boonigidaazo Vai s/He Stops Being Angry, Quits Being Angry Boonigin Vii It Stops Growing, Quits Growing Booni' Vta Leave h/ Alone; Quit h/ Boonim Vta Stop Talking to h/; Avoid Talking to h/ Boonipon Vii It Stops Snowing, the Snow Stops Boonitan Vii Quit Listening to It Boontaw Vta Quit Listening to h/ Boonitooon vti2 Leave It Alone; Quit It Boonii Vai s/He Alights, Lands (from Flight) Boonwewidam vai2 s/He Quits Sounding, Quits Calling.” The Ojibwe People's Dictionary [https://ojibwe.lib.umn.edu/word-part/boon-initial](https://ojibwe.lib.umn.edu/word-part/boon-initial) (accessed August 19, 2021).

Anishinaabeg are continually learning and understanding Mikinaakakii, the land commonly called North America. Wenabozho taught the Anishinaabeg that everything is alive and needs to be respected.

Around the Great Lakes, Anishinaabemowin teaches us the connections we have with the environment including cosmology. Anishinaabemowin is a language that reflects relationships and energy. Everything around us is a network of relationships. The simple western concept of the cardinal directions takes on a whole new meaning looking at it through the Anishinaabeg language and views. Not only are the directions related and part of the bigger familial beings, as Benton-Banai says in *The Mishomis*, but if we look at the directions in Anishinaabemowin there is a different meaning to the words. Waabanong (east) is derived from the word waaban - meaning it is tomorrow or it is dawn. Waaban can be broken up into waab bright, white, grey, pale; also one is in a state or condition to see another. This too, is an oversimplification, as the Anishinaabeg have a clear understanding that in the east comes the sun, which is also responsible for light, which gives us the ability of sight. Zhaawanong (south) refers to that place where the heat comes from. This stems from the root word gizhaate - which means it is hot, implying weather. Gizhaate can be also broken up into gizh hot; aate it is in the light. We can also see that the Anishinaabeg understand that the heat derives from the south. Ningaabii’anong (west) is the place of our relatives, derives from ningaabaawadoon which means dissolve it or melt it in a liquid and ong which is a locative; directly translated would be the melting place. This is where the sun melts into the horizon, where the Milky Way travels, the place where our relatives travel to, when they pass.

---

68 Considering that “West” was understood as the direction of “passing on” or dying, it helps to better understand why the Anishinaabes were unhappy when the Federal Government told the people they had to move “west” during Indian removal, and perhaps why so many refused to go.
returns. The *Anishinaabeg* used the north star as a guidance to ensure a safe return to their home or their destination. This understanding of the language shows that the *Anishinaabeg* had a greater sense of being, that they were just one of many beings on this land that needed to be nurtured.\(^{69}\) This understanding was that everyone takes care of everything.

As a result of the hundred plus years of the boarding school era, much of the oral tradition was corrupted with the colonizer’s beliefs. Some Indigenous people argue over what is traditional and what is a colonized version of tradition. Even within Indigenous languages there is uncertainty on what are “traditional” words and what are “new words” that have been adapted into the language. One example of this is the use of the word “mother”. In Ojibwe, the word *ninga*, means “my mother”, the prefix "*nin*" meaning “my”, but according to the Ojibwe People’s Dictionary there is no single independent word for mother.\(^{70}\) A personal prefix or a suffix goes with the dependent noun stem *ga* (mother) to make a full word. That being said, most people from the boarding school generation use the word *nimaamaa* which is a newer word for my mother. Although new words may enter languages due to a new cultural exchange (for example guns), the boarding school era brought in new cultural words that would change the meaning of the way that the Indigenous people would think and look at the world around them. Another example is the phrase “Mother Earth”; a conversation that I will talk about in a later chapter. The boarding schools brainwashed Indigenous children and corrupted the knowledge passed down from generations. Now there are generations of children that have been told that their language was the devil's language and that their customs were the work of the devil. When these children were finally released from boarding school at the age of 18, most of the children


continued to believe the propaganda they were taught and had beaten into them, causing a
cataclysmic fissure between the traditional way of doing things and the now colonized way of
doing things. The children feared going to hell and so they did not help their elders who, if their
health allowed them to do so, would continue with traditions, such as that of the iskigamizigan.
Working alone, they could only handle tapping a few trees. Ceremonies like the iskigamizigan
were done by fewer people. However, elders worked to prevent ceremonies including
iskigamizigan from disappearing and were able to pass on cultural knowledge to the children of
boarding school children.

**Precolonial History**

Understanding the nuances of the *Anishinaabemowin*, the *Anishinaabeg* language, guides
us to understand the *Anishinaabe* precolonial history. The *Anishinaabeg* people recorded on
birch bark scrolls their migration from the East. Their migration stories talk about their journey
from the East Coast and the seven prophets that came to visit them along their journey. These
prophets told the *Anishinaabeg* to look for the place where food grows on water. According to
Edward Benton-Banai-ba in *The Mishomis Book*, there were many *Anishinaabeg*. “The people
were so many and powerful that if one was to climb the highest mountain and look in all
directions, they would not be able to see the end of the nation.” He also discusses the fear of the
white man as the reason for the great migration.\(^71\) Ojibwe ideology teaches that there is no
distinction of race, color, or creed of an individual. A more plausible explanation would have
been because of the vast number of people living in the area or a migration because of rising
water from the glacial melt. This rise in water would have flooded the coastal communities

\(^71\) Benton-Banai, *The Mishomis Book*, 44
creating a need to move. The map below from Archaeological Potential of the Atlantic Continental Shelf by K.O. Emery shows the water rise and where artifacts were found in the Atlantic Ocean just off the coast indicating the water level rose flooding the villages that were on the coast.

Figure 1: Cross-section of the continental shelf. The slant numbers represent the positions of the shoreline during the past 15,000 years.

Listening to and living with the land instead of trying to own the land and all that lives on it is how the Anishinaabeg achieve what is called minobimaadiz, the good life. Minobimaadiz is not measured in the amount of money a person has, nor is it measured by the number of items a person has. Minobimaadiz is a way of living life in harmony with the rest of the land. It is about

---

treat ing others as you want them to treat you. Giving of yourself to help others including the animal people and the plant people. Minobimaadiz is something that Anishinaabeg strive for in their everyday life and incorporate it into their ceremonies and activities of daily living.\footnote{Cary Miller, Chapter 1, “Power in the Anishinaabeg World,” in \textit{Ogimaag: Anishinaabeg Leadership, 1760-1845}, (University of Nebraska Press, Lincoln, 2016), 25, 151.} This is to say the Anishinaabeg walk around looking at the world around us in a different lens. We view plants, animals, water, and the land as gifts.

Living minobimaadiz becomes easier when you look at the land, plants and animals as gifts and implement the ideology of gift exchange. This simple act of gift exchange changes the demeanor that we view the world\footnote{Kimmerer, \textit{Braiding Sweetgrass}, 22-38.}. No longer are we looking at the land as a commodity to be owned, bought, and sold. No longer are we using the land for power. The world is a big gift where we exchange gifts, we communicate with, we share power with. Every year the Anishinaabeg celebrate Minobimaadiz with iskigamizigan.

While colonizers are out trying to conceive innovative ideas on how to control, colonize, the land and all beings on the land, they ignore the very same beings that they are trying to control. These people subject all these beings to different tortuous demands, cutting down trees, destroying land for roads or buildings, damming up water, the list goes on. They are ignoring the pleas for help from these beings who are desperately trying to communicate. These same beings want to live minobimaadiz too. When these beings strike back with floods, storms, tree diseases, etc., the people get upset and lash out at the same beings that they were not listening to.

These beings are trying to get the attention of the people and let them know who has the power. The land is trying to teach us how to live in a good way. Follow the original teachings, respect one another and the land with all the gifts on the land. Only then will there be
minobimaadiz. True healing can only take place if we understand where these gifts come from. Just taking and giving nothing back produces anger and animosity. Understanding that these beings have feelings and that these gifts were given to us to help support life and help us achieve minobimaadiz.

Minobimaadiz is not something that is just given, it is a way of living and viewing the landscape. We are all intertwined living in a world where peace, love, and harmony rule. To get minobimaadiz there needs to be an understanding that humans are not above any other being including the air we breathe and the water we drink. Those two are beings that help us all survive. Anishinaabeg stories talk of how the wind is our relative, responsible for Wenabozho, water is the giver of life and without her all life would cease to exist.

Once we can accept the fact that humans are not above everyone else, then we can discuss how humans treat other humans. Even Christians have a rule, “Do unto others as you want them to do unto you”. This rule has not been followed but is still sound in principle and is the basis of the Indigenous teaching of treating all beings with respect. This is even relevant for treating all beings in the landscape.76 There should be no reason for any pedigree for humans or animals alike. This is not minobimaadiz. Minobimaadiz is inclusive and does not set guidelines and standards for who can or who should be treated with kindness and respect. There was a point during the colonization and all the wars/ battles that were being fought that Indigenous people took prisoners. Many of these prisoners were adopted into Indigenous families, treated as one of their own. Many of these prisoners, when released, would not want to leave their adopted families because of how well they were treated. This is minobimaadiz, treating all people, all beings with love and respect without prejudice. Indigenous traditions include all beings,

---

including all the land and everything on the land, as equal members in the regimes of consciousness\textsuperscript{77}.

The Haudenosaunee treaty of \textit{One Dish One Spoon} has this mutual understanding of how to care for the land because we all utilize it for food. Land was cared for with the same respect as any other human, as any other being. There was an understanding that everything on the land was intertwined, creating this vast landscape. Basil Johnston an \textit{Anishinaabe} and Canadian writer, storyteller, language teacher and scholar describes four orders of the land. These orders divide the world up into categories that help explain the interconnectedness of all the beings that live on the land. “There are four orders in creation. First is the physical world; second, the plant world; third, the animal; last, the human world. All four parts are so intertwined that they make up life and one whole existence.”\textsuperscript{78} With the connection of all four parts the true power of the land can be unlocked.

Johnston describes a whole unit working together to provide sustenance for one another. If one of these pieces fail to hold up their end of the agreement, then the interconnectedness starts to fall apart. Once that falls apart, life and existence will change to make up for the piece that is missing. Change is difficult and destructive when it is on a large scale like this, however, change is inevitable. Change does not have to be detrimental; it is how we respond to change. If we change within the structure of acknowledging these beings as alive and able to communicate, listening to what they have to say, change could be good. The problem comes when we stop talking to these beings and stop treating them as beings with a gift and treat them as a commodity.


Anishinaabeg understand this power through gift exchange. According to Robin Kimmerer, a Professor of Environmental and Forest Biology, there was a gift given before any harvest, and that there was always this understanding of not taking the first or the last of any one plant or animal. You must always introduce yourself, ensuring that you are accountable for your actions. Always make sure there is communication between the harvester and the harvestee, assuring permission is granted before the harvesting of the plant or animal takes place. Harvest in a way that minimizes the harm done to the land and the plant and only taking what gifts you need. Most of all, use these gifts, the plants and land, respectfully. There is an understanding and a mutual acceptance of power between the Anishinaabeg and the land and all beings that live on the land.

Though the Anishinaabeg lived in relationship with the land, this does not mean there was no intentional modification of the flora. Controlled burns were common in spring to bring in healthier plants and prevent uncontrolled fires. Along with the controlled fires was the continuous change of the land for the use of ceremonies, agriculture, and some landscaping. Wiigiwaaman, or wigwams, were built and had landscaping done to the area to make it more accessible for families and less accessible to predators. Iskigamizigan was cared for ensuring the ininaatigoog would share their sap next season. In some nations like the Haudenosaunee landscaping could mean clearing a whole area of land for their palisade to get built.

It is not the moving of land or removing of the plants that is so detrimental. It is the destruction of all beings that causes problems. It is the lack of respect that is given to them that causes problems. If these beings are not respected and cared for then what humans see as

innocently cutting down *mitig*\(^{81}\) (tree) to put up a building or to make paper, the *mitig* may see this as disrespect or an act of war. The *mitig* may not launch grenades, missiles or even shoot a gun at you to declare war. *Mitig* is patient and will take this feeling over generations and eventually the *mitig* will migrate away or simply just disappear and die off.

From the *Anishinaabe* perspective, *mitig* may even ask a favor from another being to be removed from areas where they are not respected. Some elders have told me that an example of this is with the emerald ash borer who decimated the ash tree. Ash was tired of being ignored and disrespected. The ash was utilized for baskets and medicine but since colonization the ash has not been utilized as much, their feelings were hurt, or they were not getting the respect that the ash wanted. Around the globe there are plants and animals that are disappearing every day. If given the right respect and honoring them as beings, the disappearance of these beings would not occur. How different would the landscape be if permission were needed from the land or the inhabitants before humans built on it or harvested food. Suddenly humans would think twice before dumping chemicals into the water.

Instead of looking at plants and animals as a commodity look at them as beings; beings that have gifts to offer\(^{82}\). These gifts come as food and medicine that they provide. Without their precious gifts we would not be able to survive. We need them for life, they do not need us. We need to respect the fact that they do not need us to survive. Show our thanks and gratitude for their sacrifice of life to take care of us. Offering up thanks in the form of a simple thank you shows respect for them as beings.

---


\(^{82}\) Kimmerer, *Braiding Sweetgrass*, 175-201.
Not only does language pass down teachings from generations past, but it influences how we think. How we think influences the language we use. In the Anishinaabeg culture there is no sense of ownership. Language is the fundamental way that humans communicate. As such, Anishinaabemowin does not have words that describe ownership. This language holds the code to the evolution of sustainability.

Anishinaabemowin has animate and inanimate beings. There are no gender assignments in Anishinaabemowin, either a being has a manidoog\(^\text{83}\), a spirit, or it does not. This concept of animacy can be fluid too. For example, asin\(^\text{84}\) stone is inanimate; however, that same stone in a ceremony would be considered animate. It is up to the speaker to voice what is being conveyed this is often achieved through the use of a different verb type and thus a different form of the verb. This information is gathered through the context of the conversation. If a being like asin has a spirit, then there is a kinship relationship that is formed. With every kinship relationship there is a gift exchange that takes place, to ensure the mutual respect, love, and connectedness continues. Ensuring that there will be mino-bimaadiziwin.

By understanding Anishinaabemowin, we can better understand the people, culture, teachings, and treaties they signed. Through this understanding, a friendship, or kinship, could be extended where the sharing of knowledge could be done, improving society and the world. This mutual understanding and respect would translate into respecting Shkaakaamikwe, earth, giving her agency that she so desperately needs. while also respecting the awesiinyag\(^\text{85}\), animals, and all the creatures including the plants on Shkaakaamikwe. Eventually seeing Shkaakaamikwe and all

---


beings on her as having their own culture with its own language and teachings that need to be learned.

Ojibwe place names in Wisconsin are descriptive of the landscape. *Emikwaan*[^86], spoon, Mequon is located north of Minowaki and is where the Milwaukee River has a big turn. *Waagosha* (Many Foxes, Waukesha), *Waadwaatesaa* (Firefly, Wauwatosa), *Ozaawaaki* (Golden Land, Ozaukee), *Ginoozhe*[^87] (Pike, Kenosha), *Waabikaa* (White Metal, Waupaca), *Michigami* (Great Sea, Michigan) and *Waasa*[^88] (Far Away, Wausau) are just a few examples of *Anishinaabemowin* utilized in this area describing the community. By understanding the history of the community that provided this description, specifically looking at the Ojibwe in this example, we get a better understanding of how they viewed the environment. Understanding what the language conveys also gives the environment agency. A voice as an independent living entity.

In *Anishinaabemowin Minowaki*, *mino*[^89] means *aki*[^90], land. In Milwaukee, the Indigenous people there understood that the land was good and bountiful for providing sustenance. The land called *Minowaki* is located in a large bay in the southwest corner of *michigami*, which is a term referring to the entire Great Lakes watershed, the world's largest

freshwater body system. The name currently used for one of the lakes, Lake Michigan, comes from the name for this vast sea, or centering location, a “michi-” (enormous) “-gamig” (place).

Figure 2: Location of Milwaukee in 1834

The confluence of the three rivers made an excellent natural port, where the three rivers Kinnickinnic, Milwaukee, and Menominee connect. This was perfect for wild rice beds, fishing, and other activities connecting the people to the land. The waterway allowed access to communities that were further away while also providing nourishment for the plants, animals, and humans. Communicating with all the beings in that biome was done in their language and in their *aadizookinaan*.

Language is how communication takes place, through sound or motions, humans, animals. Even plants and trees can communicate, at least with their same species. This form of communication is another language like Ojibwe, Ho Chunk, or English. In the book *Vanishing Voices: The Extinction of the World’s Languages* Daniel Nettle, a behavioral scientist, biologist,

---


92 Wisconsin Historical Society, martin ml, map of Milwaukee, image id 53894, 1834
and social scientist discusses the importance of languages to ecosystems. Understanding that the Indigenous languages in an area hold keys to the land and our stewardship to ensure a continued thriving ecosystem. Nettle explains, “The extinction of languages can be seen as part of the larger picture of worldwide near total ecosystem collapse. Our failure to recognize our intimate connection with the global ecosystem lies behind what we will call the biolinguistics diversity crisis facing us today.”

The Great Lakes known as Michigami to the Anishinaabeg is an excellent example of the interconnectedness of the ecosystem and a people and how the language ties the two together.

Colonization

The history of Indigenous people did not start when Columbus got lost and found land in the Caribbean. The Christian discourse gives man dominion over the earth and all beings that live on the Earth. Then God said, “Let us make mankind in our image, in our likeness, so that they may rule over the fish in the sea and the birds in the sky, over the livestock and all the wild animals and over all the creatures that move along the ground.”

That was the language used in the Bible about creation, man was to rule over all beings, even women, which came from a man, Adam’s rib. The rib, which the Lord God had taken from man, made her a woman, and brought her unto the man.

These words have been used to control the land. The Doctrine of Discovery, 1493 even states that any land that is not controlled by Christians was theirs to take and dominate over. The Papal bull, Inter Caetera, that allowed the Doctrine of Discovery to take place along with the death and destruction of Indigenous communities is based on the Bible and man's authority to

---

94 Genesis 1:26.
95 Genesis 22.
dominate it. It was even used to oppress women. A man ought not to cover his head, since he is the image and glory of God; but the woman is the glory of man.\textsuperscript{96}

To those involved in the act of colonization, land has never been more than a commodity. Since the formation of the United States, the land grab was about power, control, and most importantly, money that could be derived from the land. There was not an Indigenous understanding of the landscape being alive. Caring for the land and all the beings on it was changed to controlling the land and all the beings on it. Manifest destiny along with the papal decree made sure that expansion of the U.S. would happen no matter what. Having the sanction of the church just reinforced that any being that was not Christian or that would not convert to Christianity would be destroyed. The destruction was preferable so the land could be utilized for their own prosperity, gaining power from the land. If no man occupied the land, then the land was up for grabs to be taken, to be raped of everything and sold to make more money and obtain more power. The papal bull of 1493, also known as the \textit{Inter caetera}, was signed by Pope Alexander the VI to ensure that the Indigenous communities were conquered and converted into Christians. Unfortunately, the \textit{Inter caetera} has been used throughout the formation of the United States, justifying the atrocities of the Indigenous communities.\textsuperscript{97} This papal bull was used not only to colonize the people but to colonize the land without due regard to any of the other kingdoms.\textsuperscript{98} United States Supreme Court Judge Marshall, in Johnson v. McIntosh 1823 decision, cites the doctrine of discovery.\textsuperscript{99} The principle of discovery gives European Nations absolute right to the land and American Indians only have the right to occupancy which can be

\textsuperscript{96}1 Corinthians 11:7.
\textsuperscript{97}Doctrine of Discovery, “\textit{Inter Caetera}”, \textit{Inter Caetera}, \url{https://doctrineofdiscovery.org/assets/pdfs/Inter_Caetera_Modrow&Smith.pdf} (accessed April 1 2023).
\textsuperscript{98}Doctrine of Discovery, “\textit{Inter Caetera}”, \textit{Inter Caetera}, \url{https://doctrineofdiscovery.org/assets/pdfs/Inter_Caetera_Modrow&Smith.pdf} (accessed April 1 2023).
terminated. This ruling is one of the three rulings by the United States Supreme Court that still dictates interactions with the Indigenous nations in the United States.

The Requiremento is a Spanish document that was read as the colonizers stepped foot onto new land. This document ordained the “right” to take possession of territories while exploiting and subjugating the Indigenous people, and when necessary, fight and kill the Indigenous people. There was not a care if the Indigenous people did not understand their language, what mattered was if the inhabitants shared their belief systems. Sanctioned by the church, babies were taken from their mothers while nursing and thrown into the water, women were tortured by being raped and having breasts cut off, men were killed and forced to watch the heinous acts take place. When there was no more fight left in the Indigenous people, they would take control of the land and the colonization of the land would begin.100

Many of the Indigenous Nations that we think of today, did not exist in 1492. Throughout history both Indigenous and nonindigenous nations were formed, separated, amalgamated, and moved. There is a general presumption that Indigenous people, especially before colonization, did not have cities or communities that thrived. Indigenous communities have been around since the creation of humans.101 These communities would grow and shrink throughout the years much like any modern city. Each community would have their own way of doing things like daily chores, ceremonies, and even governmental affairs.

Communities were wiped out of existence by disease and warfare making it easier for the colonizers as they started their advancement onto the land. Indigenous communities tried to

preserve their land and their people through treaties, but often were overwhelmed by new diseases that were brought over by the colonizers, or they were destroyed by war.\footnote{David E. Stannard, \textit{American Holocaust: The Conquest of the New World} (New York: Oxford University Press, 1993).}

Nations were evolving and changing with the times. Some communities subsequently disappeared as members died from diseases or warfare and others joined other groups for shelter and protection. Many nations incorporated outsiders from other communities, including visitors, traders, spouses, refugees, and others from different nations. European contact just added additional disruption, dislocation, and social reorganization for the Indigenous communities.\footnote{Calloway, \textit{First Peoples}, 5.}

Adoption was common practice among Indigenous nations extending their kinship bonds. Marriage also extended this familial bond, making the communities stronger and larger. The Haudenosaunee did this during the Iroquois Wars 1640 - 1701. While trying to take over the beaver trade the Haudenosaunee fought with the other Indigenous nations in the Great Lakes. They would adopt the survivors into their tribe creating a bigger force to fight for their endeavor of controlling the beaver trade.\footnote{Bruce Trigger, \textit{The Huron Farmers of the North} (Holt Rinehart and Winston, 1990), 407.}

Huronia, located in the Great Lakes region, is an excellent example of a bustling community. Champlain notes that there were 30,000 inhabitants in Huronia in 1615. Huronia was a fishing and agriculture community that was impacted by the fur trade. The fur trade sparked conflicts between the French and the British for the fur.\footnote{William W. Warren, \textit{History of the Ojibway People} (St. Paul: Minnesota Historical Society Press, 1984).}

Battles ensued to control the fur trade from the Ohio Valley to Southern Canada. For over a hundred years these bloody battles took place until the treaty of \textit{La Grande Paix de Montreal} in

\begin{footnotesize}
\begin{enumerate}
\item Calloway, \textit{First Peoples}, 5.
\item Bruce Trigger, \textit{The Huron Farmers of the North} (Holt Rinehart and Winston, 1990), 407.
\end{enumerate}
\end{footnotesize}
1701, which brought peace between the Haudenosaunee, the French, British, and other First Nation people. By 1640 Jesuits reported about 18,000 living in Huronia showing that the community of Huronia was decimated by both pandemic and the bloody battles with the Haudenosaunee.106 Eventually, Huronia was displaced as the population decreased from the constant fighting of the Haudenosaunee and the encroaching settlers.

The land that the large community of Huronia occupied was turned into a battlefield for control of the fur trade. The precise population of Huronia is debatable as there is little documentation of the population of Huronia. What documentation there is contradicts itself with the different documentation accounts from people like William Clark who thought the Indigenous stories were not worth mentioning, to the Jesuits that were only interested in documenting the religious aspects of Indigenous life.107 The most reliable numbers for the population of Huronia, according to archaeologist Bruce Trigger, come from the Jesuits who claim to have gone to every house in the region to recruit and reorganize their mission. According to their documents, in 1639 there were 12,000 inhabitants in 32 villages and 70 cabins and 2000 hearths. However, Sagard estimates the Huron population to be 30,000- 50,000 which is a little bit higher than Champlain’s number which is 30,000. Both Champlain’s and Sagard’s numbers were taken before the pandemics arrived in the area that wiped out half the population.108

107 Calloway, First Peoples, 6-7.
108 Trigger, The Huron Farmers, 12.
Figure 3: Map of the Five Nations
Map of the country of the Five Nations belonging to the Province of New York made in the 1800’s shows Huronia conquered by the Five Nations, the Haudenosaunee Confederacy. As the title of the map indicates, the map is through a western view as it says the Five Nations belong to the Province of New York. 109

Another example of the multi-ethnic communities that were forming in the Great Lakes region is a community called the Glaize. The Glaize was a community in 1792 outside of what is now Defiance, Ohio, where the Maumee and Auglaize rivers meet. The rivers made excellent passageways from Lake Erie down to what is now called Cincinnati. The Glaize encompassed seven main towns within ten miles of the mouth of the Maumee. There were three Shawnee, two

Delaware, one Miami, and a European trading town. This does not include the acres of outlining pastures, dwellings and cornfields located at the Glaize.\textsuperscript{110}

What makes the Glaize so unique is that it was the home for children and adults of European heritage as well as Indigenous warriors and families from the eastern and southern tribes that were refugees of the violence and subsequent loss of their land. There were French and British traders who had Indigenous wives and families that lived there along with white captives that were adapted into families, some of them at an early age. The combined population of the Glaize is around 2,000 people. Everyone was able to find a mutual ground to get along and live in peace and harmony, at least for a while.\textsuperscript{111}


\textsuperscript{111} Tanner, “The Glaize” 16-17.
Atrocities were happening all around the Glaize. Up river, in October of 1790, General Harmar’s expedition burned 300 houses and 20,000 bushels of corn to a temporarily uninhabited village. Harmar ordered the destruction to prevent the villagers from being able to return, forcing them to move. By the fall of 1792, the Glaize became headquarters to a militant Indian confederacy protesting the American advance Northwest of the Ohio River. Eventually there were around twenty different nations represented at the Glaize. These nations included: Seneca, Cayuga, Mohawk (also known as the Mingo, 50

---

(which consisted of the Lenape and Munsee), Miami, Wyandot, Nanticoke, Conoy, Mahican, along with Irish, British, French, Spanish, French Canadians, and Americans from the newly formed United States.¹¹⁴

This gathering of peoples made this newly founded country extremely nervous. The United States advanced onto Indigenous lands and broke previous treaties that were in place. They wanted to eradicate the Native population as soon as possible before Indigenous groups could unite, rise in power, and fight off the American invasion into their land. Fort Defiance was built at the confluence of the Maumee and Auglaize Rivers in 1794, giving the United States military better access to the rivers. This access to the rivers gave the military more mobility which also gave them better ability to control the Indigenous people in the area. On General Wayne’s orders the military burned down acres of agriculture crops forcing the community of Glaize into a battle. The battle of Fallen Timbers took place where the war parties of the Glaize did not fare so well, and the Treaty of Greenville would be signed in 1795 ceding the Ohio valley to the newly formed United States.¹¹⁵

The joining of different Indigenous communities into different bands or nations did not just happen in the Glaize. Tanner notes that the Mingoes were a band of Seneca, Cayuga, and Mohawk that joined a community and were then called the Mingoes.¹¹⁶ Reservations are different bands of nations like Lac du Flambeau Band of Lake Superior Chippewa, Lac Courte Oreilles Band of Lake Superior Chippewa, are several different communities that were forced onto a parcel of land by the United States.

The names like Lac du Flambeau were given to them by the colonizers as a way that they could identify people in that region much like Mingoess was used to describe the Seneca, Cayuga, and the Mohawk. Even though in that region, there would have been several different communities. Communities that were close enough to celebrate *iskigamizigan* and other ceremonies throughout the year.

---

William Cronon, an environmental historian and the historian of the American West, discusses how the landscape was not a wilderness but a land that was already landscaped. He discusses how the land was manipulated into gardens and orchards. Paths were made through forests; burns were made regularly. Settlers remarked on how abundant game was from taking care of the land and maintaining it for everyone, including the plants and animals. The land was lush, full of life and providing more food than the settlers could even imagine.\textsuperscript{118}

What Cronon misses in his book is how the land is sacred. Indigenous people did not just care for the land because of the wealth it could bring. They cared for the land because they believed if they took care of the land, the land would take care of them. There was an understanding that they were no more important than the land or any of the plants and animals that lived on it. Even in their creation stories the land, plants, and animals were here before humans, and they all helped the humans survive.

Treaties are an agreement made between two different sovereign nations and created borders which heavily impacted the Indigenous communities. Native people have lived along the Great Lakes for thousands of years. Over 300 different nations are still living on and around the Great Lakes. These tribes have treaties, not only between themselves but also with the settlers and colonizers. Dish with One Spoon was formulated around 1142 AD before the Haudenosaunee put the Great Law of Peace into effect, which was thought to be written around 1190 AD. Dish with One Spoon is just one of many treaties made between the Indigenous nations. Dish with One Spoon is an agreement about taking care of the land and all that is on it. There was an understanding that there is only one land for us all to eat and live on. We must take care of it so we can continue to receive the gifts that the land offers us. This knowledge and

\textsuperscript{118}Cronon, \textit{Changes in the Land}, 51.
understanding are so important that the Haudenosaunee wrote this treaty before they wrote the Great Law of Peace. Even in 1142 AD their concern was taking care of the land which was more important than finding a way to have peace among the different nations.\textsuperscript{119}

While the different Native nations were trying to adapt to the colonizers, documents, such as treaties, even those that had an Indigenous “voice” in them, were interpreted by the colonizers who had no linguistic knowledge.\textsuperscript{120} Many times, the interpretation would be inaccurate and not convey what was said on the part of the Indigenous communities. This was often a tactic to gain control of an area or a community. Colonizers often altered and misinterpreted what leaders of Indigenous communities said. The written word is not as accurate as people are led to believe.\textsuperscript{121} For example, several schools still teach history from the standpoint of Christopher Columbus discovering America (that is the land that became the United States), a land base that he never set foot on.

When the United States entered into these agreements with tribal nations, there was a mutual understanding that these nations are separate and were treated as such. For Indigenous nations these treaties are based on mutual trust and understanding of what was for the good of the people. Under the Western ideology, the settler nations had supreme power over the land.\textsuperscript{122} The United States did not take into the account that the Indigenous power was not over the land, their power was with the land. Many of these treaties were recorded on birchbark scrolls for the Anishinaabeg and wampum belts for the Haudenosaunee. Even more common was having these

\begin{flushleft}
\textsuperscript{120} Calloway, \textit{First Peoples}, 9.
\textsuperscript{122} Echo-Hawk, \textit{In the Courts of the Conqueror}.
\end{flushleft}
agreements passed down orally, along with a description of the landscape including specific trees or waterways.

Since colonization treaties have been set up for the colonizers to obtain land to own along with all the minerals and other resources that came with the land. The treaties of 1836, 1837, and 1842 formed what is now upper Wisconsin and most of the state of Michigan. The treaties of 1836, 1837, 1842, and 1854, making up the Lake Superior Chippewa, all contain a clause that the Lake Superior Chippewa retains the right to hunt, fish, and gather on any ceded land. They even made provisions to protect the water in the same treaties understanding the power of water and the land. Along with the signing of these treaties came horrible and horrific sacrifices to protect the land and the beings occupying the land.\textsuperscript{123} The 1830 Indian Removal Act forcibly removed several Indigenous nations West of the Mississippi. Hundreds of men, women, elders, and children's lives were taken from them on this death march.\textsuperscript{124} All this death so the U.S. could obtain the land and take the minerals from it making money, gaining this ultimate power.

The Federal Indian Policy has changed over time. According to Steven Pevar, an ACLU attorney, there are seven distinct policies that the United States government has implemented over the years. Between 1492-1787, there were peaceful relations with colonists when it was beneficial to them. During this time disease was introduced which decimated many tribal nations. As more Europeans came over, the violence between the Indigenous nations and the colonists increased. Europeans created a pattern of invading the Indigenous land and taking

\textsuperscript{123} Satz, \textit{Chippewa Treaty Rights}.  
\textsuperscript{124} \textit{ibid}.  

55
Indigenous peoples’ possessions. After the revolutionary war, the Americans began the quest to take the land.\textsuperscript{125}

The greed for the land was all consuming to the newly formed United States. From 1787-1828 the United States viewed the Indigenous nations as separate nations and negotiated treaties with them. The Indigenous nations still had a strong force of warriors and posed a huge threat to the newly formed United States. Though the United States did pass laws to protect the Indigenous lands, very few were ever enforced, and the Americans were encouraged to expand and take over the land.\textsuperscript{126}

By 1828, the United States had enough of what they were calling the “Indian problem.” The government changed their policy and started a new one called Relocation. The Relocation policy was enacted from 1828-1887. This policy was to force the Indigenous nations to the west. The United States population grew, and it became more powerful leading them to cease worrying about hostilities with Indigenous nations. The Indian Removal Act of 1830 led to treaties that forced the east coast Indigenous nations to the west. The discovery of gold led to further expansion and further movement of Indigenous nations. During this policy the United States ordered the slaughter of the buffalo with the intent to move the Lakota people. You remove the food source the people will have to move. By 1887, there were 200 boarding schools that had roughly 14,000 children forcibly enrolled. With the idea of assimilation and eradication of the Indigenous nations, congress passed a law in 1871 that stopped additional treaties.\textsuperscript{127}

---

\textsuperscript{125} Pevar Senior Staff Attorney in the ACLU’s Racial Justice Program who has also served as a staff attorney with South Dakota Legal Services on the Rosebud Sioux Indian Reservation. Pevar, Stephen L., \textit{The Rights of Indians and Tribes} (New York: Oxford University Press, 2012).

\textsuperscript{126} \textit{ibid}.

\textsuperscript{127} \textit{ibid}.
Boarding schools, brainwashed generations of Indigenous people into forgetting their language, culture, and history. Sadly, this horrific history of Indigenous people and the boarding schools literally beating the language and culture out of these Indigenous communities are forgotten by most. These new thought processes, new ideologies, and new cultural norms are forced onto the Indigenous people making sure that their culture is forgotten.

Trying to eradicate a whole population was a difficult task that the United States took on. From 1887-1934 the United States implemented Allotment and Assimilation policy. The hope was that Indigenous people would become a part of white society taking on their culture and belief system abandoning their Indigenous communal lifestyle and their cultural beliefs. The Dawes Act of 1887 split up parcels of land between tribal members and started the tribal rolls which are used today to monitor the Indigenous nations. The land was split so every head of the house would receive 80 acres (about the area of a large shopping mall) of land. Families would be given land far from each other so they could not live a communal lifestyle as they were doing before. Prior to allotment there was over 138 million acres (about the area of Texas) of land that was cared for by the Indigenous people.128

It was not until the 1823 Supreme Court case, Johnson v. McIntosh, before the United States Supreme Court, would interpret the laws that the US has been implementing on the Indigenous people. In this case both Johnson and McIntosh claimed ownership over land previously occupied. Johnson claimed ownership from purchasing the land from the Illinois and Piankeshaw nations, whereas McIntosh claimed ownership from purchase of land from land sessions with the US government. The unanimous decision held that the “Principle of Discovery” (the Inter caetera) gave European nations an absolute right to New World lands.129 In essence,

128 ibid.
129 Johnson V. McIntosh, 21 U.S. (8 Wheat.) 543 (1823).
Indigenous people had only a right of occupancy of the land, an occupancy that could be abolished.

This ideology was again forced onto Indigenous people through the enactment of the Dawes Act, or the General Allotment Act, of 1887 – 1934. The United States government tried to force the eradication of tribal sovereignty, removing tribal boundaries by selling the land, thereby forcing assimilation into society. The Dawes Act systematically broke up Indigenous communities, forcing them to abide by guidelines and rules set forth by the United States. It was here with the signing of the Dawes Act that the “rolls” were formed. Any Indian who wanted an allotment of land had to sign the rolls to the reservation. It was at this point that the land would be assigned by the Indian Agent with various amounts; to each head of a family, one-quarter of a section; to each single person over eighteen years of age, one-eighth of a section; to each orphan child under eighteen years of age, one-eighth of a section.

This meant they had to show that they were assimilated and left their Indigenous ideology behind and take on the persona of the colonizers. The United States presumed that if they could break up the communal lifestyle and push the Indigenous people onto parcels of land forcing them to farm the land that they would naturally start to dress and act like an American and be assimilated into society. Of course, taking on the persona of the colonizers did little to prevent the Americans from continuing to take the land and treating the Indigenous communities like children. Forcing Indigenous people to pay taxes on land, land that they believed could not be owned and was a gift from the creator for Indigenous communities to take care of. Making these Indigenous communities live as an American, forgetting their cultural ties to the land and the people. Dismissing through our minds that Indigenous people are being swindled by the United

---

130 Dawes Act of 1887. [Bethesda, MD :ProQuest], 2014.
States into thinking like an American and not an Indigenous person all while being monitored for blood quantum by the government.

Using the concept of “blood quantum” to decide who is “Indian” or not, has been forced onto the Indigenous people. Traditionally and culturally, there is no concept of blood quantum. Many Indigenous communities would adopt people from other cultures into their families and take them on as one of their own. Not acknowledging that the person that was adopted had a different nationality. Blood quantum treats Indigenous people as though they were a pedigree of horses or dogs, looking for the “purest” breed and discarding the ones that are not pure. Until there are no more pure ones. This concept is used to monitor and slowly eliminate Indian people while also turning Natives against Natives. Much like the “one drop” rule, where if you had even “one drop” of black blood, you were considered black. This was used to keep as many people oppressed and slaves as they could.\textsuperscript{131} The more people enslaved meant more free labor, and with more free labor came more wealth. For Natives, if you have “one drop” of any other ancestry, you are not considered to be Indian. With less Indians, there would be a surplus of land and resources to be exploited.

After allotment, the Indigenous people only cared for 48 million acres (about twice the area of Ohio) of land. The U.S. took the power from over 100 million acres of land forcing the Indigenous people onto smaller parcels of land, while the U.S. was making millions off the land that they took by collecting taxes, selling off the land, and the mineral rights to the land. Allotment was also utilized to eliminate their communal way of life of the Indigenous

communities. Forcing them to pick up the American nuclear family model which did not fit into their way of living. 132

In 1934 the United States changed the federal policy for the Indigenous nations. 1934-1953 saw the passing of the Indian Reorganization Act. The United States passed this act to protect what remained of Indigenous land while encouraging the nations to adopt constitutions and engage self-government. 133 This ignored tribal laws and governance that has been in place before contact. Once again ethnocentrism took over the United States policies on Indigenous communities.

After much public ridicule for the Indian Reorganization Act the federal government decided that they would adopt a new policy. 1953-1968 was the United States policy of termination. From 1953-1968, 109 tribes were terminated, and federal responsibility and jurisdiction were turned over to state governments. Approximately 2,500,000 acres of trust land was removed from protected status and 12,000 Native Americans lost tribal affiliation. Very few were able to fight back and get recognized as a sovereign nation after termination. The Menominee Nation in Wisconsin is one of the nations that fought hard to get their tribal recognition back. 134 There is still a Menominee county in Wisconsin from when the Menominee Nation was terminated.

The last United States policy for dealing with the Indigenous communities has been one of tribal self-determination. This policy started in 1968 and is currently going on. The legislative and executive branches have attempted to provide measures which would improve the social and economic life of tribes and their people. The reality is since the 1970s, Indian interests have lost

132 Davis, Who is Black.
133 Pevar, The Rights of Indians.
134 ibid.
more than 80% of the cases decided by the Supreme Court.\textsuperscript{135} There is no mention of the impact on the environment from colonization, knowing that these Indigenous communities rely on the environment for sustainability.

**Colonization of the ininaatigoog**

The ininaatigoog have seen the effects of colonization on their people too. Once plentiful, the ininaatig was pushed off their land and forced to live within the confines of this make-believe boundary that the colonists put in place. These boundaries are like the boundaries that the colonist imposed on the Indigenous people. If the colonists wanted the land, they would take the land without caring for any of the beings that lived on it, including the ininaatigoog. The ininaatig were hunted down, used to make flooring, instruments and other products that were made from the hard wood that the ininaatigoog provided. The air was no longer filled with laughter and the scent of maple sugar being produced. The celebration of the ininaatigoog was put to a stop as the Indigenous people and the ininaatigoog were forced into a new era, a new way of living that was forced upon them by the colonists. The iskigamizigan fell silent, all their tools from years past to tap the trees and make the sap into maple sugar lay were left abandoned.\textsuperscript{136}

*Ininaatigoog* gave consent to the people to use their sap. The Indigenous people have shared this knowledge. Every year the Anishinaabeg would have a ceremony for the gift of sap that the ininaatigoog gave us. Since the need for the ininaatigoog to make sugar was in a decline because of the use of cane sugar, colonizers started to use the ininaatigoog to make floors and cabinets and everything in between. The ininaatigoog were brutally killed without any regard, much like the Indigenous people that once took care of them and the land. Originally the

\textsuperscript{135}Pevar, *The Rights of Indians*.
\textsuperscript{136}Cronon, *Changes in the Land*.
ininaatigoog were cut down to make room for the settlers. It was widespread practice to clear cut
trees to make room for new houses, fields, and forts to protect against raids from local tribal
nations. Trees would also be used to make furniture, ship masts, paper, and musical
instruments.¹³⁷ To the settlers their priority was not to the ininaatigoog, it was to build their
houses and lay claim to the land.

The ininaatigoog once celebrated are now going unnoticed. Through colonization and
forced assimilation, the government commodified the environment and forced Indigenous
communities to live in a capitalistic society. No longer would they be able to live with the land
like they once were able to. Now they were tied down to these imaginary borders and forced into
a capitalistic society where you own the land and the resources instead of living in unison and
looking at these beings as giving gifts for us to utilize. Today we live in a materialistic world of
consumerism and corporate globalization, a world diametrically opposed to the social and
political culture that sustained our communities in the past.¹³⁸ A capitalistic society was created
based on money and wealth, not concern for beings like the ininaatigoog. If the colonists and the
government did not enforce a capitalistic society, it would have diminished the government's
power and policy. Having wealthy and prosperous Indigenous Nations living as a community
helping one another out, inside a newly formed nation would have undermined everything that
this new country stood for. Indigenous communities were set up so the chiefs or the most
“powerful” members of the community would have the least amount of property, taking care of
the people.¹³⁹

---

¹³⁷ Cronon, Changes in the Land.
¹³⁸ Taiaiake, Peace, Power, Righteousness, 22.
¹³⁹ Miller, Ogimaag.
The *ininaatigoog* were carelessly cut down and utilized for firewood and building materials. The dense hard wood was used to make floors, furniture, and cabinets. Being a hardwood, it was also used to make stronger, more durable paper like containers, paper, books and wrapping paper. *Ininaatigoog* was systematically taken down to be utilized however the colonizers saw fit.

The land was treated like the Indigenous people, forced into whatever the colonizers wanted them. Plants that the colonizers did not find useful would be ripped up and killed. Plants that the colonizers wanted, like the cane sugar, were planted. The land was slowly being taken over and colonized. The time where the *ininaatigoog* were treated with respect and were able to roam free, dwindled as the Indigenous people were forced off the land. The *ininaatigoog* were slowly being taken over, one by one the *ininaatig* were being cut down and used for something other than the gift they were giving us.

Treaties were not enough to prevent government officials from trying to rid themselves of what was called the “Indian problem.” In Wisconsin, during Zachary Taylors administration in the 1850s, the Minnesota territorial governor arranged for the Lake Superior Chippewa tribes to get their annuity payments, provisions, and money for the land, in Sandy Lake Minnesota during October. Their thought was that if the Indians would get snowed in, they would be forced to move. Instead, what happened was the Ojibwe, Chippewa in governmental documents, tried to make it home after being given rotten meat and winter set in. Over 400 Ojibwe lost their lives, just so the government could take their land, giving the U.S. more power and control.
The village of Pahquahwong was one of Lac Courte Oreilles first settlements along the Chippewa River.\textsuperscript{140} The people lived on the river relying on her for sustenance. Not only did she provide fish but also a way to traverse. They learned to live with the Chippewa River and the land around her.

Once the timber in the area started to be depleted, they turned to harnessing the water to supply the cities downstream with electricity. Several timber companies merged forming The Chippewa and Flambeau Improvement Company. Using a 1908 report done by the U.S. Geological Survey and Natural History Survey and Wisconsin Geological the company started to look at placing a dam at Pahquahwong. In 1914, the Chippewa and Flambeau Improvement Company sold the rights to build the dam to Wisconsin-Minnesota Light & Power Company. The new company looked at building the dam to create electricity to be sold, knowing that the construction of the dam would flood the village of Pahquahwong.\textsuperscript{141}

Despite protests from Lac Courte Oreilles people, the Power Company proceeded to buy land in the area to go ahead with the dam project. In 1920 Congress passed the Federal Water Power Act with the purpose to speed-up the creation of water projects on federal and reservation land. The passing of this act gave the Power Company access to build the dam without the approval of Lac Courte Oreilles. Though the Power Company would have to compensate them for the loss of their homes They had to build a new village, including houses, churches, school, and stores. The company was also to move Indian graves out of the flowage area, stock the flowage with fish, replant wild rice beds, and pay a yearly lease fee of $1,200 to the LCO.\textsuperscript{142}

\textsuperscript{141} Kremer, “Aiming for the Dam,” 10.
Final approval of Federal Power Project Number 108, the Winter Dam, was granted on August 21, 1921, despite the objections of the Lac Courte Oreilles. Wisconsin-Minnesota Light & Power Company was given a fifty-year license to operate the dam. Construction of the Winter Dam began in 1922 and was completed on March 15, 1923, at which point the gates were closed and the area slowly started to flood. It took three months for the water to reach the village. The people of Pahquahwong watched their village get buried under 25 feet of water, losing their ancestral grounds that sustained them and their families for hundreds of years.

Their new village called New Post that the Wisconsin-Minnesota Light & Power Company was supposed to have built for them was never completed. In fact, The Power Company began to attempt to change the settlement within months of completion of the dam. The Bureau of Indian Affairs never forced the Power Company to hold their side of the settlement. They did not stock the water with fish or replant the wild rice beds. Most of the graves of the Pahquahwong people were not removed and remains began to wash up on shore.143

In the southern part of the Great Lakes just off what is now called the Yellow River outside of Plymouth Indiana, was the home of the Yellow River Band of Potawatomi. In 1835 they inhabited the region between Lake Maxinkuckee and the present site of Plymouth Indiana. With 100 different living structures, wigwams, teepees, cabins, and roughly 1500 people, the Yellow River Band of Potawatomi, were led by their leader named Menominee.144

Menominee and his people were Christians following the teachings of French missionaries that visited the area. In August 1834, Menominee and his people were baptized by a priest named Rev. Louis Deseille.145 By 1836, the United States wanted the Potawatomi out of

143 Rasmussen, Where the River Is Wide.
Indiana and removed into Kansas. Col. Pepper, an Indian agent at Logansport, negotiated treaties at Turkey Creek Prairie on March 26, at Tippecanoe March 29 and April 11, and at Logansport April 22 ceding Potawatomi lands over to the United States. Col. Pepper coerced the Potawatomi Chiefs to sign the treaties by getting them drunk on whiskey. Per the treaties the Potawatomi were supposed to emigrate to their new home in Kansas by August 6 1838.

By July of 1838, with Menominee’s people not showing any indication of intending on moving, a council gathered just north of Twin Lakes in Marshall County, five miles southwest from Plymouth. Col. Pepper was present and most of the chiefs in that part of the county, also many white residents of the surrounding country. The treaties were read aloud, and Col. Pepper made a final plea for Menominee and his people to sign the treaty and emigrate like the other Potawatomi. Menominee rose as said,146


Translated:

Members of the Council: The President does not know the truth. He, like me, has been imposed upon. He does not know that you made my young chiefs drunk and got their consent and pretended to get mine. He does not know that I have refused to sell my lands, and still refuse. He would not drive me from my

home and the graves of my tribe, and my children, who have gone to the Great Spirit, nor allow you to tell me your braves will take me, tied like a dog, if he knew the truth. My brother, the President is just, but he listens to the word of young chiefs who have lied; and when he knows the truth, he will leave me to my own. I have not sold my lands. I will not sell them. I have not signed any treaty, and will not sign any. I am not going to leave my lands, and I do not want to hear anything more about it. 147

After the council disbanded tensions increased between the Potawatomi and the settlers. Col. Pepper secured approval from the Governor of Indiana David Wallace to raise a militia to remove Menominee’s people. Under the command of General John Tipton, the militia captured 120 Potawatomi by surprise by August 30. On September 1st while the Potawatomi gathered at their church under the guise of a council meeting, General Tipton surrounded the church capturing another 714 Potawatomi detaining the chiefs as prisoners. 148

General Tipton surrounded Menominee’s village prior to departing for Kansas and destroyed the village, burning down the houses and crops to discourage anyone from returning. Family heads names were written down, becoming their rolls, registration of membership. On September 4, 1838, the caravan of 859 Potawatomi and their armed escort of 100 soldiers started their walk to Kansas. During their Death walk 42 Potawatomi died, 28 of them children. 149

In some cases, it took creating another governmental agency, the National Park Service, to take control of the land. In 1913 the Blackfeet were still utilizing the land for hunting to supply their nation with sustenance. While this was not for sport and only to support their nation, many in the U.S. were upset at this and pushed for this to become a federal park system with the intent to keep the Blackfoot from utilizing the land that has been their traditional grounds. The

147 McDonald, Removal of the Pottawatomie Indians, 16-17.
National Park Service was designed to prevent Blackfoot people from hunting off their tribal lands, offering up a “pure wilderness” for visitors from all over the U.S., free of any Indian.\textsuperscript{150}

This western ideology is reinforced in the United States school systems. The colonization has been so ingrained that Indian people are our own worst enemies judging and ridiculing our own people. No longer are they living like our ancestors, living with one another in an environment where humans are on equal grounds, many of the Indigenous people put themselves above others including their own kind. This is evident with “card carrying” Indians, or even Indians that have been able to prove lineage and are on a community's rolls. Even in academia these issues come through and people are ridiculed if they do not have the proper documentation. Suddenly, the history of what happened to Indigenous people goes out the window and the history of how our ancestors behaved with one another and even “foreigners” is forgotten, lost in the boarding schools and assimilation programs that the United States has put forth to destroy the communal living of the Indigenous people. Gerald Taiaiake Alfred is an author, educator and activist raised in the community of Kahnawake. As a political science professor known for his work with the Kanien’kehá:ka, Mohawk people, Alfred says in his Indigenous manifesto, “there is a whole set of beliefs and attitudes, ingrained over years of tacit acceptance, that prevents Indigenous people from recognizing that subjugation reasonable, realistic, and agreeable in the present reality, these beliefs and attitudes are crucial to the states control over Indigenous people. Clouding over the clarity of the Indigenous truth.”\textsuperscript{151}

The boarding school era changed the ontological dogma - the beliefs, language, and understanding of who, what, and why they are here. This change altered the future of the

\begin{flushleft}
\textsuperscript{150} Mark David Spence, Dispossessing the Wilderness: Indian Removal and the Making of the National Parks (Oxford: Oxford University Press, 2000), 88. \\
\textsuperscript{151} Taiaiake, Peace, Power, Righteousness, 83.
\end{flushleft}
Indigenous people, along with their understanding of the landscape as multiple beings. These schools (often literally) beat the language and culture out of the children, leading to many of the children being scared to practice their culture or speak their language when they were released. This started generations of children, who became parents and raised their children, to believe in this morphed version of what our ancestors believed, while their elders were still doing what they could to reteach their children and teach their grandchildren. The ramifications of this can still be felt amongst Indigenous nations today, as there is still internal turmoil on what is Indigenous and what is not Indigenous. Often there are even arguments about what is a traditional ceremony versus what is a colonized version of the ceremony.

Slowly the language and traditions are coming back, however the generations that were in the boarding schools are now in power and must deal with the post-traumatic stress from the boarding schools. This stress only creates more confusion about what is truly their culture and what is a colonized version. As time goes on more ceremonies like the iskigamizigan enlighten the people to the original teachings and we come full circle learning how to care for the land again.

Feasts and gatherings were held honoring the ininaatigoog until the introduction of boarding schools. Once the children were held at the school the gatherings were held less and less. Children were not released to go home and help with the iskigamizigan. Nor were they allowed to practice any of their cultural ceremonies and obligations. The children were forced to change the way they viewed life and practiced ceremonies honoring the relationships of the past and present. In schools there is no instruction on how to live minobimaadiz.

Although there was a loss, many of these elders are passing knowledge down to their children. My research is an example of this knowledge still being practiced to this day. Though
modern tools have replaced the old way of doing things the celebration still continues uniting people and the environment.

This chapter discussed the broad effects of colonization of the land focusing on the Great Lakes and Anishinaabewakiing. This colonization affected the Anishinaabeg in all aspects of their minobimaadiz. Their access to land was reduced due to settlement and treaties, their knowledge of language and ceremonies was beaten out of them in boarding school. Their relationship with the ininaatigoog and the iskigamizigan was altered. Many Anishinaabeg ways of being in their biome were able to continue but were altered from past practices. The next chapter will discuss the history of the iskigamize looking at the past and present practices.
Chapter Two: Iskigamizige Gaa-ezhiwebag: History of Sugarbushing

In this chapter I will discuss the science of *Acer saccharum* and the origin of the *ininaatigoog* (sugar maple) to the *Anishinaabeg* people. I will be looking at the relationship that the *Anishinaabeg* people have with the *ininaatigoog* and how this relationship is constantly changing throughout colonization. First, I will discuss the gift of sap and the chemical and biological process performed by the *ininaatigoog*. I discuss the seasonal cycle of the *ininaatigoog* using the ojibwe definitions of the seasons along with the seasonal variations of the sap. For a better understanding of the Ojibwe cosmology, I discuss the *aadizookinaan* of the *ininaatigoog* and the interconnectedness of humans to the environment. Utilizing the language to better understand the relationship that is had with the *Anishinaabeg* and their environment. The process and practices of the ojibwe *iskigamizigan* and their relationships with the *ininaatigoog* as gifts being changed to a commodity and the Indigenous economic models and how climate change has impacted the *ininaatigoog*.

The Gift of Sap

The sugar maple, *Acer saccharum*, *ininaatig* is a unique species of tree. It provides the gift of sweet sap that can be rendered into maple syrup or maple sugar through a process of boiling the sap down until the liquid is sweet enough for syrup or boiled further until it is a solid. To the Ojibwe this is our spring, when we would come out of winter camps and go to our sugar camps, preparing to harvest the sap from the *ininaatig*. Working with the *Ininaatig* we gained the knowledge and understanding that *ininaatig* require very specific temperature to proliferate and give us the gift of their sweet sap. The *ininaatig* demand temperatures that need to be cold enough at night that ice forms, and warm enough during the day that the ice starts to melt. This change in temperature creates a layer of ice to form on the snow creating a crunching sound
when it is walked on. This is called *Onaabani-Giizis*, March according to the Gregorian calendar, hard crust on the snow moon to the Ojibwe.

The *ininaatig* is extremely sensitive to the temperatures of its surroundings. When the temperature gets too warm or too cold, the sap that is flowing up the *ininaatig* slows down. If a cloud or weather front moves overhead, the sap that is flowing starts to slow down or even stop due to the change in the temperature from the cloud or the weather front. Sap flow during the leafless period is different than sap flow during the leaf on period when transpiration, an exchange of oxygen and carbon dioxide through the leaves stomata, within the leaves pulls water up through the stem. Sap flow in the *ininaatig* requires subfreezing temperature at night followed by thawing temperature during the day.\textsuperscript{152} Pressure within the *ininaatig* is lower than atmospheric pressure during freezing temperatures and greater during warmer temperatures which draws the sap up from the roots.

The northern limit of the *ininaatig* nearly parallels the 50th meridian, extending eastward from the extreme southeast corner of Manitoba, through central Ontario, the southern third of Quebec and all of New Brunswick and Nova Scotia. Within the United States the species is found throughout New England, New York, Pennsylvania, and the middle Atlantic States, extending southwestward through central New Jersey to the Appalachian Mountains, then southward through the western edge of North Carolina to the southern border of Tennessee. The western limit extends through Missouri into a small area of Kansas, the eastern one-third of Iowa, and the eastern two-thirds of Minnesota. A few outlier communities are found in northern Kansas, Georgia, and the Carolinas. Though all the Ininaatigoog do not produce enough sap due to the lack of the appropriate conditions to produce sap. Even though the *ininaatig* are found in

\textsuperscript{152} Wild and Yanai, “Soil Nutrients.”
these regions does not mean all the ininaatig are capable of producing sap. In some of the regions the climate is warming and not giving the ininaatig the appropriate conditions of the freeze thaw to produce sap.

![Map of the Range of ininaatigoog in the United States](image)

Figure 6: Map of the Range of ininaatigoog in the United States.153

When temperatures start warming to near freezing outside, stored carbon, growth and energy compounds in the ininaatig are released. The resource is then used by the ininaatig to provide for growth of the buds of the ininaatig. Sapwood cells of maples contain CO₂ gas bubbles in greater quantity which is different from other species of hardwoods. Higher density of these carbon gas bubbles is present during the dormant season than during the growing season.154


As the temperature starts to cool in a branch, tension of gas particles occurs within cells and CO₂ decreases in pressure allowing sap to flow into the cell. Water crystallizes and freezes to the outer wall of the cell and in the process, releases heat out of the branch and into the atmosphere which further reduces pressure within the stem drawing the sap up the ininaatig. \(^{155}\) It is during this growth process that the sap will turn purulent, cloudy, and have a bitterness to the taste. At this point there will be an increase of the phosphorus in the sap. The increase in the phosphorus helps the tree grow its buds and in turn the leaves.

The ininaatig is one of only a few species of trees that has enough sugar in the sap for it to be harvested in the springtime. The sap is sweet enough for it to be rendered down and made into maple syrup or sugar. For the Ojibwe this is a time of gathering and celebration. For other people, the ininaatig bloom, or the budding of the leaves, is a sign of when spring has arrived. Due to the period that the ininaatig bloom, their first leaves are monitored as a data point used to track when spring arrives in certain locations.

C(arbon), N(itrogen), and P(hosphorus) are needed to sustain life. These elements are found in every living being including trees, grasses, humans, and water. Without them life would simply not exist. These elements are important to the ininaatig and the growth and production of the sap. Carbon supports the growth of wood, Nitrogen and Phosphorus supports the growth of the leaves and the buds. Carbon is utilized for energy and in the sap providing sweetness.

The ininaatigoog needs specific nutrients during the different seasons. During the winter, the tree is in a more dormant phase and most of the nutrients are stored in the roots of the tree. As the day night cycle changes and the temperature starts to rise the nutrients get released from the roots and start flowing up the tree. These nutrients: carbon, phosphorus, and nitrogen are

\(^{155}\)Carl, “Sugar Maple Research.”
utilized to bring the tree out of the dormant phase and into a life phase. The sap during the springtime is full of carbon to give the tree enough energy to produce the buds on the tree. These buds eventually turn into leaves, collecting the nutrients from the canopy of the tree. It is at this point where we see a change in the sap, which turns a purulent color and is no longer sweet. It is at this point the sap is done being collected. It is now time to pull the spiles, taps, out of the tree and move into the summer camps.

**Anishinaabeg View of the Ininaatigoog**

To best understand the *Anishinaabe* view of the *ininaatigoog* throughout the year one uses the seasons. I will be referring to the seasonal periods in Ojibwemowin I will be referring to in this dissertation are *biboon* / winter (stopping or dormancy), *ziigwan* / spring (emergence), *niibing* / summer (growth and seed production), and *dagwaagig* / fall (seed dispersal and preparation for dormancy). I will describe how each of the key elements drives changes in the *ininaatig* in each season.

Winter is a time for inner reflection and preparing for warmer weather. The Indigenous people in Wisconsin have stories of how the *ininaatigoog* came to their people. These stories are told repeatedly during *biboon* (winter), the time when *Biboonikeonini*, Winter Maker, could be seen in the sky. *Biboonikeonini* includes the stars of Orion, but his outstretched arms reach to include Procyon in Canis Minor and Aldebaran in Taurus. he is considered a skilled canoeist ushering in the cold and winds that characterize *biboon*.\(^{156}\) The people gathered in a warm lodge, told stories of the past, and told of how things came to be. *Biboon* is a time for reflection, replenishment, and quiet as the cold sets in, days grow shorter and snow blankets *Shkakamikwe*, the earth.\(^{157}\)


The *ininaatig* prepares for the winter by feeding itself in the fall when it drops its foliage. The leaves serve as food and fertilizer for the *ininaatig* providing carbon that is stored in the root system and released to feed the *ininaatig* during the long winter months. During the winter, the *ininaatig* goes into a dormant phase, only allowing enough carbon, nitrogen and phosphorus through to keep the *ininaatig* alive. The *ininaatig* requires the temperatures to be below freezing with an average temperature 0°F in the north, while temperatures in the southern region remain

---

158 This is an illustration of the constellations that the Ojibwe saw and utilized for guidance. Obtained from Annette S. Lee, William Wilson, Jeffrey Tibbetts, and Carl Gawboy. Ojibwe Sky Star Map Constellation Guidebook: An Introduction to Ojibwe Star Knowledge, (St. Cloud, MN: Native Skywatchers, 2014).

in the low 50’s, providing less sap. The cold temperatures allow the sap to freeze, which is important in the spring when thawing of the sap creates a change in pressure drawing up the sap from the roots due to the change in pressure in the stem as discussed earlier.

When the temperature is above 32°F during the day and below 32°F at night the Carbon, which was primarily stored in the roots, flows abundantly in the sap of the ininaatig. This is the time that we call ziigwan or spring. A time of flowing water or an abundance of liquid. The water is unfreezing and there is liquid flowing to feed all the plants and animals. The ininaatig releases its sap so it can be harvested.

The sap flow is different from other trees for two reasons. One, the sap is high in sugar which makes the ininaatig perfect to harvest the sap into syrup or sugar. Two, the sap flows abundantly without transpiration which is how other trees bring the sap up from the root system. The ininaatig brings the sap up the tree through the change in pressure from the thawing and freezing of the little amount of sap that is in the xylem of the tree.160 The xylem is responsible for carrying water from the roots of the ininaatig to the top of the ininaatig. It is the xylem that is being tapped during iskigamizigan to obtain the sap.161 The melting and thawing of the sap create a pressure change that causes the sap to flow up the tree. During the daytime, when the temperature is warmer, the pressure builds up in the xylem, causing the abundance of sap to flow up the tree. During the night, when the temperature falls, negative pressure develops, causing

---

160 Xylem is composed of dead, thick cells that act as pipes for transporting water and nutrients up the tree. The active portion of the xylem is known as the sapwood. The sapwood is found near the outside of the tree. Older xylem is known as heartwood and is found in the middle of the trunk.

water to be taken in from the Ininaatig root system. When the temperature rises, positive pressure develops allowing the sap to flow freely out of any wound.\textsuperscript{162}

The pressure that develops is osmotic pressure, which results in a higher concentration of sugar being present in the ininaatig. This sap has a high concentration of nitrogen and carbon that is collected during photosynthesis in niibin and helps support the growth of the buds. The phosphorus found in the sap also supports the forming of buds. The sap turns purulent, loses the sweetness, and becomes bitter as the Phosphorus levels rise. While the Carbon levels stay the same, they are being utilized for the growth of the wood part of the ininaatig. The wood of the ininaatig is primarily made up of carbon, which is utilized through the four seasons to grow the woody parts of the ininaatig.

Once the canopy starts forming, the ininaatig collects energy from the sun. The leaves also collect energy from the sun and collect tiny amounts of water when it rains. This is niibin, the summer months. Water is plentiful and the sun is out providing nourishment for every being. The ininaatig, with the growing canopy, takes the nutrients and uses the Carbon to produce more wood. This can be noted by the rings on a cross section of the tree. The light area is from the wood that is grown during the summer months while the dark wood is the wood that was grown during the winter months. The more abundant the water and sun is, the bigger the rings are- the less amount of water and sunlight, the smaller the rings are. Droughts can be easily seen on the rings of the tree by showing rings narrower than the others. Sabah Lamlom, in a study of Carbon content in boles of mature sugar maples and giant sequoia, notes that wood is chemically

complex, and each species carries their own chemical make-up. Lamlom also says that the elements that make up the wood itself have elevated levels of carbon.

The leaves of the *ininaatig* are affected by the stressor of increasing temperatures. Stress makes *ininaatig* weak, and easier to fall into poor health and disease. Leaves that have a lackluster color, are smaller than normal, and even disease ridden with black spots all over the leaves are signs of stressors for the *ininaatig*. With a decrease in photosynthesis, a process that takes place in the leaves, the *ininaatig* will have a decrease in their reproduction. Sunlight is important for sap sweetness as photosynthesis in leaves produces sugars. Healthy Sugar Maples have a higher net photosynthesis than unhealthy trees. Trees with larger canopies produce sweeter sap since there is more leaf area for photosynthesis and light is allowed to reach lower parts of the tree. Even small losses of photosynthesis can cause drastic changes in the *ininaatig* biome. This is the time of year when the *ininaatig* grows its wood. The growth can be verified by cutting a cross section of the tree trunk and looking at the rings of the tree. The lighter wood is the summer growth and should be bigger than the dark ring which is winter growth. The width of the lighter wood will be wider in summers with plenty of water and narrow when drought occurred. Similarly, the darker ring is thicker when the Fall is warmer and wetter.

---


164 Carlson, *Monitoring the health of sugar maple*.


Much like a human breathes through respiration, trees breathe through transpiration. This transpiration takes place through the stomata of the leaves and in some parts through the bark of the trees. Stomata are the minute pores in the epidermis of a leaf or stem of a plant. This allows movement of gasses in and out of the intercellular spaces of the plant. Humans can visibly see this when the air is cooler than the ground, there is a fog that is emitted from the transpiration of the trees. Once the exchange has taken place the nutrients are carried back down the tree to help grow the wood part of the tree. This is like that of a human taking in a respiration to exchange gasses in the lungs. When a human goes outside and takes a deep breath of the cold air, the sir that is expelled is also visible. The same can be seen on a body of water, the condensation rising due to the change in temperature from the air and the body of water. This is just one more way of showing how we are all related.

When ininaatig has foliage, we can sometimes witness the ininaatig breathing. The exchange of oxygen and carbon dioxide takes place in the leaves of the ininaatig through the stomata, usually located on the underside of the leaves and on the bark of the ininaatig. This exchange is called transpiration. With a change in temperature, it is possible to see a haze or fog around the canopy of ininaatig. This is visible because the exchange of gas from the ininaatig is warmer than the atmosphere. Similarly, to when a human walks outside and can see their breath from the change of temperature, we can observe the ininaatig exchange gases.\(^\text{168}\)

During Fall, phosphorus in the *ininaatig* sap increases to help with the production of seeds. Though phosphorus is present throughout the year providing genetic material and energy to the *Ininaatig*, phosphorus increases to support the growth of seeds. When the leaves begin to die the seeds begin to grow and prepare to fall to the ground. The depleted leaves fall to the ground, creating an increase of ground cover. The ground cover provides nutrients like nitrogen or potassium to the *ininaatig* while also providing shelter and food for the beings living in the soil, creating a healthy soil for the *ininaatig*. The sugar that is present in the *ininaatig* is the result of the sugars produced from the leaves the previous year that are stored in the roots. The *ininaatig* thrives in mildly acidic soil that has a pH between 5.5 to 7.3, though they can grow in soil with a pH of 3.7. The *ininaatig* will adapt itself so when the leaves fall, they will have the nutrients the *ininaatig* needs to help them proliferate in their biome. All the nutrients that get collected from the leaves and the roots are carried throughout the *ininaatig* by sap.\(^\text{170}\)

All the carbon is collected and stored in the roots of the *ininaatig* as carbohydrates. Carbohydrates are often stored in the roots of plants. Root storage is highest during dormancy.

---


when plants transport carbohydrates to the roots for overwintering. In addition to providing energy for growth and development, carbohydrates stored in the roots allow many plants to re-sprout from the base of the tree after damage to above ground tissue.\textsuperscript{171} In addition to roots, carbohydrates are also stored in branches, stems, seeds, fruit and sap, though the carbohydrates that are in the seeds and fruit do little to the growth of the tree and are used for propagation.\textsuperscript{172} The carbon will stay in the woody part of the \textit{ininaatig} until the temperature is ideal for the carbon to be released into the rest of the \textit{ininaatig}. When the temperature is warm enough it awakens the \textit{ininaatig} from a dormant phase of the winter and the sap starts to flow. This is when the sweet sap is collected in the sugar camps.\textsuperscript{173}

The \textit{ininaatig} is different than other trees as it needs the cold months to proliferate. Without the change in temperature the \textit{ininaatig} will slowly start to die. The \textit{ininaatig} can handle only 3-5 years without having the change before they start to die. The \textit{ininaatig} requires the freezing and thawing of the sap to get the nourishment through them, not transpiration like other trees. In areas where the weather does not allow for the freeze and thaw cycles the \textit{ininaatig} produces less sap.\textsuperscript{174} After around 5 years of repeated exposure the \textit{ininaatig} dies, creating a migration of the \textit{ininaatig} to colder climates.\textsuperscript{175}

\begin{thebibliography}{99}
\bibitem{175} Rapp, et al, “Finding the Sweet Spot.”
\end{thebibliography}
Nitrogen is used throughout the seasons to assist in the growth of *ininaatig*. Nitrogen is an essential element obtained from three major chemicals: nitrite, nitrate, and ammonia. Nitrogen is almost 20% protein by weight and is one of the main components of chlorophyll. Chlorophyll is the pigment associated with the capture of light energy and the creation of chemical energy. Studies have shown that the more nitrogen that is in the soil the better the *ininaatig* grows. Nitrogen rich soils are found to have bigger trees along with an increase in sap production. An increase in sap production means an increase in carbon which is primarily used to make the leaves and the wood of the tree.\(^{176}\)

Potassium is connected to the water movement, solutes, and nutrients in the plant tissue. A low concentration of potassium could cause the *ininaatig* to have scorched ends on their leaves or a yellowing between their veins on their leaves. During the warmer months there may be a spotted mark along the edges of the leaves also indicating a lower concentration of potassium.

The *ininaatig* is extremely sensitive to temperature as discussed earlier. However, I did not discuss how other weather conditions affects the *ininaatig*. This is important when looking at the *ininaatig* at the same longitudinal coordinates on a map. In other words, a sugar grove in Wisconsin can have a different experience than a sugar grove in Michigan at the same latitudinal coordinates. Cloud cover and storm fronts influence how the sap is flowing, so naturally the weather would impact the *ininaatig*.

Meteorology creates different weather patterns along with different temperatures. The closer you live to a body of water, the more effect the water will have on the ambient temperature and the weather in the area. The air off the lake will bring in more lake effect snow

---

and cooler temperatures while the warmer air will keep the area warmer compared to more inland areas. In the summer months the lake keeps the Michigan side at a perfect temperature to support the growth of orchards at a much higher latitude than usual. This warmer air is great for the orchards but is too warm for the ininaatig. The understanding of the ininaatigoog has been handed down through generations in Indigenous stories.

Stories and Beliefs

One of the ways Indigenous knowledge is handed down from generations and years of interactions with the land. This knowledge is embedded in the language along with their aadizookaan, traditional stories. This understanding of the environment includes a deep spiritual connection to the land. This interconnectedness is best described as a relationship to a relative, a kinship bond. An association where gifts are exchanged on a regular basis to ensure a strong familial connection.

Biboon was a time when families would gather and tell aadizookaan, sacred stories, about the relationships of the past and present. Aadizookaan are only to be told during the winter months out of respect for Wenabozho, a cultural hero. Wenabozho sleeps when there is snow on the ground and does not hear the stories being told so he will not be offended when he hears people talk about him. While telling these aadizookaan families would gather more closely together, not only for warmth, but also to help pass time by fixing damaged equipment like snares, snowshoes, clothing, makizin (moccasin), or cradle boards. The children would learn from the adults how to do these things at a young age. Not only did it occupy the children, but it also bonded the family, having everyone helping where it was needed.

---

There was always one person who was gifted with the art of storytelling: not everyone could remember or tell a story like the storyteller. Most of the stories were about Wenabozho, a half-spirit, half-human, who walked Shkakamikwe long ago, and was known as a trickster, one who played pranks or jokes on others. His mother was the granddaughter of the Moon, and his father was the North Wind. One of Wenabozho’s gifts is that he can change form, shape, and appearance. Known as being mischievous, his teachings not only bring in laughter but also pass on the Indigenous knowledge that has been handed down from generations. It is only during Biboon, when Biboonekeonini, a constellation, is around, are these Aadizookaan spoken of. Wenabozho’s Aadizookaan can be sad, funny, romantic, or scary, but they always have a teaching to guide the listeners through life’s journey.

These stories would occupy the young and old alike: each time a story was told, the listener would gain another lesson from it. Anishinaabeg have many Aadizookaan that help guide them through life’s trials and tribulations and help explain why things are the way they are today. One of these many stories is about Manbozho and the maple syrup of the Anishinaabeg.

One day, a long time ago, Manbozho was looking for Anishinaabeg. He walked all over, looking for the Anishinaabeg, and was unable to find them. They were not hunting or fishing, nor could he find them tending to their gardens. Finally, Wenabozho found the Anishinaabeg lying in the maple grove. They were lying under the trees, letting the thick maple sap drip into their mouths. They were fat and lazy, not hunting or fishing, not tending to their gardens, just lying under the maple trees drinking their sweet nectar. Upset by what he saw, Manbozho went down to the stream and grabbed a makak, a birch bark basket or container, filled it with water, and went back to the maple grove. Manbozho dumped the water on top of all the maple trees, thinning the sap so it was as liquid as the water, with barely any sweetness. This to teach the people to enjoy the gift the ininaatig gave.178

The ininaatigoog has been around before Anishinaabeg even knew how to harvest the sap, many different stories tell how many different stories understood the ininaatig. For example

the following story about Gidgaa Bzhiwag a spotted linx, told by Leanne Simpson from a story she told her children every spring. She learned this story from a written source “How the Indians Got Maple Sugar ” Ritzenthaler, Robert E. and Pat Ritzenthaler, The Woodland Indians of the Western Great Lakes, Milwaukee Public Museum. She retells the story in the context of Michi Saagig Nishnaabeg cultural values, including benevolence, kindness, compassion, humor and non-punitive restoration.

It was the Gdigaa Bzhiwag who knew how sweet the sap was.179 The ininaatigoog provided food and shelter for the animals first. If it were not for the Gdigaa Bzhiwag ignoring Wenabozo the Anishinaabeg would not gain the knowledge of the sap from the Ininaatigoog. Nokomis gives knowledge to the Anishinaabeg, while Wenabozo waters down the sap.180 Not only does this teach us about respect for one another, it teaches us about being patient. With that responsibility of respect comes the knowledge of the sugar bush, teaching us the history about why we spend a month harvesting the sap.

There are other aadizookaan from the Anishinaabeg about maple sugar. This one was told by Keewaydinoquaybun181 Pakwakuk Peschel, an Ojibwe elder from Michigan. In the world of academia, Keewaydinoquaybun received her Master of Education from Wayne State University, and a Ph.D. in ethnobotany at the University of Michigan. She also won the Teacher of the Year Award in Michigan in 1975. In the 1980s, she taught classes at the University of Wisconsin- Milwaukee, (UWM) in ethnobotany as well as philosophy of the Great Lakes American Indians. Here is that story:

It was the time of the falling leaves and Red Feather was helping his Nokomis, grandmother, prepare for winter. He placed a few goodies in the toes of his moccasins while he sat by the fire preparing for bed. He heard a noise and found a waawaabiganoojiinh (mouse) looking for something to eat in the wiigiwam. Red Feather let the waawaabiganoojiinh take some food, but, knowing that the people did not like the waawaabiganoojiinh, he told his little brother, “Go back to the forest where it is safe for you.”

179 Simpson, Dancing on Our Turtle’s Back, 74-81.
180 Simpson, Dancing on Our Turtle’s Back.
181 I have added “bun” to the end of her name, as an honorific noting that she has died.
That winter was the hardest winter anyone could remember. The forest was all ice, and everyone was going hungry. Nokomis told him that there was nothing to eat today, so Red Feather went to the forest to look for food. Soon he came across a place where two paths crossed so he stopped and watched the animals go by. He saw two cold, skinny snowbirds, one very sickly-looking skunk and a plump field mouse.

Red Feather stopped the waawaabiganoojiinh to ask what his secret was—how he, of all the animals, was so fat and healthy during such a hard winter. The waawaabiganoojiinh recognized Red Feather as the one who saved his life when the leaves were falling, and told him to get closer, so he could tell him. The waawaabiganoojiinh told him that the secret was the sap from the maple tree.

Waawaabiganoojiinh told Red Feather that he was so hungry that he could eat a tree, so he went to an Elm tree and asked the elm for permission to eat his bark, explaining that he was just a waawaabiganoojiinhense, a little mouse, and would not eat that much. The Elm bark did not taste good, so he went back home hungry. The next day he tried an apple tree: again, the bark was bitter. Waawaabiganoojiinh said thank you to the tree, but the waawaabiganoojiinh said, “I will wait until your fruit ripens.” Again, he went home hungry. The next day he came across a hemlock tree, and again he went home hungry. The waawaabiganoojiinh was giving up on eating trees when he ran into a maple tree. The Maple tree said, “Try me, little brother.” so the waawaabiganoojiinh started to nibble on the bark. The bark was so sweet that he continued to nibble at it, until eventually the clear sap oozed out of the maple tree. “It is delicious and now, I share it with you, Red Feather.” With that, Red Feather thanked the Maple, and thanked his brother the waawaabiganoojiinh, and went back to Nokomis to share the goodness.182

The Menominee have an aadizookaan on the maple tree that is similar to the Anishinaabeg. This is the story I was once taught at a ceremony; in this aadizookaan, it is Nantnapush, the son of the earth, who discovered the maple’s sweetness.

It was said that Nantnapush roamed the earth for many years learning everything about her. Once he learned everything, he taught the people how to use certain things. He showed the people how to get the sap out of the maple. He showed the people how to make the “Y” in the tree to get the sap out of the tree and then taught the people how to make the baskets out of the birch and sap out of the white pine to seal the baskets so they could collect the maple sap. At this time, the sap was thick and sweet and

---

did not need to be boiled. *Nantnapush* left the people for a while, and when he came back to the village, he could not find the people. They were all lying under the maple trees, letting the sap fall into their mouths. They became fat and lazy and did not do anything. Getting upset, *Nantnapush* became very large, started to scold the people and then made it rain. It rained so much that the maple sap turned to liquid and was watered down. Now you will have to work and prepare the sap before you can enjoy the sap and I am making it a hard task, to remember to respect the gifts. That is why the maple sap is the way it is today to remind us about responsibility.

The Abenaki located on the eastern side of the Great Lakes have their stories of how Gluskabe, a cultural hero of the Wabanaki peoples, the maple sugar came to their people.

Long ago, the Creator made and gave many gifts to man to help him during his life. The Creator made the lives of the Abenaki People very good, with plenty of food to gather, grow, and hunt. The Maple tree at that time was one of these very wonderful and special gifts from the Creator. The sap was as thick and sweet as honey. All you had to do was to break the end off of a branch and the syrup would flow out.

In these days Gluskabe would go from native village to village to keep an eye on the People for the Creator. One day Gluskabe came to an abandoned village. The village was in disrepair, the fields were overgrown, and the fires had gone cold. He wondered what had happened to the People.

He looked around and around, until he heard a strange sound. As he went towards the sound he could tell that it was the sound of many people moaning. The moaning did not sound like people in pain but more like the sound of contentment. As he got closer he saw a large stand of beautiful maple trees. As he got closer still he saw that all the people were lying on their backs under the trees with the end of a branch broken off and dripping maple syrup into their mouths.

The maple syrup had fattened them up so much and made them so lazy that they could barely move. Gluskabe told them to get up and go back to their village to rekindle the fires and to repair the village. But the people did not listen. They told him that they were content to lie there and to enjoy the maple syrup.

When Gluskabe reported this to the Creator, it was decided that it was again time that man needed another lesson to understand the Creator's ways. The Creator instructed Gluskabe to fill the maple trees with water. So Glukabe made a large bucket from birch bark and went to the river to get water. He added water, and added more water until the sap was that
like water. Some say he added a measure of water for each day between moons, or nearly 30 times what it was as thick syrup. After a while the People began to get up because the sap was no longer so thick and sweet.

They asked Gluskabe "where has our sweet drink gone?" He told them that this is the way it will be from now on. Gluskabe told them that if they wanted the syrup again that they would have to work hard to get it. The sap would flow sweet only once a year before the new year of spring.

The People were shown that making syrup would take much work. Birch bark buckets would need to be made to collect the sap. Wood would need to be gathered to make fires to heat rocks, and the rocks would need to be put into the sap to boil the water out to make the thick sweet syrup that they once were so fond of. He also told them that they could get the sap for only a short time each year so that they would remember the error of their ways.

And so it is still to this day, each spring the Abenaki people remember Gluskabe’s lesson in honoring Creator’s gifts and work hard to gather the maple syrup they love so much.183

Our traditional stories teach us how to behave and interact with plants and animals. Humans still have freedom to make their own choices, however it is our stories that guide us and shape us. The stories of the iskigamizigan not only tell us that the waawaabiganoojiinh, mouse, took pity on us and showed us where to get some food, the sweet nectar of the ininaatig. There are stories that tell us how to get the sweet nectar out of the ininaatig. Of course, there are also stories of why the Anishinaabeg must work so hard to obtain the ininaatig sap. A teaching from Wenabozho, name of an aadizookaan, traditional story, character viewed as culture hero, on how to live minobimaadiz.

In the Anishinaabeg culture, the land's knowledge and gifts were obtained through a reciprocal relationship. These relationships are based on gift exchanges, honoring the land as a

being. The Anishinaabeg use ceremonies and prayers with the gift exchange to survive over the millennia. These relationships were built on reciprocity and mutual respect. Honoring them for their gifts. There are stories of the animal kingdoms leaving the Anishinaabeg people because of the lack of respect that the Anishinaabeg were giving them. The Anishinaabeg were letting meat go to waste and not treating the animal bodies properly. It was the animal nations meeting in their council before the deer spoke up and told of the way the Anishinaabeg can make amends. To make amends the Anishinaabeg must respect the animals in both life and death, not waste their flesh, preserve their habitats, and leave a gift of tobacco. A gift of tobacco asking permission to harvest, sometimes leaving some food to feed the animal or plant that is to be harvested out of respect for them. Always using everything that is harvested, along with being sure not to disrupt the habitat or harvest the last one is essential to keeping the kinship relationship with the other kingdoms in the environment.

There is a mutual understanding between humans, plants, animals, water, soil, the land. This land, mikinaak aki, Turtle Island, was lived on by Indigenous people for thousands of years. This interconnection and relationship begins when it is understood that we ourselves are gifts, just like everything that surrounds us are gifts too. All of these gifts need to be nurtured and taken care of much like we take care of ourselves and our loved ones. Gifts that are not taken care of will slowly start to disappear and not share their gifts anymore, much like the animals disappeared on the Anishinaabeg in their aadizookaan, only coming back after an agreement was made with the Anishinaabeg. Sometimes agreements cannot be made, and they disappear forever

---

185 Wendy Makoons Geniusz, Our Knowledge is Not Primitive: Decolonizing Botanical Anishinaabe Teaching (Syracuse: Syracuse University Press, 2023).
186 Kimmerer, Braiding Sweetgrass.
187 Simpson, Dancing on Our Turtle's Back, 110.
much like the ash tree, wiped out by the emerald ash borer. The gifts of the ash tree were not being respected, and the ash tree was slowly taken away. The same thing could happen to the ininaatigoog if their gifts are not respected and taken care of.

Because of Wenabozho, the Anishinaabeg must make a fire and heat up rocks to drop into the makak and evaporate the water, leaving barely any syrup there. They will have to collect a lot of the sap for them to have throughout the year. Wenabozho also made it so that the trees would only give their sap to the Anishinaabeg once a year. This was to ensure that the Anishinaabeg would be able to hunt, fish and gather the rest of the year.

Indigenous nations have relationships that are based on the mutual trust and respect that is given through reciprocity. The Anishinaabeg sought relationships through gift exchange with humans and manidoog that aided them in basic subsistence and helped them achieve mino-bimaadiziwin. These gift exchanges were not just with humans but also animals and plants. Developing a relationship with these plants and animals is an integral part of mino-bimaadiziwin. To achieve mino-bimaadiziwin it is imperative that you have a good kinship relation with all plants, animals, land, and even the spirits. Only then can you attain mino-bimaadiziwin.

In some of these communities, spring has arrived when the thunder beings have come back, while others recognize spring when they hear certain frogs croaking. Some communities will recognize spring when a certain plant starts to bud or when the mother bear kicks the babies out of the den. Living with the land gives you a better understanding of the land and the life that utilizes it. By understanding the land, you know when it was time to harvest, and when it was time to move to winter camps. The native peoples that lived on the upper Missouri River, took full advantage of the river's rhythms. They appreciated the flood cycles of the rivers, and they

knew better than to set up their full camps on the river's floodplain.\textsuperscript{189} Taking care of the *ininaatigoog* is a part of life, the natural rhythm of the world. Much like following the flood cycles of the river.

The *Anishinaabeg* talked to the *ininaatigoog* and respected the circle of life. The *ininaatigoog* told them every year when spring would be arriving. Once the *Anishinaabeg* knew when spring was arriving, they would move into their spring camps and prepare for the sap that was coming their way. They knew that they would have a short window to collect the sap and boil it down to make sugar and candy.

Iskigamizigan tools would be cached in a framed wiigiwam, lodge. The *wiigwaas*, birch bark for the wiigiwam, would have been stored in the frame or taken with them to their winter camps to cover the winter lodge. In the *wiigiwam* would be clay pots, birch bark baskets, and sugaring logs to make the sugar. Carefully stored away so it could be used again each season. Sugaring logs would be logs that would have troughs in them for the sap to be poured into. Hot rocks would be dropped into the troughs that contained the sap. This process was repeated until the sap was able to be turned into sugar. Another method was letting the sap freeze at night and taking off the frozen part. The water would freeze leaving the sugary sap to be boiled down into sugar.\textsuperscript{190}

The *Anishinaabeg* are guided by this gift exchange and the relationships of these spirits. Great care was taken not to offend them. In *Ojibway Heritage*, Basil Johnston, an Ojibwe scholar, states that *Anishinaabe* ontology is holistic and based on spiritual relationships.\textsuperscript{191} Running an *iskigamizigan*, or sugar bush, requires an intimate knowledge of the land and the

\textsuperscript{189} Wildcat, *Red Alert!*, 119.
\textsuperscript{190} Schoolcraft, *Historical and Statistical Information*, 81.
\textsuperscript{191} Johnson, *Ojibway Heritage*. 
ininaatigoog, sugar maples. Knowing when the sap will run, how to harvest the sap, and how to make it into sugar, comes from observing and spending time with ininaatigoog, shows an understanding of the environment. Knowing that when the temperatures were freezing at night but above freezing during the day was when that sap flows, or knowing how to eliminate the water from the sap to make sugar, is all a part of science - both Indigenous and western. This knowledge comes from patience along with observing, experiencing, and listening to the environment. Understanding that these beings will communicate and help us, we just have to listen.

The knowledge of when to start and stop the iskigamizigan requires communication with much more than just the ininaatigoog, it requires a scientific understanding of the environment. A communication with the land and all that is around. Much like a good hunter will know how the animal that is being harvested will act, when the best time to look for the animal is, what the animal will eat, and the landscape where to find them. This is more intimate than picking up a weapon and going out to obtain the animal. To the Anishinaabeg these are all animate beings that have a spirit that needs to be nourished because we are in a kinship relationship. The land is not outside of the world of the Anishinaabeg, as we see animacy in plants, animals, fish, birds, crawling animals, rocks, and our ancestors. These relationships are what guide the Anishinaabeg, leading to mino-bimaadiziwin.

Feasts honoring these relationships were common. Every year during iskigamizigan, sugar bush feasts would honor the sugar maples. The feasts were to honor the gifts of the Ininaatigoog, and the relationship they have with the Anishinaabeg. There is this understanding that both, the gift and the relationship, could be taken away as quickly as they were given. Iskigamizigan marks the beginning of spring, a renewal and celebration of all life. The feasts
united all beings, bringing the communities closer together, honoring friendships, kinships, and all other relationships. Elizabeth Baird, a nineteenth century Ojibwe Metis writer from Green Bay, talks about some of her fondest memories of the sugarbush. Having people gather laughing, talking, and enjoying pancakes with maple syrup.\footnote{Baird, \textit{O-De-Jit-Wa-Win-Ning}.} 

Iskigamizigan, sugarbush, was a time of renewal, celebration, and arrival of spring, \textit{zaagiyangidwa}. A time of opening, opening one’s heart, soul, opening of the buds, opening of life and most of all, springtime is the opening of a time of love where new life is starting. Families would come to gather after long winters and harvest the maple sap, laughing and joking, enjoying the comforts of being close to each other. Women, children, and elders would \textit{Zhiiwaagamizan}- boil the sap. Ceremonies honoring the \textit{ininaatigoog} would be held. This was the first ceremony that was done, starting the ceremonies till next winter.

Ceremonies would take place in honor of the \textit{ininaatigoog} and the gift they were giving. Erik Redix, Grand Portage Ojibwe, in his youth storybook \textit{Iskigamizigedaa}\footnote{Douglas P. Thompson, \textit{The Right to Hunt and Fish Therein; Understanding Chippewa Treaty Rights in Minnesota’s 1854 Ceded Territory}, from 1854 Treaty Authority. Education & Outreach, \url{https://www.1854treatyauthority.org/education-outreach/publications.html} (accessed April 19, 2023).} talks of how a gift of food was given to the \textit{ininaatigoog} before they start to harvest and again after the first harvest. If any of the sap is wasted or spilled there would be another gift given to the \textit{ininaatigoog}. The \textit{ininaatig} are still sacred and respected among the \textit{Anishinaabeg}. Not just utilized for their beauty and their sap but as another being that has feelings.

As colonization spread throughout \textit{mikinaak aki} the introduction to trade goods allowed for many of these tools to get upgraded. Many of these upgrades would be replacing the wooden tools used to collect and prepare the sap. Women would trade for iron kettles or copper kettles to boil down the sap, making their work easier. The cedar spiles, or taps, would be replaced by tin
spiles. With the new tools that were being brought in, the method of rendering down the sap changed. Tripods were made to boil more sap at a time using the kettles. In some places more than one kettle would be hung over the fire. Each kettle is at a different stage in the process, to ensure a more productive harvest. The new tools allowed for the practice to be more efficient which enabled them to produce more sugar that was traded.194

Two methods were used to render down the sap before the introduction of the iron kettles or copper kettles. The first method involved heating up stone in a fire and the hot stones into a makak, birch bark vessels or large clay pots. The second method involved repeatedly freezing sap and removing the frozen water that formed on top. Since the sugar in the sap does not freeze, eventually all that is left is a thick syrup. When metal pots were introduced by the traders, the way women rendered down the sap changed.195

With the introduction of iron pots the Indigenous women devised a new way to render down the sap. Men constructed an arbor with heavy support beams over the fire pit to hold multiple iron kettles to hold the sap that was collected. A continual fire was built under the kettles to constantly be boiling the water out of the sap. The sap with the most liquid gone was kept in the center of the beam. Someone was placed in charge of watching the sap to make sure that it would not boil over. To prevent the sap from boiling over the person in charge of watching the sap would stir the sap with a fir or spruce branch which prevented the sap from boiling over.196

Maude Kegg, an Ojibwe writer from Mille Lacs Band of Chippewa in Minnesota, remembers the days of *iskigamizigan* in the early twentieth century. Kegg recalls arriving at the *iskigamiziganing* the sap boiling place, which was a different location than where they stayed during the winter. They had to remove the snow from the frame of the lodge and cover it with cattail matts and birch bark rolls. All of their sugar tools were kept in the lodge from last year's sugaring. Before Kegg was allowed to help she remembers she had to fast without food or water for two days for the gift of the sap. They collected the sap in *makak* and if they leaked they would quickly seal it up with pine pitch. They were very careful not to spill or waste any of the sap. Once enough sap was collected they would start the boiling process. In the middle of the lodge was what Kegg calls the *iskigamiziganaak*, sap boiling frame. It consisted of four sticks, two on each end, they put them standing up with a stick laid across the top connecting them both. Some short sticks were cut and carefully peeled and where to go over the crossbar. The kettle hangers were attached to them. Kegg says that the *Anishinaabeg* always boiled the sap inside. Kegg had a fir bough and was in charge of watching the kettle so it would not boil over. She also had a basswood trough that they would use to turn the syrup into sugar. They would pour the syrup mixture into the snow to make taffy or into birchbark cones, even duckbills could be molds for the syrup to mold it into a sugar block. These sugar treats were often sources of gifts to the manidoog or the children, young and old.\(^{197}\)

*Anishinaabeg* believe in a spirituality that links all beings together. This linkage is based on respect and power. Gifts are given when communicating with these beings along with feasts held in honor of them. Gifts of *asema*, tobacco, are usually given out of respect, honoring the

---

relationships of past and present, ensuring there will be more gifts in the future. This is a reciprocal exchange based on mutual trust and need.

Since the Anishinaabeg were given the gift from the ininaatig they have taken care of them. Listening carefully to the ininaatig, making sure that ininaatig needs were being met, ensuring that there would be more sap to harvest for future generations. Living with the land and understanding how to live with the seasonality of the land is how the Anishinaabeg lived. We would move with the land, as the land was providing them with gifts. When fish were ready to be harvested, it was time to fish; if the sap was running, it was time to move to the sugar camp. Relying on the land to notify them when to harvest. The Anishinaabeg graciously accepted the gifts and left a gift of thanks in return. This exchange of gifts was an understanding that was taking place. By offering up the gift of asema you are acknowledging that whatever you are harvesting has a spirit. Through this act you agree to follow the unspoken rules, taking only what you need and making sure there is plenty more left to harvest. Never taking the last of anything. Robin Kimmerer refers to this as the honorable harvest.198 She gives certain rules that are to be followed when going out to harvest plants. Though Kimmerer refers to just the plants that are being harvested these rules are to be followed when harvesting anything on the land.

In Matthew Thomas’s dissertation “Where the Forest Meets the Farm,” he refers to maple sugar being the first commodity.199 There is no doubt that the maple sap was turned into maple sugar and was traded and bartered with. Many colonists used maple sugar as their sweetener. It was preferred over the cane sugar that was being imported from the Middle East, Egypt, and the

198 Kimmerer, Braiding Sweetgrass, 175.
Canary Islands. Thomas is right that the first commodity for the colonizers was the maple sugar that the Indigenous communities were producing; however the Indigenous people would be trading and sharing their gifts with other people in the community to make sure they had kinship ties. In her dissertation, Susan Wade shows how maple sugar was traded and was an important commodity in the region. If there was another community that was struggling and did not have enough sugar the Indigenous community would often trade or gift some of their maple sugar to the family in need. This kept a close-knit community where everyone helped everyone. Neighboring nations would also be included in this familial trading ensuring a kinship relationship and keeping peace.

Cane sugar, originally planted by the colonizers in the Caribbean, sparked a massive change in the ecological structure of the settlements and soon the world. Having planted too much crop to care for by themselves, the colonizers used slave labor. When the use of Indigenous people did not work, shipments of slaves from Africa started to come in. This started the biggest slave trade that world has seen, enslaving millions. Early Spanish plantations of Santo Domingo of 125 acres of land took control of as many as two hundred slaves. Not only were the colonizers now enslaving people, but they were making a huge profit on the slave trade as well. Cane sugar was cheaper and easier to use because of slave labor. This freed up the sugar maples to be colonized, and used without consent.

---

203 Mintz, *Sweetness and Power*, 47.
Climate Change

A modern threat for the ininaatigoog has risen in the form of climate change. As temperatures and carbon levels continue to increase since the industrial revolution, it has caused the ininaatigoog and the iskigamizigan to suffer as the locations where they have grown for millenia are no longer habitable. The latitudes where ininaatigoog and iskigamizigan have been found healthy and culturally harvested are moving. The scientific community has acknowledged and validated that climate change is here, happening now, and having direct impacts on our lives, however many, including our elected officials, refuse to accept this reality. To ensure that readers of this dissertation have understanding of this problem, I am providing a detailed explanation of climate change.

Climate change is the long-term shifts in temperature and weather patterns caused by the anthropogenic increase in CO2. This is not the change in weather from year to year. Climate change is the monitoring of the weather over a period of time, documenting the changes, and observing the trend of the weather. The trends are warmer temperatures with more erratic weather patterns. This means that people may observe a cold summer or a summer with little rainfall, but the overall trend is a warming of the natural environment, with more erratic weather behavior, and more flooding and extreme conditions than in years past.204 This has serious implications on the iskigamizigan, affecting when the ininaatigoog will give their sap, along with sweetness, and even how much sap is harvested.

These shifts in the landscape are linked to human use of fossil fuels. The burning of fossil fuels, like coal, oil, and gas, releases heat trapping gasses into the atmosphere. An increase of

carbon dioxide in the atmosphere was first noted during the industrial revolution when the use of fossil fuels increased. The increase in carbon dioxide in the atmosphere continues to heat up the earth. The temperature increase has been significant enough to cause the glaciers to melt more rapidly and a momentous change in weather patterns. These changes have caused significant die off of the ininaatigoog, and a shift in the ininaatigoog region that they typically reside in.

Climate change is more than just an increase in temperature to the region. There is a change in the precipitation patterns, such as more intense rainfall or snowfall in a shorter period followed by periods of drought or no precipitation. There will also be heat waves unlike any we have experienced before. Northern latitudes may receive 20 to 40% more precipitation, but the Intergovernmental Panel on Climate Change or IPCC warns that the benefits of this may be outweighed by more intense storms and earlier snow melting. In snow dominated latitudes, which include New Hampshire, snowpacks may melt earlier, causing drought in early spring, just when young maples are leafing out.

Along with heating up the atmosphere, prolonged exposure to elevated concentrations of CO2 shows an increased mass in the root system of the ininaatig. The elevated CO2 also creates a greater overall mass of wood and has a significant increase in the mass of the leaves, though this increase is only noted when there is enough water. In years with less water, it can presume that these results would be different, though an increase in carbon would be beneficial in the growth of the ininaatig.

---


CO2 levels have risen exponentially. Since the pre-Industrial Revolution until now has seen an increase in CO2 in the atmosphere over 100 ppm. In 1960, according to the Keeling Mauna Loa CO2 monitor, the CO2 was 320; in 2020 it was 415. While the increased Co2 helps the plants grow, the plants have a hard time keeping up with the nutrition they need to support such rapid growth. In Washington State, Darren McCrea, an ecologist, has noticed that trees are becoming more brittle. Pine needles that were once able to be woven now break when they are bent. Without the pine needles Indigenous nations will be unable to make their baskets. The medicinal values that the pine holds are also being altered. Branches from the sugar maples and the pine trees are also snapping with very little force applied to them. This is a clear sign that the nutrients are not sufficient to support such rapid growth in the trees.\footnote{\textit{Justus Caudell, “McCrea Featured in Western Forester Magazine,” \textit{Tribal Tribune}, http://www.tribaltribune.com/news/article_0fa862fe-0a30-11ec-9afa-c729daf44b0.html} (accessed August 31, 2021.)}

Another issue of latitudinal climate change is the sweetness of the sap. The \textit{ininaatigoog} who have been under stressors of climate change have had less sweet sap during the sap run. The carbon is not being changed into the usual amount of sucrose to help the tree support life. The abnormalities of the tree leaf prevent the \textit{ininaatig} to properly photosynthesize.

In the Great Lakes region for the \textit{Anishinaabeg} and \textit{ininaatigoog} climate change has had a sizable impact. The \textit{Anishinaabeg} rely on the natural environment to provide sustenance for their people, through fish, wild rice, and maple sugar to name a few. The \textit{Anishinaabeg} start their year with the sugarbush. It is the first harvest of the year where everyone comes from the winter camps to celebrate spring, welcoming in the new life. The \textit{ininaatigoog} rely on the weather for its sap to be drawn up from the roots to feed the rest of the \textit{ininaatig}. If the weather does not get
cold enough for the sap to freeze and thaw, the *ininaatig* will not be able to sustain life because not enough of the nutrients are getting up throughout the rest of the *ininaatig*.

The lower boundary of the *ininaatig* is slowly moving North, changing the *ininaatig* biome. The *ininaatig* need the milder temperatures where there are temperatures at or below freezing followed by temperatures above freezing. If the *ininaatig* has a few years without getting the change in temperature, the *ininaatig* starts to die. This is currently taking place as it has been observed by the Indigenous communities and scientists that the *ininaatig* is slowly dying.

The risks to crucial biological processes in this region due to climate change are varied. Looking at climate change impact in the Boundary Waters region versus Southern Wisconsin we can see that both regions are having an impact on the *ininaatig*. Both areas are having to adjust their harvest times, the *ininaatig* in the north are proliferating while in the southern areas the *ininaatig* lives are being threatened. The more their biome heats up, the closer they are to moving on from the area and leaving areas that were once full of *ininaatig* and sugar camps.\(^{210}\)

The *ininaatigoog* relies on the water not only for its own nourishment but the water collected in the summer provides the sap for the following season. While we all need water for life, water still is not viewed as a being with rights. Water has been trying to get the attention of people, changing weather patterns, creating areas to go without water for extended periods of time.

Since the watershed of the Great Lakes is so vast, it is challenging for it to illustrate the impact of climate change on watersheds. Yet the impact is there. For example, the waterbed of Lake Mead, a reservoir made by the Hoover Dam, is drying up due to shifts in precipitation.

patterns, forcing an economic change that is not limited to those living immediately around Lake Mead.\textsuperscript{211}

Lake Mead and waterbeds were made to harness the power of the water and provide electricity and water to the western United States. Though the effects of the dams had huge ramifications to flora and fauna kingdoms downstream, the decision to force nature into what humans desired outweighed any ramifications. The Dine or Navajo people living on the land area known as Arizona were hit the hardest with the dam placement. Forced into a herding community via colonization, they had to reinvent themselves again and move their herds to


various places to find nourishment. The fish beings are also affected by the placement of the
dams. No longer would the spawning fish, such as the salmon and the sturgeon, be able to
navigate up the streams to get to the spawning grounds. This caused several species of fish to die
off and be lost forever in the streams, now only present in the stories that are told of them.

Living in the water rich Great Lake area makes the water crises harder to realize. Yet in
the west the Colorado River is slowly drying up. California, Arizona, New Mexico, Utah,
Wyoming, and Colorado now are fighting amongst themselves to obtain water from this
diminishing source, the Colorado River. A closer example of water crises is the attempt (and
eventual success) of Waukesha County obtaining water rights to Lake Michigan, even though the
county is located outside of the watershed.

---

Press, 2016).
215 Colorado River Compact, 1922, Bureau of Reclamation. Can be viewed, read and downloaded at
216 WI Dept of Natural Resources, “City of Waukesha Diversion”,
https://dnr.wisconsin.gov/topic/wateruse/waukesha.html
In a tree this system goes up and down the tree which is nonexistent in water systems, both are affected by the rain and ground around them.

In the winter, the tree is frozen and goes into a dormant phase until spring when the nutrients once again rise.

much like a water system the roots are the tributaries carrying the water and nutrients up to the canopy or the lake.

In the spring the sap is loaded with enough carbon to help the tree grow buds to obtain energy from the sun it is at his point when the sap turns purulent and bitter.

In the fall the sap is loaded with Phosphorus to support the growth of the seeds.

Figure 10: A tree system collecting nutrients in the seasons. \textsuperscript{217}

\textsuperscript{217} Image was drawn by Dr. Cuhel
The water network is similar to that of the tree network. The roots gather all the nutrients from the area. The nutrients are then carried up the tree and into the canopy. Much like the tributaries collect the nutrients from the area which runs into the rivers and streams feeding the lakes or ponds. In either case when the water dries up, life ceases to exist.

As mentioned above the *ininaatigoog* get their nutrients through water and sunlight. The water can be collected from nearby streams and rivers. In all cases it is collected from a water table. When it rains the water soaks into the ground, collecting with it the nutrients in the ground. It flows into the water table which runs into a stream or a river. We can visibly see this when it rains, it takes a couple of days for the rainwater to affect the rivers or streams, this is the time needed for the water to make its way into the stream and rivers. It then flows down these

---

*Image drawn by Dr. Cuhel showing how similar the tree and the water systems are.*
tributaries through fields, cities, and industries collecting nutrients along the way before it is dumped into a lake. The Great Lakes are specifically higher in nitrates because of the limestone in the ground.\textsuperscript{219} Nutrients like nitrite, nitrate, carbon, phosphorus, and ammonia can be found in the water system. Carbon and phosphorus are the nutrients that the Ininaatigoog use to proliferate. Most of the water that the tree collects is from the ground with extraordinarily little being collected from the rain. The significant difference between groundwater and river water is that the river is a collecting area of nutrients from all over.\textsuperscript{220} Much like the ininaatigoog the water system is affected by the temperature of the environment. The water system is also affected by temperature change. In the winter months the water system is cold and, in some locations, frozen. This prevents nutrients from being absorbed into the water system, also preventing the animals and plants that rely on the nutrients from growing or reproducing. If the water is frozen for too long, it throws off the plankton and algae growth which is heavily relied on by the fish for reproduction. In the spring the water warms and the ice melts causing an increase in water along with it an increase of nutrients that flow into the water ways.

Water is the most sacred medicine, a gift to humans and all beings. Just like the ininaatigoog or other animals and plants, water is needed to sustain life. The Anishinaabeg have a kinship relationship with water just like the Anishinaabeg have with the rest of the environment. Josephine Mandamin walked the Great Lakes to draw attention to this relationship, while giving agency to the water. Mandamin did a ceremony honoring the water, acknowledging the spirit of the water. She walked around the entire Great Lakes doing a water ceremony,


drawing attention to the water. Mandamin reinforces the Indigenous ideology acknowledging that we should be a community of giving not taking. Debra McGreggor, an associate professor at the University of Toronto studies Indigenous knowledge and environmental justice. She says that to get Mnaamodzawin we have to understand Zaagidowin. In order for us to have Mnaamodzawin, we have to have love. Love and openness, not only for ourselves, but also the environment including all that live on, including the water. McGreggor also states that the water connects us to our ancestors and to our future generations. By taking care of the water now we are also taking care of our ancestors and our future generations. Without that zaagidowin for the water, the water will disappear, showing people how much they love the water. This loss of water can be seen in the western United States as they struggle to maintain a relationship with water. Drying water beds followed by massive amounts of rainfall, leads to the inability of the soil to absorb the water or the nutrients in the water. This phenomenon creates flooding problems and a washing away of healthy soil, creating millions of dollars of damage a year just in the United States. According to the National Oceanic and Atmospheric Administration (NOAA) since 1980 the United States has sustained 341 disasters costing more than 2.4 trillion dollars in damages.

---


Erratic weather patterns affect the *inaatigoog*. Drought makes the ground so dry that it can not soak up the moisture. The ground repels the water allowing it to collect and form fast-moving streams and rivers. The rain comes from erratic weather patterns that have been on an increase. Storms are less frequent than in years past but are much more aggressive when they do come.\(^{225}\) Wisconsin averages 23 tornadoes per year, however the tornadoes are coming earlier in the year than has been seen in years past along with more severe weather patterns that have not produced tornadoes but have caused flooding\(^{226}\). Numerous wildfires that are going on at any time. Prior to contact the Indigenous people would practice burns to get rid of brush and prevent wildland fires.\(^{227}\) Great Lakes Indigenous peoples recognized that some of the vegetation needed the fire to produce seeds. Controlled burns also helped protect the *ininaatigoog* and other trees from the destruction of wildfires. This was part of the ceremonies that the Indigenous people


\(^{225}\) *ibid*.


would do every year. It cleared paths and made the landscape more accessible for what they were planning to use it for including iskigamizigan. The difference being that the Indigenous people would communicate with the land, letting the land know what was going on and why.\textsuperscript{228} The relationship was not taken for granted as there was always a line of communication open and a ceremony to celebrate the relationship. Winds have also been creating mischief and mayhem. Fierce winds off the coasts of the Great Lakes have been eroding away the shores. This erosion has caused numerous problems for the coastal regions.\textsuperscript{229} Shift in the weather patterns has caused erratic harvesting of the ininaatigoog sap and in some cases cause ininaatigoog die off.

The ininaatigoog proliferates in the milder temperatures. It needs the temperatures to go down to freezing to survive. The freezing and thawing of the sap are what draws the sap up from the roots and feeds the branches to enhance the growing process. Without this process the ininaatigoog starts to lose their big canopy and starts dying back. While the increase in temperature and drought conditions increase, the Ininaatigoog slowly start to die while their seedlings find an environment more suitable for them.\textsuperscript{230}

The ininaatigoog needs cold temperatures to proliferate. The below freezing temperatures at night and the above freezing temperatures during the day are prime for the sap to run. Without these temperatures the sap does not flow, and the tree ceases to exist. We can see this take place gradually as climate change has affected where these trees are currently growing. We can

\textsuperscript{228} Cronon, \textit{Changes in the Land}.
physically see these trees gradually moving North where they can get this change in temperature.\textsuperscript{231} It takes years before the change is visible.

As the \textit{ininaatigoog} slowly migrates north we should stop and listen to what the \textit{ininaatigoog} are trying to tell us. This migration is a slow process that has been going on for years. As the temperature rises the \textit{ininaatig} that do not have the cold temperatures start to die the seeds from them grow further north. Same with the \textit{ininaatig} in the northern regions. As the northern regions get warmer, the \textit{ininaatig} will start to move in, competing for the warmer land.

For years, the \textit{ininaatigoog} have not been listened to, however the \textit{ininaatigoog} voice is starting to be heard by more people. The National Phenology Network monitors the \textit{ininaatigoog} to lineate when spring arrives at a certain location. Now when the \textit{ininaatigoog} starts to bud Dr. Mark Schwartz and others from the phenology network listen and record the data. They watch the maples from when the first bud is formed to the last leaf is fully formed. From this data Schwartz has been able to analyze when spring has arrived at a certain location.\textsuperscript{232}

The phenology network correlates with people in the United States to understand when spring arrives. Through this data they can monitor how much sooner spring is coming. They post their data online so anyone can look at the information.\textsuperscript{233} As the warmer weather increases the ininaatigoog migrates to milder temperatures. This migration is not like a migration that we see with animals. It is a slow process, when an area is too warm for the \textit{ininaatig}, they start to die off leaving an area that was once filled with \textit{ininaatig} desolate of \textit{ininaatig} an open for other species


\textsuperscript{233} You can find more information on climate change and when spring arrives at certain locales at this link: \url{https://www.usanpn.org/usa-national-phenology-network}. 
to take over changing the environment. At the same time the areas that were too cold for the
ininaatig to grow, start to warm up. As this environment is now warmer the ininaatig are able to
sustain life and start growing.\textsuperscript{234} This effect creates a northern migration of the ininaatig from the
once colder climate. This happens over a prolonged period of temperature change.

The ininaatig is reaching out and trying to help the humans again. Schwartz, Whyte, Reo,
McGreggor and other scholars are trying to give the ininaatigoog and the environment a voice.
The ininaatigoog are telling us what is happening to the landscape and the impact on the land.
They are not the only being that is affected by climate change. All of the plants and animals are
also affected by climate change as we all try to manage through this, it is time to listen to our
environment. The plants, animals, land, and water all have a voice in Indigenous knowledge that
need to be heard.

Indigenous people have been so used to abiding by the new laws of the land that we
forgot what the old ways were. The old ways periodically peak through when we discuss
ceremonies like iskigamizigan, however even the iskigamizigan ceremony has been changed,
adapted to fit into the colonized way of doing things. No longer do we take a month to enjoy the
iskigamizigan. Nor are the ceremonies of the iskigamizigan practiced like they used to be. The
tools that are used for the iskigamizigan have changed, however the ininaatigoog are still the
ininaatigoog and need to be treated as beings. As Johnston points out all four orders of the land
are needed for life to exist and without acknowledging the ininaatig the four orders are not being
met and the whole existence is in jeopardy. These thoughts and actions that have been forced
upon Indigenous people, have consciously and unconsciously shaped our thoughts and mindsets

\textsuperscript{234} L.R. Iverson, et al. “Estimating potential habitat for 134 eastern US tree species under six climate scenarios”,
(accessed April 1, 2023).
on how we handle not just the landscape but also how we treat ourselves and others. It is more common to see these people ridiculed and made fun of to the point where they do not want to be a part of the community anymore. This not only causes a fraction in the landscape, but it also changes our reality. Once the reality has been changed, assimilation and colonization by the United States has won. This is not just a battle for land this is and as always been for our people a battle for minobimaadiz.

This chapter discussed Ishkigamizige gaa-ezhiewebag, the history of the sugarbush starting by looking at the science of the ininaatig and what is going on with the ininaatig in the four seasons of winter, spring, summer, and fall. I discuss the stories of the maple tree and how sap came to the Anishinaabeg and the practices of the ishkigamizige. How colonization changed the landscape and the use of the ininaatig to a commodity and how climate change has impacted the ininaatig.
Chapter Three: Ezhi-dibaadanawaa Iskigamizigewaad: An Ethnographic Perspective of Sugarbush

With ethnographic methodology, people are encouraged to tell their own stories. In this chapter a diverse group of people narrate their understanding of the iskigamizige process which takes place in the iskigamizigan. Through their stories, which serve as qualitative data, they explain their relationship to the ininaatigoog in Anishinaabewakiing and the region in the Great Lakes where ininaatigoog thrive. I will begin with a discussion of Anishinaabe ethnography and how it is used in this dissertation, then I will share the ethnographic responses from various locations and conclude with a summary of the variation I found using the holistic framework I am proposing.

Ethnography in Anishinaabewakiing

Evidence of ethnography taking place in the region for thousands of years is found in the morphology of numerous Ojibwe words used long before colonization. The term nisidotan, is recognition of something inanimate by the sounds and energy it emits, nisidotaw is the recognition of something that is animate by the sounds and energy it emits. Nisidawaabandan is used to indicate recognition based on the way something appears to an observer. Nisidawendan describes the intellectual processing of all data someone might have about the universe. Even to this day, ninisidotawaanaanig, we recognize others in the Great Lakes region by using a name based on the way they are described by others. For example, the Mamaceqtaw, were given the name Menominee based on the Ojibwe word, manoomin, or wild rice, referring to their location near beds of wild rice when Ojibwe people first encountered them in this area. Nisidotan is through the naming of the various communities, and even some of the bodies of water like Michisippi or Michigami.
Historically what has been categorized as ethnographic research in the Great Lakes region of the United States begins with Henry Schoolcraft, Huron Smith, Francis Densmore, Ruth Landes, Inez Hilger.235 These Americans conducted their research as a way of preserving the language, culture, and history of a people who they believed to be conquered and on the verge of extinction. They viewed the ceremonies, knowledge, and stories as uncivilized and their knowledge superior to the knowledge that they are preserving. In most cases these ethnographers were hired by federal governmental agencies to preserve the knowledge of the Indigenous communities that they were colonizing, viewing the Indian people as a natural resource to be exploited and gain a profit from.

My ethnographic research incorporates an Indigenous framework for understanding how the people who have told their stories are stewards and relatives of the ininaatigoog. The participants' knowledge from working with the ininaatigoog is firsthand knowledge, a voice of the ininaatigoog in their biome. Their knowledge of their iskigamizigan is specifically related to them, each of the participants telling their story of the gained knowledge they carry about the ininaatigoog. In this chapter I will describe the questionnaire I used, the location of the ininaatigoog and the individual responses and patterns found across the stories.

During the course of my graduate work, I have studied the framework for how to best observe and assess the environment. Since completing my master’s thesis “Aninatoogoog Ezhi-Maamwi-Minobimaadiziyang (Maples and How We Live with Them)” I have encountered numerous communities, both human and non-human, where relationships have been planted.

235 Some early examples of their ethnographic research; Henry Rowe Schoolcraft, Personal Memoirs of a Residence of Thirty Years with the Indian Tribes on the American Frontiers ... 1812 to 1842 (Philadelphia, 1851); Huron H. Smith, Ethnobotany of the Ojibwe Indians (Milwaukee: Board of Trustees, 1932); Frances Densmore, Chippewa Music, (St. Clair Shores, MI: Scholarly Press, 1976); Ruth Landes, Ojibwa Sociology (New York: Columbia University Press, 1937); Inez Mary Hilger, Chippewa Child Life and Its Cultural Background (Washington: United States Government Printing Office, 1951).
These relationships run their course, coming in and out of people's lives, as every being has their own roller coaster of life. My research is not a longitudinal study but an ethnographic study looking at very different sites and how they interact with the environment. I will look at and discuss the scientific data that was collected in Chapter 4 while in this chapter I focus on ethnographic research.

Recognition of Relationships

Recognizing the relationship between people and trees, from an Anishinaabe perspective, has required a multifaceted approach. To be clear, I am using an Anishinaabe framework to document and summarize a wide range of relationships people currently have with several specific ininaatigoog communities. Some are now stewarded by non-Indigenous people while others are cared for by descendants of the people who have lived with them for centuries.

The collection of summaries that follow began at different points in time and I grew to know each set of people and trees slowly before inviting them to be part of my research which led me to asking the same questions of each group in a more formal or ceremonial way.

To better understand the people and their iskigamizigan I asked two sets of questions to learn about the lens through which they viewed the ininaatig and their iskigamizigan. My first set of questions were ethnographic in focus and concentrated on where they learned the practice and how they currently practice iskigamizige. The second set of questions centered on the physical biome of the iskigamizigan. I wanted to understand how much sap was being collected and what was being made with the sap. I also wanted to understand the processes of their iskigamizige, and the different techniques being used. This second set of questions will be discussed in chapter 4 as it relates more to quantitative observation of the landscape, disease, invasive species, and overall health of the ininaatigoog.
The ethnographic data I am focusing on in this chapter was obtained through fifteen open-ended questions (found in Appendix A) intended to gather personal narratives and auto-ethnographical observations. While building a network of people connected to the *inhaatigoog*, I kept records of their basic ethnic and biographical information including: their spirit name, if they have one, their *Zhaaganash* name as United States citizens, their gender identity, and their role in their community.

I first asked each of the humans about their own identity and their beliefs and knowledge related to the *inhaatigoog*. I asked if they know and use *Ojibwemowin*, if they regularly practice *Anishinaabe* ceremonies, and if they learned any stories or songs about the *inhaatigoog* or the *iskigamizigan* as they were growing up. Then I asked specifically about their relationship with the trees including how long they have been practicing the *iskigamizigan* and if there are any ceremonies or procedures they perform before the start of their *iskigamizigan*. Respecting the *inhaatigoog* as beings who give a useful and nutritional gift to people, I wanted to ask if they talk, sing, or even care for the *inhaatigoog*. Since every community has their own ideology on when to start their *iskigamizigan* I wanted to know if there was anything in the environment that signals when the *inhaatigoog* are ready to give their gift of the sap. With the *inhaatigoog* dependence on the environment, I wanted to know if there was any indication of climate change in their *iskigamizigan*. Finally, I wanted to know what they made from the sap, how they made it and if they keep records of their harvest.

I have attached the full list of ethnographic questions in Appendix A.

**Overview of Locations**

I have attempted to document *iskigamizige* practices and the relationships between people and *inhaatigoog* in six different locations. After getting to know the people in each location I
began talking to them about the *ininaatigoog*. Eventually I mailed them a survey, some collection bottles for sap samples, and a refractometer to show the sugar content of the sap. In a few locations people provided sap samples which were sent to Cuhel-Aguilar Lab in 2020-2022 and Michigan Technical University Lab in 2023. This process and data collected will be discussed in chapter four.

I have only been able to observe and document a few of the relationships of *ininaatigoog* in the vast diaspora of *mitigoog* living in *Anishinaabewakiing*. I began with the two *iskigamiziganan* in which I participated, a pair of trees on the campus of the University of Wisconsin-Milwaukee in Milwaukee and a grove located in the Cedarburg Bog in Saukville, Wisconsin. I also was able to visit the trees and people in Spring Green, Wisconsin, and Ogema, Wisconsin. Through long-distance communication I learned about the trees and people in Iron River, Michigan; Detroit, Michigan; Grand Portage, Minnesota, and at Lumberjack Syrup Company in Armstrong Creek, Wisconsin to find out how they perform their celebration of the *iskigamizigan*. I went to two of the *iskigamiziganan* during harvest and boiling to observe and assist them in the day's activities: University of Wisconsin-Milwaukee Cedarburg Bog and Spring Green, Wisconsin. While I was invited to attend numerous other *iskigamiziganan*, I was unable to travel to them all. Figure 12 is a map of the locations I discuss in this dissertation.
The relationship between the *ininaatigoog* and people used to be much more extensive in the Great Lakes region. The human population was not as dense as it is now, and the cities were not as dominant over the landscape. For example, Figure 13 shows the Green Bay area and the large number of *iskigamiziganan* in the area between 1760 and 1848.

---

236 Map created for this dissertation by Shannon Noori, 2023.
Figure 13: Composite Map of Green Bay area showing the different areas of iskigamizigan\textsuperscript{237}

As the human population grew, the space for the *ininaatigoog* shrunk. Traditional *Anishinaabe* communities were forced to assimilate into a new economy and modern conveniences took over the need for humans to live with the environment. As a result, the relationship between people and the *ininaatigoog* changed and there was less need for the gift of sap from the *ininaatigoog* offered every year. Over time the *iskigamizigan* was not practiced and disappeared in areas that routinely honored the *ininaatigoog*. My hope is that this dissertation provides a record of the spaces where the relationship between the people and trees is thriving, and the gift of sap is appreciated.

**Milwaukee and Saukville**

The University of Wisconsin-Milwaukee (UWM) Field Station is located at the Cedarburg Bog in the village of Saukville, Wisconsin. On the far southwest side of the UWM owned land are several *ininaatigoog*. With the permission of UWM we were able to have an *iskigamizigan* starting in Spring of 2022. On Tuesday March 1, 2022, we started out to the *iskigamizigan*. The temperature for the area on March 1 was a low of 33.8°F with a high of 42.8°F. When we started our journey, the temperature was a cold 40.2°F.

The *iskigamizigan* is located at 43° 22’55” N and –88° 01’46” W. This location is away from any UWM buildings. The nearest building is a farmhouse about a mile down the gravel road on the south side. I traveled west on State Hwy 33 and turned left onto a paved road called Knollwood Road. Knollwood Road took me to a road called Blue Goose Road which travels in either direction. I turned left onto Blue Goose Road which continues past the UWM field station buildings. As you pass the entrance to the UWM field station the road turns into a gravel road. Through some twists and turns, you come up on a sharp turn to the north with the Cedarburg bog on the south side of the road and the Cedarburg Beech Woods State Natural Area on the north
side of the road at which point the name changes to St. Augustine Road. The road is still gravel and will eventually intersect with another paved road which is Hwy Y. The gravel road continues in both directions and does not dead end, intersecting with both Hwy Y and Knollwood Road. There are two farmhouses on the gravel road closest to the iskigamizigan, one about a half mile down the road from the entrance of the iskigamizigan on the south side of the road. On the north side of the road there is a field 100 yards from the entrance of the iskigamizigan and a farmhouse about a mile and a half east of the entrance. There is a small pond by St. Augustine Road a half mile west of the entrance of the iskigamizigan. The pond has apakweshkwayag (cattails) and grass growing in it and was partially iced over. Directly behind the pond is the iskigamizigan, a hilly backdrop of gaawemizhiig (beech) and ininaatigoog with an occasional mitigomizh (oak) mixed in. To the East of the iskigamizigan is some wiigwaas (birch) that follow the edge of the mitig line separating the iskigamizigan and a field.

On either side of St. Augustine Road is a car path that has a cattle gate over the path to prevent unauthorized vehicle traffic from traveling down the path. The south side of the St. Augustine Road led to the bog while the north side led to the iskigamizigan. Just after the cattle gate leading to the iskigamizigan were two mitigooog had fallen and were preventing vehicles from going any further on the path. Around the fallen mitigooog were several grape vines along with dense underbrush and raspberries off to the side. There was also an invasive buckthorn at the entrance to the iskigamizigan. The path leading to the iskigamizigan had several zhingwaakoog (pines) around 20 yards away from the entrance. Just past the zhingwaakoog the path opens into a hilly view of the sugar grove. A hilly grove of ininaatigoog and gaawemizhiig, complete with the songs of cranes singing in the background. In some of the low areas water
remained sometimes surrounding the *ininaatig*. The path leads to the top of the hilly backdrop where there is a small building.

The skin or soil in the *iskigamizigan* is rich loam soil that has a top layer of ground cover. The ground cover consists of leaves, twigs, mosses, lichens, ferns, and liverworts. As the top layer is removed, the exposed ground is coarse and mainly created by decaying plants and rotting wood. Mixed in with this are several isopods, or such forest crustaceans as roly-poly, who are non-harmful to humans as they eat the decaying foliage on the forest ground. Approximately two inches under the dense loam is a layer with mixed silt loam and calcareous till that holds moisture and contributes to the acidity needed by the *ininaatigoog*.

The building created by humans who come to do research in this space has the usual barriers between people and nature that have become standard in recent centuries. The exterior has wood siding painted green with brown trim and a foundation made from fieldstone and mortar. On the east side of the building there are two aluminum garage doors, the door on the north side has a small window up by the roof. On both the north and south side of the building there are two windows with wooden weather shutters. On the south side of the building, facing St. Augustine Road, there is a wooden screen door that is open but has a wooden storm door that is locked. The south side of the building has an overhang with four wooden pillars for support of the overhang, like a porch with a cement bottom and a wooden box that was 3 feet high by 1.5 feet wide. There are two windows on this side of the building with both storm shutters closed. On the north side of the building there are two more windows, one of which the storm shutters are closed, the other the window is about 4 to 5 feet high and with no storm shutters on it. The inside of the building has a concrete floor with nothing in the building. The west side of the building has two more windows with the shutters commonly kept half open. The building is big
enough for two cars, the windows are not broken, and the inside of the building is empty. The building does not appear to have any damage, but in the middle of the ininaatigoog and gaawemizh forest, a healthy community of maples and beeches, it appears a bit out of place as it sits as it is not fully functional and not completely abandoned.

Twenty-five yards to the east of the building there is an old and rusted well pump. A tin drinking cup sits on top of the pump. After about a minute of pumping colorless, odorless water will flow out of the pump. The building is not plumbed and there is no evidence of any other plumbing or electrical going to the building or the area of the iskigamizigan.

There is no decorative landscaping apart from the area just beyond the well pump which has been landscaped with medium to big rocks surrounding the gully leading to some of the ininaatig. The only other evidence of landscaping is along the trail leading up to the building which shows the dominance of the bog, savannah, and forest in this location.

The humans in this space are few and the person who served as my contact for the location is Mishiikenh. I first met Mishiikenh at the University of Wisconsin- Milwaukee where he was hired as an elder-in-residence at the Electa Quinney Institute for American Indian Education. He identifies as Miami-Anishinaabe from Walpole Island Anishinaabe Unceded Territory. Mishiikenh speaks Ojibwemowin and is a member of the Grand Medicine Society and practices Sundance and other ceremonies. He knows songs and stories that go with his iskigamizigan. He taps the trees during iskigamizigan giizis and pulls the taps when the month is over. The Ininaatigoog should be visited throughout the year according to Mishiikenh, even going out on a fast for the ininaatigoog and feasting them throughout the year.

A group of us interested in iskigamizigan, consisting of three people, arrived around 1:00 pm. We parked on the southside of St. Augustine Road in two vehicles standing in a group
talking, waiting for Mishiikenh, our elder who is running the iskigamizigan to arrive. Once Mishiikenh arrived, he was given asemaa (tobacco) and a gift of mashkodewasak (sage) that my family harvested last year. A gift of asemaa is customary when asking an elder for a teaching, and I wanted to learn the ceremony for the iskigamizigan. After a brief conversation about the weather, how hard it was to find the place, and the cranes talking to us, we packed up the tools, medicine bundles and started to make our journey to the iskigamizigan. The walk was short, only about 200 yards from the road to the iskigamizigan. We found a level area and set down the equipment and the medicine bundles.

Mishiikenh laid out a blanket and unpacked the food and the medicines, placing them on the blanket. There were blueberries, crackers, sausage, and cheese along with some water. Mishiikenh sang a song and smoked his pipe passing it around so everyone would have a chance to pray with it. Everything was smudged with sage. After Mishiikenh finished smoking the pipe he placed a little bit of all the food by an ininaatig as a thanks for allowing us to harvest the sap. Once the food was placed by the ininaatig we were able to enjoy in the feast. After the food was gone Mishiikenh showed us a sweet water ceremony. Using the sap from the ininaatig that was gathered the day before, we all gathered and drank some of the sap that was harvested from a copper cup.

After the sweet water ceremony Mishiikenh instructed us how to tap the ininaatig. First you ask permission from the ininaatig to harvest the sap. Once permission is granted by the ininaatig, asemaa is placed by the ininaatig and then smudged down with sage. Once the ininaatig is cleansed with the smudge a red ribbon is tied around the ininaatig to mark the mitig. At this point we were given a brace and bit drill, a hand operated drill, with a 5/16” drill bit attached and drilled into the ininaatig so the bit was going towards the center of the ininaatig at a
slight upward angle. We were instructed to only drill in about 2-3 inches until sap came out. Once the hole was drilled, we would blow air into the hole to clear out any debris that would be present from drilling the hole into the *ininaatig*. After the hole was cleaned by us blowing out the shavings, we took a metal spile and gently tapped it into the freshly drilled hole. Once the spile was in place, we made sure the sap was coming out the spile and then hung a metal bag holder with a blue bag attached to collect the sap as it came out the spile. The Blue bags hold 4 gallons of liquid so it needed to be checked frequently so the sap does not spill out of the container.

We would walk from *ininaatig* to *ininaatig* repeating this ceremony. Walking down into the valleys and up to the peaks asking for permission from *ininaatig* and tapping them once permission was granted. During the walk, we came across some scat of a bigger animal, such as a big coyote. In all we tapped 20 *ininaatigoog* in about 4 hours.

All the sap was collected at Cedarburg Bog in 5-gallon buckets. Once there was around 100 gallons of sap collected by Mishiikenh, he would load the buckets in his truck and transport them about 40 minutes South to University of Wisconsin- Milwaukee campus where the boiling process was going to take place. Figure 14 is the first noted *iskigamizigan* for UWM located at the Cedarburg Bog.
The *iskigamizigan* on UWM Campus is located at 43° 04’ 39” N and –87° 52’ 45” W by Garland Hall on the north side of the building. There are two *ininaatig* standing in a grass area.

---

238 Picture taken by Mishiikenh Altiman, Cedarburg Bog Sugarbush, 2022
about 30 feet apart. The ground has been manicured, raked and lawn mown, by UWM grounds crew. It is presumed that under the topsoil is clay and other material from when the building was built in the urban setting. The ininaatig that is more east seems to need more nutrients as the upper branches appear to be dying or dead while the more westerly ininaatig appears to be in better health since it did not have any dead or dying branches. The westward ininaatig does have a crack or a wound in the crutch of the mitig, tree, looking like it might have been struck by lightning at some point.

We gathered at the American Indian Student Center on UWM campus then located in Bolton Hall, room 195. It was a small group of students and faculty that were interested in this historic event on UWM campus. With a group of four people we headed over to the ininaatigoog to start the iskigamizigan. With Mishiikenh leading the way, we performed our ceremony. We smoked the pipe and sang an honor song for the ininaatigoog and smudged down the area marking each ininaatig with a red ribbon. Then we drilled a hole into the ininaatig about an inch in until we had some sap running out. Finally, we secured the spile with a wooden mallet and placed our metal hangers with blue bags onto the ininaatigoog. The ininaatig on the west had two spiles placed in.

The ininaatig were watched over the next month, bags emptied whenever they were full. The two ininaatig on UWM campus gifted us 15 gallons of sap. This boiled down to a couple of pints of maple syrup. The rendering from the ininaatig on campus was done on my stove top while the sap from the Cedarburg bog was rendered down on campus over a fire.

The set up on campus for rendering down the sap was several cinder blocks set up in a “U” shape. There were two cinder blocks high, two cinder blocks by length, two cinder blocks in the back, and finally two cinder blocks on the other side. The opening was towards the east.
Hardwood was used to keep the fire going so the ashes could be used to make corn. There are two stainless steel pans placed over the top of the cinder blocks, with the fire beneath heating up both pans. Sap is poured into both pans and stirred with a pine bough.

With closing ceremonies done at the next full moon, the ininaatig were smudged and the spiles were pulled out from them. Since the end of iskigamizigan I have gone to visit with the ininaatigoog to listen to the stories that they tell. Watch how they grow using energy collected from the sun. How the rich soil stays moist, continually feeding the ininaatig. The birds using their branches as perches to sing a song, while giving shelter from the sun who is blessing us with his heat. Off in the distance a woodchuck scurries away looking for something. The ininaatig are the skyscrapers of the city while the hustle and bustle for life takes place under the canopy.

Spring Green

Spring Green iskigamizigan is located at 43°08’04”N 90°08’49”W. It is a wooded area outside of the city of Madison, Wisconsin. The roads to the iskigamizigan have a lot of twists and turns and goes through areas of trees and farms. The road follows the Wisconsin River though it is a mile or two away in some stretches of the road.

I met Mary Schultz in 2016 when we spent a week on Garden Island in Lake Michigan. Since that week Mary has remained in contact, eventually inviting me to her sugarbush. Mary and her husband George identify as nonindigenous. Mary does know some of the language and has attended some Ojibwe ceremonies. Mary watched her father tap trees when she was about seven. Having this memory from her childhood sparked her to want to learn how to tap trees herself. She researched and taught herself how to harvest the sap from the maple trees on her property. Every year Mary looks forward to spring, the time when the sap runs. Each year Mary
recalls the date of spring changes: one year the sap ran around February 12, the following year the sap ran in late March. Mary cares for the maples the best way she can but is unaware of a specific ceremony she should do. However, she offers up her tobacco and says thanks for the amazing sap.

On Saturday, March 6, 2021, I traveled to Spring Green Wisconsin to take part in sugarbush. The day was sunny with the temperature around 45°F (per my iPhone weather app). The snow was crunchy as it was melting during the day and freezing again at night. We arrived on location around 11am. Mary and George Schultz had already started to boil the sap that they harvested earlier that week. The Schultz have been harvesting maple sap on Mary’s property for seven years. They have 33 acres of land that they utilize for iskigamizigan. Mary and her husband tap between twenty to forty-five trees each spring. They say that is as much as the two of them can handle by themselves. Mary and George live a few miles from the House on the Rock in Wisconsin. They live on the North side of a hill with a valley and another hill on the south side. Behind them is the hill and to the west is a small field followed by more hills. They only tapped 17 trees this year as it is all that they needed to tap to keep them busy and have enough syrup for themselves. They have several more sugar maples on their land but utilize the ones that are the easiest for them to get to and only tap what they can handle and need. They start tapping the trees when the temperature goes above freezing during the day and below freezing at night (for approximately 3-5 days in a row). They also start tapping the trees in the afternoon because it is easier to drill the spiles holes when the trees are not frozen. They watch the weather reports to make sure that the fluctuation will stay instead of a fluke warm spell. They make syrup and some candy, which they use for their own personal use and gifts to friends and family.
They use a 3/4" drill bit to tap onto the tree drilling roughly an inch and a half into the tree. They place the spile into the tree and use their own buckets to collect the sap. They use any plastic bottle that has been cleaned out. Hoses connect to the spile and run into the plastic holding containers which are secured to the ininaatig with a flexible cord. The flexible cord is used so it is easy to pour the sap into a 5-gallon bucket to haul back to their residence. The bottles are checked at least twice a day depending on how the weather is. If the sap is running fast, they will check the containers more often to make sure none of the sap is overflowing. The 5-gallon buckets are kept in their garage where it is cold, until they have enough to start boiling down. The sap must be kept at 38°F. So, they usually put frozen water bottles (liter size) in the 5 gallons to keep it at an acceptable temperature until the next boil. The sap can only be kept for no more than 7 days; it must be boiled on the 7th day. They usually start the boiling process when they have 40 gallons of sap. On March 6, 2021, the sap was running 1 drop every 2 seconds from the tree I obtained my samples from. The other trees were close to that fast with some running one drop every 4 to 5 seconds. We collected 25 gallons of sap in 12 hours from the 17 trees tapped. In a typical season there are usually 7-8 days of very fast sap flow (intermittent throughout the 4–6-week season) when the barometer rises. However, the sap stops flowing (shuts down) within 24 hours prior to a storm coming, rain or snow. Once the Barometer starts dropping, they pull their taps when the sap begins to turn milky in color. This is the time when the buds start to form on the trees.

Their boiling system is set up on a metal barrel that can withstand a fire inside. On top of the barrel is a food grade metal container that holds the boiling sap. The container is broken into four rows that are connected. The rows have holes in opposite sides of each other allowing the sap to flow through the system. There is a spicket at one end to allow the boiled sap out of the
container. On top of this container is another food grade metal container that holds sap. This container allows the sap to become warm before being put into the lower container that has the boiling sap in it. There is a spicket on one side of the container to allow for the sap to go into the lower container when the sap in the lower container becomes low. According to Mary and George they average burning through about one log every eight minutes on the fire. Once the fire is hot enough it takes roughly one hour for them to boil 5 gallons of sap.

On this day they started boiling 40 gallons of sap. They expect to be done around 6pm that day with the first boil. They will stop for the evening and then start over in the morning. They say that it is too hard to stay up all night to boil down the sap and found that it is much easier on the body and does not seem to change the product. They use a wooden spoon to help circulate the sap through the rows in the boiler to help keep an even heat. As far as wood they say they use whatever wood is available to them on their property. They finish the process on their stove top which is basically just thickening up the sap. They do this because it is easier on them, however they used to just finish it in the metal containers that they started with.

The Schultz's *iskigamizigan* has changed over the years from how many *ininaatig* they tap to how they render down the sap, but the result has never changed. They still have many gallons of the maple syrup that they produce each year to enjoy and give away to family and friends. They plan on celebrating the *iskigamizigan* for years to come.

Figure 15 shows the health of the *ininaatig* community with the canopy with full foliage. The trees they tap are in the foreground at the bottom right between the road and the house now occupied by their son. Figure 16 shows the *ininaatigoog* from Sneed Road looking towards the house that their son occupies. Figure 17 is of two *ininaatigoog* that are tapped. They both face Sneed Road. Notice they are using empty vinegar jugs to collect the sap. They also use empty
juice containers to collect the sap. They secure the containers to the *ininaatigoog* using string, so the container is secure and easily emptied into a five-gallon pail.

![Figure 15: An aerial photo of the Schultzes sugar grove](image1)

*Figure 15: An aerial photo of the Schultzes sugar grove* 239

![Figure 16: The Schultz's iskigamizigan from Sneed County Road.](image2)

*Figure 16: The Schultz's iskigamizigan from Sneed County Road.* 240

---

90.15070612,276.26062135a,403.02503077d,35y,110.63345976h,43.13989524t,0r/data=MikKJwo1CiExd25hVUx
UalU2MkdqaVI1YXlyNThlMnlxVUc1NzFDblggAQ (accessed May 6, 2023).

240 Photo by Nathon Breu, taken 03/06/2021.
I have also included several images of the equipment used in their process. Below, in Figure 18, is a front view of the Schultz's boiler set up, with the spigot shown above the bucket in the image below. This spigot is where the finished syrup will exit the boiler. The five-gallon white pails in the background are used by the Schultz’s to store the sap until they process it.

---

241 Photo by Nathon Breu, taken 03/06/2021.
The boiler they used has been pieced together through trial and error over many years of use. Figure 19 shows the top view of the boiler where individual channels have been made for the sap to help keep the heat even above the fire. The image on the left shows sap in a holding tank above the evaporator which is used to warm the new sap before it is added to the boiling sap.

\(^{242}\) Photo by Nathon Breu, taken on 03/06/2021.
Included in the specialized set of equipment is a large spoon. The three-foot wooden spoon shown in Figure 20 is used to stir the sap in the holding pan so the constant motion can ensure there are no hot spots. The photo is the top view of evaporator while the sap is boiling, notice the spigot on the side of the boiler and wooden spoons on holding tank to stir sap to even the heat, the white on the wooden spoon is foam from the sap boiling that the Schultz’s will eat.

---

243 Photo by Nathon Breu, taken on 03/06/2021.
Figure 21 is a distance shot of the complete boiler with stove pipe showing how it is used by someone standing. From the ground up is the barrel which has the fire inside to heat the sap. On top of the barrel is the slotted evaporator and on top of the evaporator is the holding tank that warms up the sap. On top of the holding tank is the wooden spoon. The smokestack is coming out of the rear of the stove.

\[244\] Photo taken by Nathon Breu, taken on 03/06/2021.
In conclusion, at Spring Green, the Schultzes have a relationship with the *ininaatigoog* and their *iskigamizigan* that demonstrates a relationship based both on *nisidotaw*, a knowledge of the animate beings who offer a varying amount of sap each year and *nisidotan*, a knowledge of the inanimate pieces and parts needed to process that gift of sap into syrup.

**Ogema**

A location where *Anishinaabe* harvesting traditions can be observed is at Ogema, in northern Wisconsin. The *iskigamizigan* located at 45°27’06”N 90°14’09”W is within a heavily wooded area in Northern Wisconsin and managed by Marian Erdringer. The terrain on her *iskigamizigan* has peaks and valleys creating a different biome for her *iskigamizigan*. I met Marian in 1984 at a sweat lodge. We have gone to many of the same ceremonies since then. Over
that time our families have become “one”. She identifies as a Lakota woman living in an area adjacent to several Ojibwe nations. She participates in ceremonies, speaking a little Ojibwe and Lakota. She has been sugarbushing on her property in Ogema for 12 years with her daughter Joanne and her husband Mike Sippen Jr. She was taught by some neighbors of hers. However, she told me that recently when she was going through family heirlooms, and she found recordings of her grandma that were made in the 1960s. In the recordings, her grandmother discusses how they would make 15 pounds of sugar for the family a year. That was the only sugar they had, and it would have to sustain them until the following season. She tries to carry on the tradition with her family by tapping the trees on her property every year.

The ininaatigoog range in age from saplings to mature trees of around 40 inches in diameter. Most are located on the east side of the house while the others are located on the south side. They never tap over 50 trees as this is all they can handle with just a few of them doing the work. The smallest tree they tap is about 15 inches in diameter, however, most of the trees are much bigger. There have been a few years where they would have to carry buckets of sap in snowshoes because the snow was so deep, and the hike is about a mile going up and down a valley from the ininaatigoog to her house that is on a hilly terrain.

They collect about 300 gallons of sap a year boiling some of it every day. Their cooker only holds about 8 gallons of sap. They will boil the sap on the boiler until it is almost done, which both Marian and Joann can tell when it is done by how it is boiling, what the bubbles look like and how the sap in general is acting. They will then bring the sap into the house and finish it on the stove while they are canning the sap to preserve it. They mostly stop the process at the syrup stage but will sometimes enjoy the making of sugar and candy. Conversely, she also can
tell by watching the sap when it is ready to be turned into sugar or candy. On the weekend they stay up all night and cook the sap on their boiler.

Their boiler system has a wood burner in the front and sand in the rear of the oven. The sand is used to disperse the heat out evenly over the boiler pan. It takes about 4 hours for the heat to get hot enough to boil the sap, and then it requires just maintenance to keep the fire going. They go through roughly 2 cords of wood during the sugaring season. They have the wood hauled in from a different location and dropped off at her house. The smokestack is far enough out so in case it rains or snows they can put an awning over the barrel and continue with the sugaring without any interference from the weather. They use a coffee can in the corner of the boiler to warm up the sap before being poured into the boiler. This year they obtained 6 gallons of syrup and 15 lbs. of sugar from 50 trees and roughly 300 gallons of sap. Figure 22 shows the Ogema evaporator and collection buckets. Notice the longer burn barrel and longer smokestack with a single boiler pan. Coffee cans are used to warm up sap before pouring it into boiling sap.
Figure 22: Ogema evaporator.  

Photo compliments of Marian.
Both Marian and Joann laugh about years past experiences out in their sugarbush. They both agree that people tend to just show up at their camp. The people that show up always walk away feeling better than when they arrived. They will give the syrup away to friends and family as gifts and utilize the rest for themselves. After the syrup is canned, they decide when to make sugar at a later time when it is more convenient for them to do so. They both hope to keep on celebrating the *ininaatig* for years to come and pass it down to future generations.

**Iron River**

Located at 46° 07’ 21” N and 88° 36’ 38” W, this is a 10-acre property of mostly sugar maples. There is no address on the land, but it is located northeast of Iron River off of Don’s Road about a 30-minute drive from the city of Iron River, Michigan. It is a heavily wooded area with the area being used for mines and timber in years passed. I met Rich Sloat at a sweat lodge in 2000. He has been going to ceremonies since and has become a close friend. Rich identifies as non-Indigenous, but participates in ceremonies, speaking some Ojibwe words. He has been practicing the ceremony of *iskigamizigan* for around twenty plus years. Rich is self-taught and learned his ceremony through trial and error, communicating with the *ininaatig*.

Rich taps between 50 and 70 trees a year on his property, rotating every year so the same *ininaatig* does not get tapped two years in a row. This rotation takes Rich seven years to cover the entire property so that after the seventh year, he is back at the beginning. He uses a 7/16” drill bit to tap the tree and collects the sap in galvanized buckets. He carries the buckets to one of three 55-gallon holding barrels to store the sap until he has enough sap to start the boil. Only on rare occasions will Rich put in two taps into *ininaatig*, and it is only if the *ininaatig* is 24 inches in diameter or bigger. Figure 23 shows Rich’s taps on some of the *ininaatigoog*. 
Rich clearly knows the paths through the community of trees and has a relationship with each of them individually.

In his *iskigamizigan*, Rich makes his fire pit out of eight-inch cinder blocks on three sides with an opening on one side so he can load the wood onto the fire and make sure the fire stays burning. The cinder blocks are stacked three high with the bottom layer being placed on the ground totaling 24-inches high. He has them wide enough apart so he can place a boiling pan that is 3’x5’8” tall on the fire pit. His boiling pan holds close to 70 gallons of sap. Once he has enough sap for a boil, between 50-70 gallons, he will start the boil. Figure 24 shows a view of

---

246 Photo compliments of Rich Sloat.
the iskigamizigan.

Rich only boils one batch at a time because he feels the sap turns out better than adding cold sap to the already boiling sap. He can tell the sap is close to being done by how the sap is boiling and has timed it just right to take it off the fire and finishes the boil at home as part of the canning process. He filters the sap twice, once taking it out of the pan and again when he is bottling it to take out as much of the sediment as possible. He finishes this process on the stove in his house and says that the later in the season the darker the syrup will be.

Rich uses the dead wood that the land provides for him to boil the sap. In his twenty plus years of celebrating the iskigamizigan he has always had enough dead wood. He has not thinned

---

247 Photo compliments of Rich Sloat.
out the *ininaatigoog* but said he is going to have to this year as he noticed that the canopy is so big it is keeping the sunlight and other essential nutrients from reaching the smaller *ininaatig* preventing them from growing. He is planning on thinning out some of the older *ininaatig* that have some dead branches on them and some younger ones that do not look as healthy as the other ones to make room for the younger *ininaatig* to grow. He is hesitant to do any of the thinning as he feels he says “that Mother Nature does a better job than he could ” but sees that he must intervene this year.

He has not seen any invasive species of plant on his property but notices a lot of 3-inch slugs. They only seem to come out when it is wet and rainy. When the weather is right, there are what Rich calls “multitudes” of them. The slugs are on all the *ininaatigoog* and cover the road going onto his property. Rich knows the land and described the forest floor as very thin, which he said has very little leaf cover; leaves that fall in autumn are all gone by the time the next leaf fall, with barely any there during spring. Some of the other plants that he has living amongst the *ininaatig* are leeks, blue cohosh, and leather leaf as well as others. He knows each of them and notices small pink earthworms when he digs in the soil to fix the fire pit. Rich enjoys being out there and harvesting the sap, it brings him closer to the environment and helps him find peace. He does not do any specific ceremony for the *ininaatig* but does follow one *Anishinaabe* tradition and makes an offering of *asema* to them as thanks. He uses all the syrup he makes for personal use or gives to close friends and family.

**Detroit**

In 2020 I was able to connect with Antonio Cosme who celebrated the *iskigamizigan* in Detroit. I met Antonio online during my master’s degree work. He is doing amazing work with the youth in Detroit introducing them to Indigenous culture. Antonio identifies as Xicana
Boricua and supports learning the Indigenous language and cultures. The celebration he organizes takes place in Rogue Park. 42°21’04” North and 83°15’13” West. According to Antonio, at nearly 1,200 acres, on the city’s far west side near Dearborn Heights, Rouge Park is among the most extensive urban green spaces in the country. It is forty percent larger than New York’s famed Central Park. 248 He goes on to say it’s home to several stands of healthy sugar maples, which thrive amid the cold winters and shaded ravines of the northern region just west of Lake St. Clair in the Lake Erie basin. The largest stand of sugar maples in the city of Detroit is found along the floodplains of the Stone Bridge Nature Trail, which winds through Rouge Park. 249

Antonio uses a 7/16” drill bit to tap the trees, using a cordless drill to make the hole into the ininaatig as shown in Figure 25. He then runs tubing from the tap into buckets that have their lids on. There is a small hole drilled in the lid to keep it a more closed system, not allowing debris into the collection of sap. Figure 26 shows this system at work, notice the ininaatig in the foreground has two taps.

---


249 ibid.
Figure 24: Picture of the ininaatig being tapped.  

Figure 25: The Ininaatigoog in Detroit.

Photo compliments of Antonio Cosme.
ibid.
Once enough sap is collected, they start the boiling process on site. They construct a firepit out of cinder blocks every year, hauling the materials in by wagon or sled. The firepit is big enough to place the boiler on top of it. Figure 26 shows the evaporator that is used in Detroit.

Figure 26: Detroit evaporator used at the iskigamizigan. 252

252 Photo compliments of Antonio Cosme.
Everything is carried into the *iskigamizigan* and is taken down after the celebration is complete. The season’s harvest of sap and boiling process to make syrup or sugar is considered a community event and everyone gets involved as they work all night until it is done, finishing up the process right there at the park.

Antonio is clearly following the *Anishinaabe* tradition of using the harvest to unite the community. As seen in Figure 28, a group of Detroit youth gathering to help with the *iskigamizigan* posing in front of the *inaaatig* that they tapped. Notice the tap has a tube going directly into the covered bucket.

---

253 _ibid._
The *iskigamizigan* has even been known to bring some police officers in to enjoy the celebration. In 2022, the *iskigamizigan* was initially shut down by the Detroit Police Department, but they later apologized to the community and allowed the *iskigamizigan* to continue.\(^{255}\) Grace Wimbley, who is a Reservation and Event Coordinator for the City of Detroit General Services Department, informed me that there was an *iskigamizigan* in early February of 2023 so the tradition has continued.

**Armstrong Creek**

Lumberjack Maple Syrup Company is owned and operated by David Kowalkowski and his family. They have several parcels of land in the Armstrong Creek area. The area of Armstrong Creek is heavily wooded and located in the Northeast part of Wisconsin. The location for their sugar shack is 45° 41’ 03” N 88° 30’ 09” W at 8698 Wall Road, Armstrong Creek.

I was introduced to the Lumberjack Maple Syrup Company through my father-in-law’s friend Kim who owns property near Armstrong Creek. I have spoken to David on the phone

\(^{254}\) *ibid.*  
numerous times, at times for up to 40 minutes. He has a plethora of knowledge about the
*inaatigoog* and the *iskigamizigan*. I have not been up to visit his company; however I do have
an open invitation to come up when time allows it.

In 2023, David and his family put in 10,000 taps on their 200-acres of land. They started
their *iskigamizigan* about 20 years ago as a hobby with the family. After ten years of
*iskigamizigan* his son went away to college. While his son was at college, his son talked about
how much he missed the *iskigamizigan*. David’s uncle had *ininaatig* growing on it so they
decided to expand their *iskigamizigan* into a growing business utilizing the *ininatig* gift of sap as
a commodity. Together the family made the Lumberjack Maple Syrup Company. The company
has been in operation and growing for ten years starting 10 years ago with 2550 taps and 1500
gallons of syrup in the first year of business. The added taps from when they were just doing the
*iskigamizigan* as a hobby did not add much more work. When a joining parcel of land came up
for sale, they added the land to the lease while they tried to think of how to be more efficient.
Tanks that would be outside would sometimes freeze creating problems for their sugar shack
which led them to buy a 20,000-gallon tank. The tank sat dormant at their sugar shack for two
years while the company kept growing. David was able to obtain two more tanks bringing the
total to three 20,000-gallon tanks. One of the tanks holds raw sap, one of the tanks holds
concentrated sap, and the final tank holds water. The sugar-shack is all plumbed so there is no
need to step outside and cleaning up is easy with being able to attach a hose to wash out
equipment or just turn on the faucet to wash their hands.

They rely on each other to care for the *iskigamizigan*. Each person has their set tasks. On
the 200-acres of land you will find some basswood, white and yellow birch, hemlock, balsam,
and spruce. There are some moose wood and wild parsnips are starting to come into the area. Yet
the predominant species is the sugar maple. They do not do species elimination, but care for the ininaatig during the summer, cutting down the ininaatig that are diseased or cutting off branches that are falling off or damaged. The objective is to keep a happy healthy sugar grove for years to come. They tap the same trees every year. Each ininaatig gets visited twice a year, once to tap, and then to pull the tap. Each summer they look for damage from squirrel or bears. Bear damage occurs typically between May and October. The biggest problems are teething juvenile bears and boredom that damage the ininaatig.

When they tap an ininaatig they use a smaller 5/16” drill and tap because it creates a much smaller wound on the ininaatig, so the ininaatig will heal faster. Plus, they get just as much sap output from the ininaatig. They also use a plastic tap instead of the conventional metal one. Plastic taps create less staining and cause less damage to the ininaatig than the metal taps. Staining will be vertically above the tap and vertically below the tap wound. The area that is stained is a nonconductive wound, scar tissue that will release smaller amounts of sap. When the tap is pulled it is just the outside of the ininaatig that heals. The ininaatig repairs the outer quarter inch while the rest will still be hollow. They have a closed system which means that each tap is connected by plastic tubing. Figure 29 shows the closed system that Lumberjack Maple Syrup Company uses. In the picture you can see the blue tubing running to all the taps in the ininaatigoog. All the tubes get pumped to a holding tank for the tanker truck to pick up the sap and haul it to their iskigamizigan.
The plastic tubing is run to every *ininaatig* tap to a central location where the sap is stored, called the pump house. The pump house also contains a vacuum pump which is used to harvest the sap from the *ininaatig*. The vacuum uses 28 inches of vacuum to extract the sap from the *ininaatig* which lowers the pressure of the *ininaatig* by using negative pressure. The Lumberjack Maple Company buried their lines under the ground and under the roads, so their tanker truck does not have to drive into their sugar grove to pick up the sap and move it to their sugar shack.

The tubing is about 2 miles away from where their sugar grove is. A tanker hauls the sap like milk being hauled to a cheese plant. Everything is done inside the pump houses holding the sap that is being vacuumed by a deep well that pumps the sap to the tank or underground. Every

---

256 Photo courtesy of Lumberjack Maple Syrup Company.
year, or when it gets warm out, they have to flush the line out, so the sap does not spoil. The pump house controls the operation and is located at the bottom of the drainage basin.

The tanker drives the maple sap to their sugar shack. Dave says that they also have several contracts with other people who tap their sugar maples. Maple sap is viewed as a cash crop and Lumberjack Maple Syrup Company has numerous contracts in the area, some as far away as an hour, for the *inhaati* sap. Here is where the sap is turned into maple syrup.

Lumberjack Maple Syrup Company has three silos at their sugar shack that stores the sap and water from the evaporator, this is all plumbed into 5x16 propane fired evaporators. There are three separate reverse osmosis evaporators, one of which is used for redundancy to make sure the sap is rendered down to the right consistency. Taps start to get pulled when the sap starts to smell different in their sugar shack. The sap does not taste as good, so they render it down and sell it to companies as food grade, not table grade. This just means that companies will add it to food for the maple flavor along with other sugars.

As far as climate change and noticing an effect on the *inhaati* or the *iskigamizigan* David says he is tapping earlier than usual. He adds that the tapping season is kind of all over the place. He says on average he sees the sap run starting sooner and getting longer runs. The usual month to start sap run was March but now it can start the first of February. In 2023, he started February 14th, but it got cold and shut down again. In 2022 the sap run started March 15, around the usual time, but went to late April.

Lumberjack Maple Syrup Company has a state-of-the-art facility and are looking at obtaining the first ever contract with the State of Wisconsin to harvest the maple sap on state land. Not only do they make maple syrup but also maple cream, and maple vinegar. They are currently in talks about selling maple water. In 2022, Lumberjack Maple Syrup Company made
6,000 gallons of maple syrup out of 270,000 gallons of sap. It is clear that David and his family have a passion for the ininaatig and look to maintain them.

**Conclusion**

Out of the six people that I have spoken to two identify as female and four identify as male with three of them identifying as Indigenous while three of them identify as non-Indigenous. There was only one person that identified themselves as being a fluent speaker while two of them know how to say various words or phrases in Ojibwe. Four of the participants attend some Indigenous ceremonies, sweat lodges, sundance, medicine society. There was only one person that said they feast or practice any ceremony for the ininaatigoog.

I have talked to six different people who celebrate the iskigamizigan. Through hearing their stories of how they each celebrate the ininaatig giving the gift of the sap to be used and enjoy, each person has their own holistic way of being with the ininaatig. Though the times have changed since the gift of the sap was given to the people the process remains primarily the same. The people interviewed care for the ininaatig in many different ways. Some are more spiritual than others, but all speak of feeling better when they are out by the ininaatig and celebrating the iskigamizigan. The celebration unites people from all walks of life to enjoy the celebration and the gift of the sweet water that the ininaatig gives us.

As illustrated by my participants, every community has their own unique way of their iskigamizigan. Some start their iskigamizigan by watching the weather on tv. Others have a specific month that they start, no matter what the weather is like. Even the tools being used vary from community to community. Some of my participants are using plastic spile and others are using tin spiles, some collect the sap in metal buckets, while others use empty containers to
collect the sap. No matter their ritual for the *iskigamizigan* all participants have stated that there is joy in the air to all who attend the *iskigamizigan*.

No matter if the *ininaatig* is used as a cash crop or if the *ininaatig* is used for the family, the *ininaatig* is celebrated and appreciated for the gift of the sap. All the people that I have spoken to have an understanding that they must work with the environment, let mother nature do her job and we just assist, as one of my participants mentions, she does a better job than us. Protect the beings from destruction and make sure that they will be here for future generations to enjoy.
Chapter Four: Ezhi-nanagadawendamowaad Iskigamizigewaad: An Indigenous Framework for Scientific Observation

In this chapter I will be discussing the differences between the scientific methods that have dominated recent centuries (frequently referred to by me as “western”), the concept of Traditional Ecological knowledge (TEK), and Anishinaabe scientific methods as one example of Indigenous knowledge. I will discuss some of the dangers that TEK has, while opening the door to a different understanding of the landscape that we live in, and highlighting why TEK is not Indigenous knowledge. I will introduce two new words: naanagadawaabam (seeing living relationships) and naanagadawaabandan (seeing something in the world) to better understand the relationships the Anishinaabeg have with their environment and how these practices can be utilized to better maintain the example I used, sugarbush practices, and in time the rest of the landscape.

Critique of Traditional Ecological Knowledge (TEK)

Traditional Ecological Knowledge (TEK) is a word that gets frequently used in conversation about climate change. Using the term TEK gives an appearance that people are being more cognitively aware of the environment, however it is only an appearance of awareness as TEK falls into the realm of the western sciences. Western science does not recognize animals, plants, or water as beings having their own kingdom. Western science also ignores the Indigenous language as an aspect to their understanding of the environment. Indigenous nations have an understanding of the environment and the world around them which is embedded in their language and their kinship relationships.257 Embedded in Indigenous languages is Indigenous

---

257 Kyle Whyte is an Indigenous philosopher, professor and environmental/climate justice scholar and Nick Reo an Indigenous and environmental professor. Kyle Powys Whyte “On the Role of Traditional Ecological Knowledge
knowledge; how to live in a kinship relationship with the environment, not fighting or forcing a change in the environment, a lived experience creating the knowledge.258

Whyte, Reo, and Gregeory Cajete are Indigenous and environmental scholars who recognize TEK as not just knowledge about relationships but a complete participation in the responsibilities in caring for the land and all of the beings.259 TEK does have Indigenous knowledge aspects and should be utilized together with other sciences, however western science pushes its agenda and belief systems onto TEK. Science picks and chooses what parts of Indigenous knowledge fits into the western science ideology or their specific scientific framework. TEK is often only recognized as valid if it fits into an already established scientific discourse.260 As Yvette Collin, a philosophy scholar points out, “To date, ‘history’ has been written by Western academia to reflect a Eurocentric and colonial paradigm. The traditional knowledge (TK) of the Indigenous Peoples of the Americas, and any information that is contrary to the accepted Western academic view, has been generally disregarded, purposefully excluded, or reconfigured to fit the accepted academic paradigm.”261 That is to say that the only Indigenous knowledge accepted and utilized is the knowledge that will back their agenda.

TEK also does not take into account Indigenous belief systems or Indigenous languages. This agenda of western ideology ignores the fact that the environment is a living, breathing entity. Public and governmental officials hide behind this construct of TEK to shield themselves from the atrocities that are happening to the environment. The Environmental Protection Agency,

---

258 Whyte, “On the Role.”
259 Cajete, Native Science, 268.
EPA, whose mission statement is to protect human health and the environment, says that they will take TEK under advisement when a tribe wants to give them their Indigenous knowledge.\textsuperscript{262} The EPA will not go out of their way to learn TEK or ask local tribes for assistance, it is up to the tribe to offer their knowledge and then maybe the government agency will listen to what they have to say. Even though the government agency is supposed to look after the health of the people and the environment, they still presume that their knowledge is the only way and the right way.

One of the missions of the EPA is working on keeping the water clean so people have clean water for consumption but still allow frac mines to be built and operated when current literature shows contamination to the ground, air, and water.\textsuperscript{263} There are 73 sand mines located in Wisconsin alone, with many more frac sand mines located throughout the United States\textsuperscript{264} This tells a story of how the environment has been colonized and is now utilized as a commodity and thus ignoring Indigenous knowledge.


Western science does not allow for kinship relationships with plants and animals. The thought of being related to plants and animals is a foreign concept for most people, let alone talking to these beings and asking them permission to build, hunt, or even forage. These concepts of behavior have no room in western ideology. Western sciences use animals and plants in labs, running tests and giving them diseases under an assumption that these beings do not have a soul or a spirit, an adventitious ideology. Some people in what I am calling the “Western Science” fields, do not care about the relationship with the landscape, focusing on controlling and subduing the environment like what has happened to Indigenous communities all over the globe, not worrying about the relationship they are creating. As Kimmerer states “Western science is conducted in academic culture in which nature is viewed strictly objectively.” It ignores the interconnectedness that Indigenous knowledge carries with it.

---

TEK ignores animals, water, and land as beings; not requiring people to ask permission to build, hunt, or destroy landscapes, habitats, and other beings, whereas Indigenous knowledge requires such permission to maintain the kinship relationship. Indigenous understanding would require to one to ask the permission of the water, animals, and plants to build a sand mine. TEK does not allow for this understanding of the interconnectedness with the land, nor does it understand the relationship that Indigenous people have with the land. This relationship that the Indigenous people have with the land quickly gets romanticized and exploited. This exploitation keeps many Indigenous people quiet when it comes to discussing Indigenous knowledge. TEK carries a western lens on how Indigenous knowledge is viewed. This lens separates humans from the rest of the animals and land, placing them on a hierarchy where the humans are on top and in control. It does not honor the kingdoms of the other plants and animals, nor does it respect the landscape as a living entity. Understanding the power of each kingdom and how to respect and honor those kingdoms is the core to Indigenous knowledge and escapes the rationale of TEK.

TEK has limitations, restrictions that Indigenous knowledge does not have. If TEK benefits an already established scientific discourse, then it is often accepted and utilized. If TEK branches out of what would be considered “normal” scientific discourse and uses Indigenous knowledge and starts speaking of the land as if the land and its occupants have their own kingdoms, then TEK is often discarded. As Wildcat says in *Red Alert! Saving the Planet with Indigenous Knowledge*,

To suggest that Native knowledge emergent from tribal lifeways can be affirming to much of what humankind says they aspire to is very difficult for most citizens of the United States to appreciate, especially when the major conflicts in which the US government is engaged are often superficially couched in the prejudicial Western dichotomy of civilized nation versus tribal society equals in
the Western-influenced mind the dichotomy between an enlightened culture and a superstitions primitive culture.267

We need to understand that the way we view the landscape, and the world around us, is the hegemonic worldview. In doing so we can begin to view the environment differently and live

\textit{mino-bimaadiziwin}.

The other issue that arises with TEK is it excludes Indigenous languages of the area. Indigenous languages hold vital information about the land and all beings with whom Indigenous people communicate. Looking at the Ojibwe language we can better understand the ontological perspective of the \textit{Anishinaabeg} world. \textit{Ojibwemowin}, Ojibwe language, shows the culmination of the interconnectedness of all beings. How we are all intertwined with the land. \textit{Naanagadawaabam} acknowledges these beings as alive and having an equal right to exist as humans do, living in a natural state of coexistence.

\textbf{Anishinaabeg Earth Observation}

For centuries the landscape has been colonized. Fences and cages have been put up to keep beings out, or to keep beings in a certain area. With colonization people have also placed themselves into a cage following the Eurosettlers into a tunnel vision on how to view the environment and the world that we live in. To break free of the shackles that are holding people back from understanding the environment, we can turn to the Indigenous communities who have been living with the environment for millennium. These communities have their original instructions on how to live minobimaadiz with the environment.268

\begin{flushright}
\footnotesize
\textsuperscript{267} Wildcat, \textit{Red Alert!}, 35.
\end{flushright}
Understanding the environment through an Indigenous perspective means avoiding the Euro-Western theories and deficiencies that have dehumanized and colonized the Indigenous people and the landscape. Looking at research through a different lens requires a hard look at the injustices that are perpetrated by non-Indigenous people. There also needs to be room for cross-cultural encounters and understanding. Every Indigenous nation has their own way of doing things, this dissertation looks specifically at the Anishinaabeg and how they lived and interacted within their environment. Each nation where the ininaatig grows has their own stories and their own set of practical and spiritual knowledge of how to take care of these beings.

Spiritual knowledge is the least accepted in the context of Western research unless it is anthropological data. Knowledge derived from the spiritual world is highly regarded in Indigenous communities but highly suspect in western science. Communicating with the spiritual world is done through a ceremony of gift exchange, usually an offering of asema. Putting out asema, a gift to the ininaatig to harvest sap, is an act of reciprocity and acknowledges the ininaatig as a living being. One cannot separate Indigenous knowledge from spiritual practice. Offerings of asema establish a mutual relationship, an understanding that to whomever the asema is being offered to is a being. Disrespecting the relationship invites a reciprocal process of natural justice in the forms of floods, fire, disease. Understanding this process of gift exchange acknowledges that all the landscape is alive. Indigenous knowledge is diverse and dynamic, emerging through individual and collective experiences in-relation to place.

---

269 McGregor, Restoule, Johnston. Indigenous Research, 8
270 Margaret Kovach, Indigenous Methodologies: Characteristics, Conversations and Contexts, (Toronto, ON; University of Toronto Press. 2009).
272 Kovach, Indigenous Methodologies.
The *Anishinaabeg* have a close interconnection with the environment and they have relied on this reciprocal relationship for food, shelter, and protection. They treat their environment as a living breathing entity, a being that nurtures all. To the *Anishinaabeg* the environment is alive. Through their stories and language, they have studied and understood how their biome sustains. The *Anishinaabeg* have been taking care of the *ininaatigoog* through practicing *iskigamizigan* and other ceremonies. *Naanagadawaabam*, seeing living relationships, is the core of Indigenous knowledge. Knowing that these are beings and maintaining a kinship relationship with them.

The *Anishinaabeg* have two names to refer to the earth as *shkaakaamikwe* or *mazikaamikwe*. Both names invoke an animate being full of life, able to feel, speak, take in nourishment, and breathe. Even Roger Revelle, who was among the early scientists to study anthropogenic meaning originating in human activity, as well as global warming and the movement of Earth's tectonic plates, acknowledged that the Earth was a living being, just like the *Anishinaabeg* believe. When describing the earth and carbon dioxide in the documentary “An Inconvenient Truth,” Revelle says,

> The clear majority of it is north of the equator. And most of the vegetation is north of the equator. When the northern hemisphere is tilted toward the sun as it is in our spring and summer, the leaves come out and they breathe in the carbon dioxide and the amount in the atmosphere goes down. When the northern hemisphere is tilted away from the sun as it is in our fall and winter, the leaves fall and exhale the carbon dioxide and the amount in the atmosphere goes up again. It’s as if the entire earth once each year breathes in and out.\(^{273}\)

Revelle has described the earth as taking a breath, as a living, breathing being. This is not a new concept yet many in the science community do not subscribe to the theory of the earth as a living being.

---

\(^{273}\) “An Inconvenient Truth: Transcript - Masaryk University.”
In the Anishinaabeg culture we say that we are all related. This does not just refer to humans, it refers to all beings, the four legged, the two legged, the crawling ones, the flying ones, the swimmers, and even the land, trees, and water. In the water system, the tributaries collect the nutrients and carry the nutrients to the rivers where these nutrients are added to support life in the river system. In the human body the heart pumps the blood to the rest of the body through arteries. The arteries carry oxygen-rich blood to the extremities of the body, feeding the body’s muscles. In the human body the heart is the core, the main body of water, or the center of the tree. The roots, streams/tributaries, veins/arteries carry the nourishment to the canopy of a tree, the organs of the body, the lake. In all three examples what happens to the roots, the tributaries and a human’s extremities will have an impact on the rest of the system. Some events are more catastrophic than others, but all impact the rest of the system. The Anishinaabeg, understanding how everything is intertwined, took care of the environment with great care, paying attention to what it needed. Much like the water system and the trees live, so do humans. We all need oxygen to support our lives and we all expel elements. We are all interrelated.274

Though we are all related, many humans ignore this interconnectedness. To defend themselves from acknowledging the interconnectedness people hide behind professionals in science and academia who hold what Pierre Bourdieu, a French Socialist, calls symbolic power. This symbolic power provides its carriers with discourses of influential and competitive advantages that are unequally distributed throughout society. Struggles over scarce resources create discourses that can legitimize symbolic categories. These categories classify the world in a

western view and often objectify the land and all that dwell on the land including the Indigenous people utilizing the land. These categories or classifications favor the interests of one segment of society. The group or groups that have secured this symbolic capital have also secured the power to make vital decisions that affect everyone.\textsuperscript{275}

**Specific TEK/IK Frameworks**

*Shkaakaamikwe*, and *mazikaamikwe* are two names the *Anishinaabeg* use for earth.\textsuperscript{276} There is not a word in *Anishinaabemowin* that represents the idea of “Mother Earth”, which is a colonized version of what the *Anishinaabeg* thought. An *Anishinaabeg* elder Roger Roulette, in an interview with Maureen Matthews on Canadian Broadcasting Corporation radio, stated that the concept of Mother Earth is foreign, there is no name for Mother Earth in *Anishinaabemowin*.\textsuperscript{277} This is a colonized version of what the *Anishinaabeg* believe. Through the utilization of the boarding school's system many of our thoughts and practices were manipulated and changed into a western version of what was once believed.

If we talked to elders prior to the 1960’s the concept of Mother Earth would be foreign to them. *Shkaakaamikwe* refers to the rattling sound made during the creation of *mikinaakaki* (turtle island), the land the *Anishinaabeg* live on, in the *Anishinaabeg* creation story. *Mazikaamikwe* is *mazinitoon*,\textsuperscript{278} make a representation or image of it and *Ikwe*\textsuperscript{279} referring to women, giving Mother Earth a specific gender that nourishes life. *Ninga*\textsuperscript{280} refers to my mother which is not

\textsuperscript{275}McGregor, Restoule, Johnston. *Indigenous Research*, 234.
\textsuperscript{276} Doerfler, Sinclair, and Stark. *Centering Anishinaabeg Studies*, 36.
present on either term. There is no word in *Anishinaabemowin* for “mother”. There is always a
prefix in front referring to the “possessive” (or relationship) to indicate my mother, your mother,
their mother. With around six thousand fluent speakers of *Anishinaabemowin* and four thousand
of them sixty-five and older,281 it becomes imperative that we grasp onto the language before it
becomes a zombie language, a language that only exists in recordings.282 The elders, the keepers
of the knowledge, have the traditional understanding that has been passed down through the
generations, and if we do not learn it, all the teachings could disappear along with the language.
When the language is gone, we will lose all of the Indigenous knowledge that is embedded in the
language.

In a land that has been dominated by the colonizers, language, ideology, and philosophy
(while oppressing any opposing or different language ideology or philosophy), it is still difficult
for people to come to terms with the fact that these plants and animals have their own language
with which they communicate. These beings have their own hierarchy and their own ceremonies.
They have their own kingdom and their own social networks. More importantly, it is difficult for
science to understand that these beings are in constant communication with humans.

Coexisting with the environment in today's society is difficult. The environment is in a
constant state of change from the erratic weather patterns, along with the more extreme weather
events and a hemogenic worldview. More people, including scientists, are turning to TEK to
better understand the changes that are taking place and how to live, adapt, and even mitigate
through these environmental changes. TEK presents people with a sense that they are living in a

2022).

282 Bernard C. Perley “Zombie Linguistics: Experts, Endangered Languages and the Curse of Undead Voices.”
good way, living with the environment, not trying to change or manipulate the landscape for their economic advantages. Yet many people still do not recognize the environment as a being, let alone the animals on it. The agency that is given to the land is hidden behind words like TEK. That extra step of understanding these entities as beings is not addressed. None of these beings are consulted when there is a change in the environment like placing a dam, building on land, cutting down trees, or even hunting or foraging. The kinship bond is broken, hence it is not Indigenous knowledge. Indigenous knowledge recognizes this kinship relationship, honors that bond, and gives agency to the environment.

What is not discussed is how the Indigenous people have studied and understood science. We have our own way of recording and documenting our knowledge and history. It was called biased and unscientific by science, undermining the Indigenous ideology and belief system. Indigenous people have their own set of ethics and guidelines that they expect others to follow too.283

Anishinaabeg Experiential Knowledge Framework

Indigenous knowledge has been intentionally disenfranchised since the formation of the community called the United States of America. This government has set forth a series of policies to alleviate the “Indian Problem,” since the original inhabitants were getting in the way of what the colonizers called their “Manifest Destiny.” While desperately trying to alleviate the Indigenous communities of life, land, and resources, the newly formed United States of America had to successfully rewrite the native history and reprogram native culture. Through propaganda, fictitious stories, and federal policies such as the boarding school era, Native people have been subjected to ridicule, misconceptions, and loss of cultural knowledge. Indigenous people were

283 Kathleen E. Absolon, Kaandossiwin: How We Come to Know (Halifax: Fernwood Pub, 2011).
robbed of their humanity through distorted terms and stereotypical images, including the idea that they were savages or children who did not understand life, let alone science. Beliefs still exist that Indigenous cultures did not have the knowledge to collect sap and render it down to make sugar, ignoring the evidence that Native people were trading maple sugar with other communities, including the colonizers when they arrived.

Plants and animals have been around before the Anishinaabeg were walking on Mikinaakaki, turtle island. The science of plants and animals is humans trying to understand the biological processes of them. The Anishinaabeg have adapted and learned from all the beings that have walked this land before them. Embedded in the Anishinaabeg language and culture is science, a way to understand the environment where we live. Looking at each season through the eyes of the Anishinaabeg shows that sense of understanding the world as one giant biome where everything is connected.

To truly understand Indigenous knowledge there must be an understanding of the interconnectedness of the land. According to Reo, this interconnectedness to the land can be seen within Indigenous nations and their kinship relationship, and how they interact with the land. There is an interconnectedness and inseparability of the knowledge, practice, and belief elements of TEK. Reo also says:

[T]o be successful, hunters require knowledge of animals and animal populations, such as their sensory strengths and weaknesses, habitat use patterns and indicators of population decline. Geographic knowledge is also important, such as the location of preferred habitat, migration patterns, daily travel routes, funnels and areas of refuge. This knowledge is learned experientially by participating in hunts and spending time on the land.

---

284 Reo, “The Importance of Belief Systems,” 1.
285 ibid.
Time spent on the land informs us of what is going on with the land. It tells us about the plants, animals, and all other beings that live on the land. It also informs us about the land itself; helping us know if it is good land for agriculture, herding, hunting, or even ceremonies. Working with the land, the land will tell us what it wants to be used for. This knowledge informs us on how we decide to react, or not to react, to changes. These changes not only affect the hunters, but also harvesting of plants, medicines, along with all the lives on the landscape, including the landscape itself.

Indigenous people notice a slight change in what would be considered normal weather. The change in weather patterns not only affects the movements of the animals but also affects the plants and the land. The Anishinaabeg relied on the land to guide them and provide food, clothing, shelter, and medicine. They were more in tune with the land, like the hunter looking for food to feed the family; the Anishinaabeg lived with the land, listening to it, and studying it to better understand what the land was telling them. It was a relationship based on love, respect, and a need for survival. This intimacy and understanding of the environment does not currently fall under the realm of TEK, because it is not understood by western ideology. This relationship or interconnection is Indigenous knowledge.

In the Ininaatigoog the nutrients being collected by the sun and water are transported down to the root system to prepare for winter. Here the energy is stored as carbon until it is needed in the springtime to create the buds. This will be triggered by the warming temps and the arrival of water. In the waterways, the water will reach its maximum heat and start to cool off. This cooling off causes the water to sink, carrying down the nutrients to the cooler levels of the water. This allows the animals that are in the colder temperatures to feed on during the cold winter. Everything in the environment prepares for colder temperatures.
The life of the *Ininaatigoog* does not end in spring. The *Ininaatigoog* is cared for throughout the seasons. The *Anishinaabeg* have been shaping the landscapes for thousands of years, maintaining the sugar groves and caring for the environment they lived in.\(^{286}\) They would clear out dead trees and fallen debris, keep trails clear, and clear out underbrush. Some of this was to make areas more accessible, while other of this was to prevent forest fires.\(^{287}\) Looking specifically at the *Ininaatigoog*, the *Anishinaabeg* would take care of them so they would be more prolific, producing more sap to be harvested.\(^{288}\) This meant cutting down saplings and brush that would be grown around the Ininaatigoog to ensure access to the trees but also giving them plenty of space to grow.

The *Anishinaabeg* see the sap as a gift from the *Ininaatigoog*, not as a commodity. This relationship has changed over time, with an introduction to traders. *Anishinaabeg* did trade their maple sugar and other products that they view as gifts, however they always honored those beings with an exchange of a gift. They see the *ininaatigoog* as beings and listen to what they want and need. Through this communication the *Anishinaabeg* know when the *Ininaatigoog* are ready to be tapped for their sap, and when to pull the taps when the season is over. This communication helps the *Anishinaabeg* decipher when it is time to move from winter camps into spring camps, when to plant gardens, when to fish, and when to hunt. This is all done through communication with the environment and this knowledge has been passed down through the generations. The *Anishinaabeg* observe their world, learning from what they see and hear. There is no need for a specific date to mark when something is supposed to be done. McGregor points

\(^{286}\) Simpson, *Dancing on Our Turtle’s Back*.
out that the acquisition of knowledge is often associated with a process of doing and requires establishing relationships not just with one another but with the lands and waters, and the spirits and beings who dwell there.²⁸⁹

The knowledge that Anishinaabeg possess is not gathered overnight but has accumulated over the years that they have walked on this land. So, as the environment has changed from being glacierized to constantly warming up, their understanding of the environment has grown and shifted. Since they relied on the environment for food and shelter, they had to adapt to the changing environment. Watching the Ininaatigoog and living with them the Anishinaabeg knew what the ininaatigoog wanted and needed to provide a good yield of sap.

Through naanagadawaabam there is an understanding that humans are just one intricate part of nature. The Anishinaabeg were able to communicate with these other beings through the act of gift exchange and respecting their kinship relationship. By treating the ininaatigoog as a living being and viewing the sap as a gift affords the Anishinaabeg the ability to see the world through a different lens. This lens sees Nature’s bounty as gifts to be exchanged not a commodity to own, bought, and sold. Once people make the realization that the environment is a gift, the environment will fundamentally get treated differently.

There exists a feeling of reciprocity when the environment is looked at as a gift. This concept of gift exchange has been utilized for harvesting animals and plants.²⁹⁰ When there are gifts given, there is this inherent feeling or need to return the favor of a gift. There is a bond that has been formed and a feeling of gratitude.²⁹¹ This exchange of gifts has taken place over

²⁹⁰ Kimmerer, Braiding Sweetgrass.
generations to show respect, love, admiration, and even sympathy. The gift exchange has also been used during colonization to settle debts and to win the affection of neighboring nations.\textsuperscript{292} Looking at the \textit{ininaatigoog} as a gift the Anishinaabeg were able to harvest the sap and treat the \textit{ininaatigoog} as a living being.

\textbf{Using this Framework to Examine Data}

To better understand the different relationships that people have with the \textit{ininaatig} I put together a survey asking people how they interact with the \textit{ininaatig} and asking about the health of their \textit{ininaatigoog} and their \textit{iskigamizigan}. I want to know how the land is cared for and the state of the land. Some of the questions include: Do the \textit{ininaatig} have good canopies? Have saplings been growing to sustain the \textit{iskigamizigan} for years to come? I want to know if there is disease on the \textit{ininaatig} ensuring the health of the \textit{ininaatig}. Is the \textit{ininaatig} being colonized by other species of plants, Buckthorn or Japanese Barberry? I want to know the condition of the skin of the earth or soil. Was the skin covered in leaves, are there any signs of worms, and have there been any animals living or utilizing the \textit{ininaatigoog}?

The survey (found in Appendix B) also asked questions about the individual’s practice of \textit{iskigamizigan}. I want to know if they go out and have conversations with the \textit{ininaatig}, do they ask permission to harvest their sap. I also want to know if any participants feasted the \textit{ininaatig} or offer up a gift of sap. I ask how many \textit{ininaatig} are tapped each year and how they tap the \textit{ininaatig}. Do they rotate through the \textit{ininaatig} or do they tap the same trees each year. Subsequently, I want to know the type of spile they use and if they know how much sap they collect. I ask them to mark the date that the sap started to run and the date that they pulled the taps and to denote the reason for pulling the tap; was it the end of the sap run.

\textsuperscript{292} Miller, Ogimaag.
I also ask a series of ethnographic questions to better understand the lens from which the participants view the *ininaatig*. I want to know how long they have been celebrating the *iskigamizigan* and where they learned the practice from. I want to know if there are any stories or songs that connect them to the *iskigamizigan*. I want to know if there was a specific environmental factor that told them to start the *iskigamizigan*, for example is a certain animal or plant seen or if it was *iskigamizigan giizis*. I ask if they keep records of their past harvests and if they have noticed any difference from climate change. Finally, I ask them what they usually make with the sap they harvest.

I look at two scholars' work and put an Indigenous lens to their research providing another way to interrupt data.

Tara’s research in her dissertation “Evaluation of Sugar Maple Dieback in the Upper Great Lakes Region and Development of a Forest Health Youth Education Program” the dieback of the *ininaatigoog*. Her research included 120 points across the upper Great Lakes Region using Forest Health Monitoring Protocols to measure the canopies of the *ininaatigoog*. Bal noticed in her evaluation of the plots that there was no evidence of prior *iskigamizigan*. Core samples were taken from the *ininaatigoog* in her sample to identify patterns in the *ininaatigoog* rings. She identifies climate changes as influencing the growth of the *ininaatigoog* across the region.

As seen in Chart 2 there is a significant die off that is taking place in the upper Great Lakes Region. Further research is being done to help track and mitigate these changes, little is being done as far utilizing Indigenous knowledge to help with the *ininaatigoog* die off.

---

In Wild’s and Yanai’s conclusion in “Soil Nutrients Affect Sweetness of Sugar Maple Sap,” 314 trees were tapped with 298 providing sap for sampling. His research sampling shows a higher Nitrogen content in the soil will produce a higher sugar content. This has the benefit of taking less energy to boil the sap into syrup. While he identifies that proper management of the ininaatigoog, by thinning and selection of genetically superior trees is more important than fertilizing them, Wild’s research the canopy seemed to have little effect on the sweetness of the sap, though he acknowledges that the canopy has a direct effect on the

---

sweetness of the sap.\textsuperscript{300} Chart 3 shows that the more nitrogen to phosphorus ratio in the soil the greater the sugar content is in the sap of the \textit{ininaatigoog}.

\begin{center}
\includegraphics[width=\textwidth]{chart3.png}
\end{center}

\textit{Chart 3: The Nitrogen to Phosphorus ratio in the soil affecting the sweetness of the sap. 301}

Much like Bal’s research, Wild does not use any Indigenous knowledge to understand the \textit{ininaatigoog}. Their observation is through a western scientific lens interested on what western science can do to help strengthen the \textit{ininaatigoog} population. They are not viewing the \textit{ininaatigoog} on the same field as a human. Much like we can tell a lot about a human by looking at their skin, hair, extremities, and blood; we can do the same with the \textit{ininaatigoog}. Living with these beings we can be more in tune with what is going on in their environment and correct issues before they become catastrophic.

\textsuperscript{300} Wild and Yanai, “Soil Nutrients,” 10.

As Bal points out in her research there were no signs of *iskigamizigan* taking place in those areas of study. Wilds does not indicate if there were any signs of an *iskigamizigan*. If we look at the *ininaatigoog* as a being, then we need to treat it as such. Much like a healer would try to obtain a clear picture of ailments of the condition before he attempts to heal a person, we must take the same approach with the *ininaatigoog*.

**Local Data Analysis**

In 2021 and 2022, I was able to collect samples of sap from the *ininaatig* at Detroit, Michigan; Ogema, Wisconsin; Spring Green, Wisconsin; University of Wisconsin- Milwaukee Field Station Cedarburg Bog; and University of Wisconsin Milwaukee Campus. Dr. Russel Cuhel and Dr. Carmen Aguilar-Diaz, specializing in water science, offered to help analyze the sap in their lab using the equipment they use when analyzing water. Not having analyzed sap before, we wanted to look at some of the minerals in the *ininaatig* sap. They gave me a conductivity meter, pH strips, and I obtained some urine specimen jars, and they instructed me how to collect the sap and use the conductivity meter. With a few days of working in the lab with Dr. Cuhel and Dr. Aguilar, I was ready to go out into the *iskigamizigan* to obtain the samples of sap and record the data.

I traveled to Spring Green, and the *iskigamizigan* at UWM. The sap samples from Detroit were sent by USPS in a box and were not refrigerated or frozen. My samples from Ogema were driven down to the area where we met up and exchanged the sap. These samples were refrigerated for all but a few hours during transport for the exchange. I filtered the sap, with a syringe and a paper filter tip, to get out the impurities. I also used a conductivity meter and pH strips recording the data. From here Dr. Cuhel and Dr. Aguilar used their knowledge on water to figure out the best way to get the total carbon, nitrogen, and phosphorus in the sap. They spent
many hours working on the sap to obtain the data at the School of Freshwater Sciences in the Aguilar-Cuhel Laboratories.

The minerals that were measured were nitrogen (N), phosphorus (P), and carbon (C). N and P are two of the more abundant nutrient elements required for tissue biomass production. Leaves, wood, seeds, and other plant parts all have a similar C by weight of about 45–50%, but they have very different N and P content. P is crucial for genetic material (reproduction) and rapid growth (budding out), while N is a major constituent of mature functional tissue including leaves and roots. Both are required but the relative amounts vary with seasons – seed formation requires a great deal of P, budding out requires both N and P. In raw saps from the three locations studied in 2021, all contained some nutrient N and a greater amount of nutrient P (See Chart 4). N was much less than local water sources while P was strongly enriched, indicating selective uptake during the winter awaking.

---

In 2023, I made contact with scholars Tara Bal, Valoree Gagnon, and Shelby Lane-Clark from Michigan Technological University, in Houghton, Michigan. They are doing some similar research on the ininaatig and suggested the use of their lab to analyze the sap of the ininaatig that I was monitoring in the various locations. Michigan Tech. Lab will analyze tree sap samples at their Laboratory for Environmental Analysis of Forest (LEAF) core facility. They will measure the pH and conductivity of the samples with probes prior to elemental analysis. The sap samples will then be analyzed for total nitrogen and dissolved organic carbon with the Shimadzu TOC-V system. Calcium, phosphorus, magnesium, iron, manganese, boron, copper, zinc and sulfur concentrations will be analyzed with the Perkin Elmer ICP-OES. Inductively Coupled

---

303 Aguilar-Cubel Laboratories. Chart compliments of Dr. Cuhel and Dr. Aguilar-Diaz.
Plasma Optical Emission spectroscopy (ICP-OES) are instruments that analyze how much and what kinds of elements are in a sample.

In February 2023, I sent out packages to the participants that contained my questionnaire and four 60 ml plastic bottles to collect the sap. I also sent labels and a sharpie asking the participants to please label the sap collected with the date and any other information such as did the sap come from the oldest tree, the youngest tree, the first sap of the year, the last sap of the year. I advised the participants to freeze the bottles of sap to preserve it for the lab analysis. I arranged for the bottles of sap to be shipped to my location at UWM where I labeled them with letters and numbers corresponding with the location of the sap collected and the other notes regarding that iskigamizigan. For example, SG 1, is Spring Green first sample which coincides with the information gathered about sample 1 from Spring Green on the master sheet. The bottles were then packaged and sent to the Michigan Tech LEAF lab for analysis (see Figure 31) for resulting data.
For many of the participants, 2023 was met with its own challenges. Several were unable to celebrate the _iskigamizigan_ this year because of other obligations. The participants that were unable to celebrate this year expressed sorrow for not being able to get out and harvest the sap. Each of them said that it has been such a crazy winter with periods of higher-than-normal temperatures and subsequent freezing temperatures that they could not adequately prepare for the upcoming _iskigamizigan_. This spring I was able to establish more connections and expanded the range of _ininaatig_ that I am monitoring including Grand Portage, Minnesota for future data analysis.

**Conclusion**

Indigenous people are seeking to transcend the history of the pain and loss that began over 500 years ago with the colonization of _Mikinaak Aki_. The centuries saw Indigenous people suffer murderous onslaughts of greed, disease, and oppression that has not always been acknowledged. The western compulsion to remain in control of the knowledge remains strong, however as Indigenous people we fight to reclaim Indigenous knowledge and integrate this

---

304 Data provided by Michigan Technical College Laboratories.
knowledge with western knowledge.\textsuperscript{305} This integrated knowledge should be used to better the environment and help mitigate issues of climate change and food scarcity.\textsuperscript{306}

A more effective way to monitor \textit{ininaatigoog} is to watch them at the same longitudinal coordinates. The \textit{ininaatig} is sensitive to the environment where it resides. Too little water, not acidic enough solid, too cold and the roots freeze, even salt that is placed on the road to melt snow and ice for safe travels as attributed to the demise of the \textit{ininaatigoog}. The warmer temperatures bring in new diseases that are killing the \textit{ininaatig}. Monitoring the chemical components of sap, we will be able to tell if the \textit{ininaatig} is under duress, and in trouble of migrating further north.\textsuperscript{307}

By observing an \textit{Ininaatig}, we can mark when spring has arrived. For the Indigenous communities it was when the sap started to run, for Dr. Mark Schwartz, a distinguished professor at the University of Wisconsin- Milwaukee, it is when the buds start to form on the \textit{ininaatig}. Dr. Schwartz has been watching the \textit{ininaatig} for years, reporting his findings to the National Phenology Network (NPN), where people from all over the United States monitor plants and temperatures. In some locations, the NPN watches for when the buds of the \textit{ininaatigoog} start to form. According to NPN, when the buds start to form spring has arrived at those locations.

Tracking when spring arrives in an area is done by monitoring the buds of the plants, but leaves can tell us much more than the start of spring. The leaves can give us an indication of how well the sugar grove is doing, when the stressors of the environment may not be prevalent. If the

\textsuperscript{305} Taiaiake, \textit{Peace, Power, Righteousness}.
leaves are normal in size, color, and shape, then the sugar groves are doing well. If there is any variant other than normal, that is an indication that there is something wrong with the ininaatigoog.  

Odd shaped or discolored leaves could indicate that there is malnutrition for the ininaatig. Leaves perform photosynthesis that takes place in the tree and when the leaves are not normal, the effects can be felt throughout the whole tree. The malnutrition could be from the soil not being acidic enough or from any of the stressors an ininaatig faced last year. Ininaatig prefers acidic soil which is obtained by the leaf litter it produces in the fall. The ininaatig is a conservationist, as it uses its own leaf litter to fertilize the tree and ground. Observation of the leaf litter around an ininaatig will provide a good indication of how healthy the sugar grove is. A healthy sugar grove will provide a better sap to be harvested.  

Tracking the health of the ininaatigoog will tell us how much of an impact climate change is having in a location. The current trajectory of the sugar maples is bleak with the range diminishing to just the northern portion of the United States and lower Canada. As the climate slowly starts affecting the ininaatigoog, it is projected that there will be a significant drop in sap production.

---

As the map clearly shows a decrease in sap production in the southern regions, we could more accurately anticipate and try to mitigate potential problems by monitoring the *ininaatigoog*, listening to what they are trying to tell us.

In this chapter I critique Traditional Ecological Knowledge (TEK) pointing out how it is not traditional knowledge and how it has been corrupted by the dominant sciences. I discussed the *Anishinaabeg* observations of the Earth with the understanding of the spiritual connectedness they have with the environment and the understanding that the earth is alive. I show Indigenous frameworks of how the earth is alive, using the *Anishinaabeg* framework on how knowledge is obtained by living with the environment, not living on the environment. I use this framework looking at some of the data that others have used, along with the data collected from Cuhel-Aguilar Labs at University of Wisconsin- Milwaukee School of Freshwater Sciences to provide a better way of looking and taking care of the land.

---

Conclusion

Indigenous communities around the world have been trying to get the attention of people, expressing their discontent with how the world and the environment around us are being taken advantage of. No longer is there reciprocity, no longer is there an exchange of gifts. The environment has been turned into a commodity, with laws passed to ensure that the environment remains a commodity for humans to own, control and manipulate.

The Indigenous population has an understanding with the environment since their arrival onto their land. Their creation stories reflect this understanding showing how these Indigenous nations relate their existence to all the other beings that also lived on the land. In the Anishinaabeg world, the environment and all the other beings were here before the Anishinaabeg. It is these beings that guided and helped the Anishinaabeg through all the trials and tribulations that life has given them.

All the animals and plants that are living on the Earth have their own separate kingdoms, their own language, and their own social structure. They too need to be heard and taken care of. Many stories have been passed down through the generations about these other kingdoms and how they helped the Anishinaabeg survive. It is our turn now to reciprocate and help these other kingdoms through the tyranny of colonization. Through the languages of Indigenous people carry the knowledge and the history of the land. Looking specifically at the Ojibwe people and their relationship with the ininaatigoog we can have a better understanding of how they interacted with the environment. Using naanagadawaabam there is an understanding that what is being observed is alive and subject to being treated as a living being with rights, like humans. As Simpson points out in “Land as Pedagogy: Nishnaabeg Intelligence and Rebellious Transformation” the knowledge of the land was passed down from generation to generation with
changes to the teaching being implemented to change with time. So, while the landscape was changing so was the Indigenous knowledge that was handed down. This made for a more accurate and a healthier environment for everyone.

Anishinaabeg understanding of minobimaadiz incorporates an understanding that the environment is a conglomeration of different entities that are animate beings. These beings guide us through our journey, providing us with food, clothing, and shelter. This knowledge is gained through life that was lived and passed down through the generations. Learning from what was done in the past, what worked better, or what did not work at all. The colonized version of this theory would be learning from past mistakes, however by using Indigenous methodology those are just teachings, lessons that were learned. After all, no one just walks out and is “perfect” at everything. It takes time to “master” any type of craft, cooking, hunting, building, etc., it also takes effort, and practice to become even good at something. While utilizing a western understanding of the environment can reinforce the Indigenous knowledge, it can by no means take the place of Indigenous knowledge; after all the gift of maple syrup was given to the Indigenous people to utilize as retold in their aadizookinaan.

Colonization and commodification plague the landscape; however, the practices of the Indigenous people are still being lived and the ininaatigoog still honor people by giving their gift of their sap. Although, as science has shown, along with Indigenous knowledge, that the ininaatigoog are slowly not giving up as much sap as they used to. As I have pointed out the ininaatigoog are projected to be all but gone without some intervention and care of the environment. Combining both Indigenous understanding and western sciences gives a clearer

---

understanding of the *inaaatigoog* as a being. Enlightened by this understanding we can carry on conversations about how to better take care of the environment and mitigate problems like climate change. This all starts with the simple understanding of *naanagadawaabam*. Viewing the environment, whether it is the *inaaatigoog* or any other being in the environment, as a living being, changes the framework of viewing the environment. There would be a need to ask permission to make any change to the environment. How we even view food would change, seeing the food as a gift whether it is meat, fruit, or vegetable; all are gifts given to us to utilize by those beings. As I was once told by an elder, the best hunters cry for the animal that sacrificed their life so your family can eat.

Humans can help mitigate climate change and learn how to adapt with the environment by listening to what the environment is telling us. Erratic weather patterns continue to cause problems for the *iskigamizigan*. Lumberjack Maple Syrup Company had a horrible season with the sap harvest only lasting a couple of weeks and not producing as much sap as desired. The spike in temperature brought the sap flow to a halt and they had to pull taps. Some of the other participants talked about starting earlier than in years past and only being able to collect for a couple of weeks before the temperature stayed too warm for the sap flow. Using this framework, we can work with the ininaatigoog and support them, however we cannot do anything but ask for mercy from the weather beings.

Using the *inaaatigoog* as an example, all my participants care for the *inaaatigoog* in their own way. They all have their own way of running their *iskigamizigan*. None of my participants are using old traditional methods of the Indigenous people, yet all of them are still caring for the *inaaatigoog*. By combining the knowledge bases with other sciences, we can
strengthen our communities and fix our biome making the environment a less hostile place to live.
Bibliography


Dawes Act of 1887. [Bethesda, MD :ProQuest], 2014.


Doctrine of Discovery, “Inter Caetera”, *Inter Caetera,*


Google earth, [https://earth.google.com/web/@43.1321893,-90.15070612,276.26062135a.403.02503077d.35y.110.63345976h.43.13989524t.0r/data=MikKJwolCiExd25hVUXuAlU2MkdqaV11YXlyNThlMnlxVUC1NzFDblggAQ](https://earth.google.com/web/@43.1321893,-90.15070612,276.26062135a.403.02503077d.35y.110.63345976h.43.13989524t.0r/data=MikKJwolCiExd25hVUXuAlU2MkdqaV11YXlyNThlMnlxVUC1NzFDblggAQ) (accessed May 6, 2023).


Johnson V. McIntosh, 21 U.S. (8 Wheat.) 543 (1823).


Ma, Suhui, Feng He, Di Tian, Dongting Zou, Zhengbing Yan, Yulong Yang, Tiancheng Zhou, Kaiyue Huang, Haihua Shen, and Jingyun Fang. “Variations and Determinants of Carbon


National Phenology Network https://www.usanpn.org/usa-national-phenology-network


Schoolcraft, Henry Rowe. Personal Memoirs of a Residence of Thirty Years with the Indian Tribes on the American Frontiers ... 1812 to 1842 (Philadelphia, 1851).


Thomas, Mathew M. “Where the Forest Meets the Farm: A Comparison of Spatial and Historical Change in the Euro-American and American Indian Maple Production Landscape.” Ph.D. diss., University of Wisconsin-Madison, 2004


Appendix A: Ethnographic Questions

Do you practice ceremonies?
Do you speak any Ojibwemowin?
Do you do any ceremonies with the trees?
How long have you been practicing sugarbush?
Do you have any stories that go with your sugarbush?
DO you know any songs about the sugarbush?
Do you sing to the trees?
Do you talk to the trees?
Do you care for the trees off season; feed them, sing to them, trim dead branches?
Is there something you see in the environment that starts the sugarbush?
Is there something that you see in the environment that tells you to end the sugarbush?
Do you talk to the sap when you're boiling?
Do you keep records of your harvest?
Do you make anything besides syrup, like candy, sugar, vinegar, taffy?
Have you noticed any change to your sugarbush from climate change?
Appendix B: Letter with Questionnaire

Boozhoo wiijiwaanagan

I am writing to you because we all have an interest in the Ininaatigoog, sugar maples. My doctoral dissertation, “Ezhi-Nisidotamang Ininatigoog miinawaa Anishinaabeg Maamwi-Bimaadiziyang (A Framework for Understanding Maple and Human Relations): An Ethnography and Scientific Summary,” is on the relationships we have with the Ininaatigoog, along with the cultural significance of sugar bush, and what it is telling us. I would like to monitor the Ininaatigoog in Ogema, Wisconsin; Spring Green, Wisconsin; Cedarburg Bog Wisconsin, Detroit, Michigan, and Grand Portage Minnesota to see how similar or how different they are. Part of my study is also looking at the Ininaatigoog sap throughout the sugarbush season, monitoring the sap in a lab to see what levels of carbon, nitrogen, and phosphorus are in the sap and how that changes throughout the season.

Would you be willing to answer some questions about the Ininaatigoog, your maple community, that you spend time with, and send samples of sap to me?

You can answer the following in writing or I can schedule a zoom, or team meeting with you to discuss this further.

My hope is to communicate through email every couple of weeks just to check in. Thank you for being a part of my research and I look forward to talking to each of you.

Gimiigwechiwi’n

Nathon Breu
Questions:

Part 1 - Tell me about your Maple Community

1. Do you know the total number of trees? If yes, how many? If not, can you guess?
2. How many trees are you tapping this year? How many taps total if you are tapping any trees more than once?
3. Do you know the age the age of the tree's oldest/youngest sugar maples that you are tapping?
4. On live trees are the branches brittle? Can they be bent without snapping?
5. Do they have a good canopy, able to receive lots of sunshine when leaves are out, nothing impending the branches, other trees?
6. How does the bark look? For example: Is it falling off? Is it full of holes from animals/pests/humans? Are there any markings on the bark that are of note?
sugar maple cankers porcupine markings from chewing

7. Are there any other trees mixed in with the Ininatigoog? What kinds are they?

8. If you have beech trees are there signs of Beech bark disease? Orangish red sores or white woolly chaff or fluffs that easily rub off the tree?

9. Do you utilize the dead trees for boiling sap? for something else?

10. Is there any other invasive species located in your maple community?

11. Do you have any Buckthorn present?
Bark is gray and changes with age. Young trees or smaller branches have smooth to slightly flakey bark and older trees and large branches have very flakey bark.

Smaller saplings or twigs are mostly gray and smooth with small raised white cork like bumps.

Cut bark exposes yellow sapwood and orange heartwood.
12. Do you have Japanese Barberry?

13. Is there any water on your property, a river, stream, pond, swamp, lake etc?

14. Testing the skin of the earth, describe what you see and feel?

15. Please describe the leaf cover on the forest floor? (0-5) 0 no leaf cover, 3 some leaf cover, 5 is 2-3 inches of leaf cover
16. Any signs of earthworms, earthworm castings, or earthworm middens?

17. What type of soil? Sand, Clay, Silt, Peat, Loam

18. What are the dominant features of the terrain? Hilly, flat, rivers, ponds, post-industrial recovery, etc.

19. What animals have you seen near the trees?

20. What animals have left evidence of being in the area?

21. Do any animals live in your trees?

22. Do any animals feed on your trees?

Part 2 - The care of the Ininaatigoog

Answer yes or no, if you answer yes please explain further about what it is you do.

1. Do you smudge or feast the Ininaatigoog before or during the sap run?

2. Do you fertilize them?

3. Do you water them?

4. Do you spend time with them?

5. Do you talk to them?

6. Do you ask permission to harvest the sap from them?

7. Do you give them any type of gift, i.e., tobacco?

Part 3- Tapping the Ininaatigoog
1. How long have you been tapping?
2. Do you have a size requirement for a tree before you tap it?
3. Do you rotate trees that you tap or do you tap the same tree every year?
4. What do you use to tap the tree: Hand drill or electric?
5. What size drill bit?
6. What type of taps (traditional wood, metal, plastic)
7. What vessel do you use for collection and what is it made of?

Part 4 - Sap Harvest

1. When did the sap start to run?
2. How much sap do you collect?
3. How do you render the sap?
4. What do you make with the sap?
5. What was the color of the sap?
6. When do you decide to stop collecting sap?
7. When did the buds start to form?
8. Using the bottles provided please collect a sample of sap, on the same day, from five different trees during the first week of the harvest. Please write the date and time the sample was collected on the bottle. Freeze it until it can be shipped back.
9. Using the refactor provided what was the reading you received?

Part 5 - If you are willing to be quoted in my dissertation, could you tell me about yourself, feel free to answer any of the questions and give me any information that you want me to know.

1. What name do you prefer me to use?
2. How would you describe your age?
3. Where do you originally come from?
4. Is the address I sent this to your current home?
5. How would you describe your current occupation?
6. How would you describe your identity?
7. Is there anything else you want me to know about yourself?

Ethnographic questions if you want to answer:

Part 6 - Describe the relationship between you and the trees:

Where did you learn the art of sugarbush? Are there stories you connect with the trees? Are there songs you connect with the trees? Are there activities you do with your family during the sap collection/run?
## Appendix C: Ojibwemowin Glossary

<table>
<thead>
<tr>
<th>Word used in this document</th>
<th>English equivalent</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>asin</td>
<td>stone, a stone; rock, a rock</td>
<td></td>
</tr>
<tr>
<td>Anishinaabe/ Anishinaabeg</td>
<td>The Anishinaabe people which are the Odawa, Ojibwe and Potawatomi.</td>
<td></td>
</tr>
<tr>
<td>Anishinaabemowin</td>
<td>Language of the Anishinaabe.</td>
<td>Each group now has their own dialect/linguistic differences, but collectively they speak this language.</td>
</tr>
<tr>
<td>Anishinaabewakiing</td>
<td>land areas where the Anishinaabe live and have relationship</td>
<td>Sometimes referred to as “Indian country” the land where any Indigenous people live and have relationship</td>
</tr>
<tr>
<td>Aadizookaan</td>
<td>a sacred story (a legend, a myth), a spirit</td>
<td></td>
</tr>
<tr>
<td>Asema</td>
<td>tobacco; or other plant leaves used as offering</td>
<td></td>
</tr>
<tr>
<td>awesiinyag</td>
<td>animals</td>
<td></td>
</tr>
<tr>
<td>Biboon</td>
<td>Winter season</td>
<td></td>
</tr>
<tr>
<td>Biboonikeonini</td>
<td>Winter moon/ winter month</td>
<td></td>
</tr>
<tr>
<td>Gidimaagizi</td>
<td>They (singular) is poor, is pitiful</td>
<td></td>
</tr>
<tr>
<td>giizis</td>
<td>Sun, moon, month</td>
<td>Understanding of which definition is provided with context</td>
</tr>
<tr>
<td>Ininaatig</td>
<td>Acer saccharum, sugar maple tree</td>
<td>-oog is the plural version</td>
</tr>
<tr>
<td>Ininaatigoog</td>
<td>Sugar bush sugar bush camp</td>
<td></td>
</tr>
<tr>
<td>Iskigamizigan</td>
<td>a story of the past/ history</td>
<td></td>
</tr>
<tr>
<td>Gaa-ezhiwebag</td>
<td>April; sugar Bushing moon</td>
<td></td>
</tr>
<tr>
<td>Ishkigamizige -giizis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>manidoog</td>
<td>manitou, spirits (plural)</td>
<td>plural form of manidoo</td>
</tr>
<tr>
<td>Makizin</td>
<td>moccasin</td>
<td></td>
</tr>
<tr>
<td>makak</td>
<td>a birch bark basket or container</td>
<td></td>
</tr>
<tr>
<td>mikinaak +aki (akii)</td>
<td>Turtle + Earth; turtle island, north America</td>
<td></td>
</tr>
<tr>
<td>Minobimadiz</td>
<td>Mino=good Bimaadiz = living / path walking</td>
<td>The good way to live your life as an Anishinaabe.</td>
</tr>
<tr>
<td>Mino-bimaadiziwin</td>
<td>Tree/ trees</td>
<td></td>
</tr>
<tr>
<td>Mitig/ mitigoog</td>
<td>Alternate spelling of Minobimadiz</td>
<td></td>
</tr>
<tr>
<td>Mnaamodzawin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nimaamaa</td>
<td>My mother</td>
<td>Modern use with incorrect conjugation of relationship</td>
</tr>
<tr>
<td>Ninga</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nisidotan nisidotaw</td>
<td>Understand by hearing</td>
<td></td>
</tr>
<tr>
<td>Word used in this document</td>
<td>English equivalent</td>
<td>Notes</td>
</tr>
<tr>
<td>----------------------------</td>
<td>--------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Nokomis</td>
<td>Grandmother</td>
<td>Missing correct word parts to properly indicate relationship.</td>
</tr>
<tr>
<td>Opwaagan</td>
<td>Pipe/ ceremonial pipe</td>
<td></td>
</tr>
<tr>
<td>Oshkaabewis</td>
<td>Ceremonial attendant or helper</td>
<td></td>
</tr>
<tr>
<td>Shkakamikwe</td>
<td>Name for the land/ earth</td>
<td>Sometimes translated as “mother earth”</td>
</tr>
<tr>
<td>Wenabozho</td>
<td>name of {aadizookaan} character viewed as culture hero</td>
<td></td>
</tr>
<tr>
<td>Wiigiwam/ Wiigiwaaman</td>
<td>A house or lodge; made with bendable saplings and birch bark</td>
<td></td>
</tr>
<tr>
<td>Waawaabiganoojiinh</td>
<td>A mouse</td>
<td></td>
</tr>
<tr>
<td>Zaag</td>
<td>Morpheme meaning “to open” or “to sprout”</td>
<td></td>
</tr>
<tr>
<td>Zaagi</td>
<td>Doing with, referring to Federal, USA, or “white”</td>
<td></td>
</tr>
<tr>
<td>Zhaaganash</td>
<td>Arrival or time of opening and sprouting</td>
<td>These are conjugated forms of “zaag”</td>
</tr>
<tr>
<td>Zaagiyangidwa zaagidowin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zhiwaagamizan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ziigwan</td>
<td>the leaves come out; it buds Zaagibagaa-giizis: May</td>
<td></td>
</tr>
<tr>
<td>Zaagibagaa</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>