

# **STRENGTHENING TRIBAL AND UNIVERSITY RELATIONS ON SUGAR ISLAND AND BEYOND**

A project submitted in partial fulfillment of the requirements for the degree of Master of Science at the University of Michigan School for Environment and Sustainability

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We would also like to give our thanks to our client, Eric Clark, former lead Wildlife biologist of the Sault Ste. Marie Tribe of Chippewa Indians, who invited us to conduct this work. Specifically, the Natural Resources Department, including Brad Silet, Kali Apelt, Michael Castagne, Danielle (Dani) Fegan, Becca Lathrop, and Katelyn Schultz have been incredibly generous with their time and expertise. We were welcomed into the community with patience and grace, and for that we would like to use the Anishinaabemowin term for gratitude, *chi miigwech*.

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# POSITIONALITY

This Master's project was conducted by six graduate students at the University of Michigan's School for Environment and Sustainability (SEAS), none of whom identify as being of Indigenous descent. Thus, the knowledge, stories, lifeways, and viewpoints of Anishinaabe and other Indigenous peoples found in this report are second-hand, from interviews, archival research, and other literature. Working for the Sault Ste. Marie Tribe of Chippewa Indians (Sault Tribe) introduces an inevitable bias in favor of Anishinaabe viewpoints, but it also creates a more tangible link to the viewpoints the authors hope to represent with humility, respect, and authenticity.

This project is a part of a Theme-Based Capstone course taught by Dr. Andy White, with a focus on Indigenous- and Community-Led Conservation and Climate Action, and advised by Dr. White and Dr. Kyle Whyte (Citizen Potawatomi). We recognize that the land currently known as the United States is Native land. In southeastern Michigan, the University of Michigan began on and continues to benefit from lands ceded to the federal government in 1817 by the Odawa, Ojibwe, Bodéwadmi, and Wyandot nations under the Treaty of Fort Meigs. In northern Michigan, the University holds lands in ancestral territory of Odawa, Ojibwe, Bodéwadmi, and Métis communities. We have benefited from the mass theft of this land conducted by the United States government, academic institutions including the University of Michigan, and many other entities. This allowed for access to land, educational opportunities, and resources that enabled us to conduct this very project.

Our goal is to provide capacity and analysis in creating work products that are useful to the Tribe that requested the work, with and the field as a whole, supporting the Indigenous land rights movement as allies. As lifetime learners, we welcome continued teachings and suggestions from reviewers and advisors, some of whom identify as Native and some who do not. We thank them for their contributions of time and expertise.

## **Disclaimer**

The views and opinions in this publication do not necessarily reflect the views and opinions of the acknowledged individuals or their respective organizations. We do not represent them or their organizations, and they do not necessarily recommend, sponsor, or endorse our work or final products.

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# EXECUTIVE SUMMARY

From January 2023 to April 2024, a team of six students pursuing Master of Science degrees from University of Michigan's School for Environment and Sustainability conducted their capstone project for the Sault Ste Marie Tribe of Chippewa Indians (Sault Tribe). This collaborative initiative aimed to provide comprehensive support for the advancement of Tribal-led conservation efforts, with a focal point on the University of Michigan-owned Chase Osborn Preserve situated on Sugar Island in the eastern Upper Peninsula of Michigan. The project, initiated through established connections between the client, Eric Clark, and advisor Dr. Kyle Whyte, is ongoing beyond the specified timeframe.

This project developed four overarching objectives:

1. Create and edit materials to document the Tribe's history with the land and UM
2. Evaluate the economic and ecological benefits of different management options for Chase Osborn Preserve
3. Contribute to strengthening the relationship between the Tribe and University
4. Demonstrating potential paths of Tribal-University land relations

Research was conducted through a variety of means, including archival research, community gatherings, informal interviews, and ecological surveys. Specific deliverable methods are documented within each chapter.

**Ecological synthesis:** In Chapter 1, the Ecological Synthesis, brings together the research of the Sault Tribe Natural Resources Department with the historical relationships of the land to demonstrate the capacity of the Tribe to manage and steward the Chase Osborn Preserve. This document details ecological history of the Preserve, along with an overview of current and ongoing research conducted both on the Preserve and by the Sault Tribe in the eastern Upper Peninsula.

**Preliminary economic assessment:** Chapter 2 applies Indigenous economic principles to examining potential mutual economic benefits for both the Tribe and the University under different management

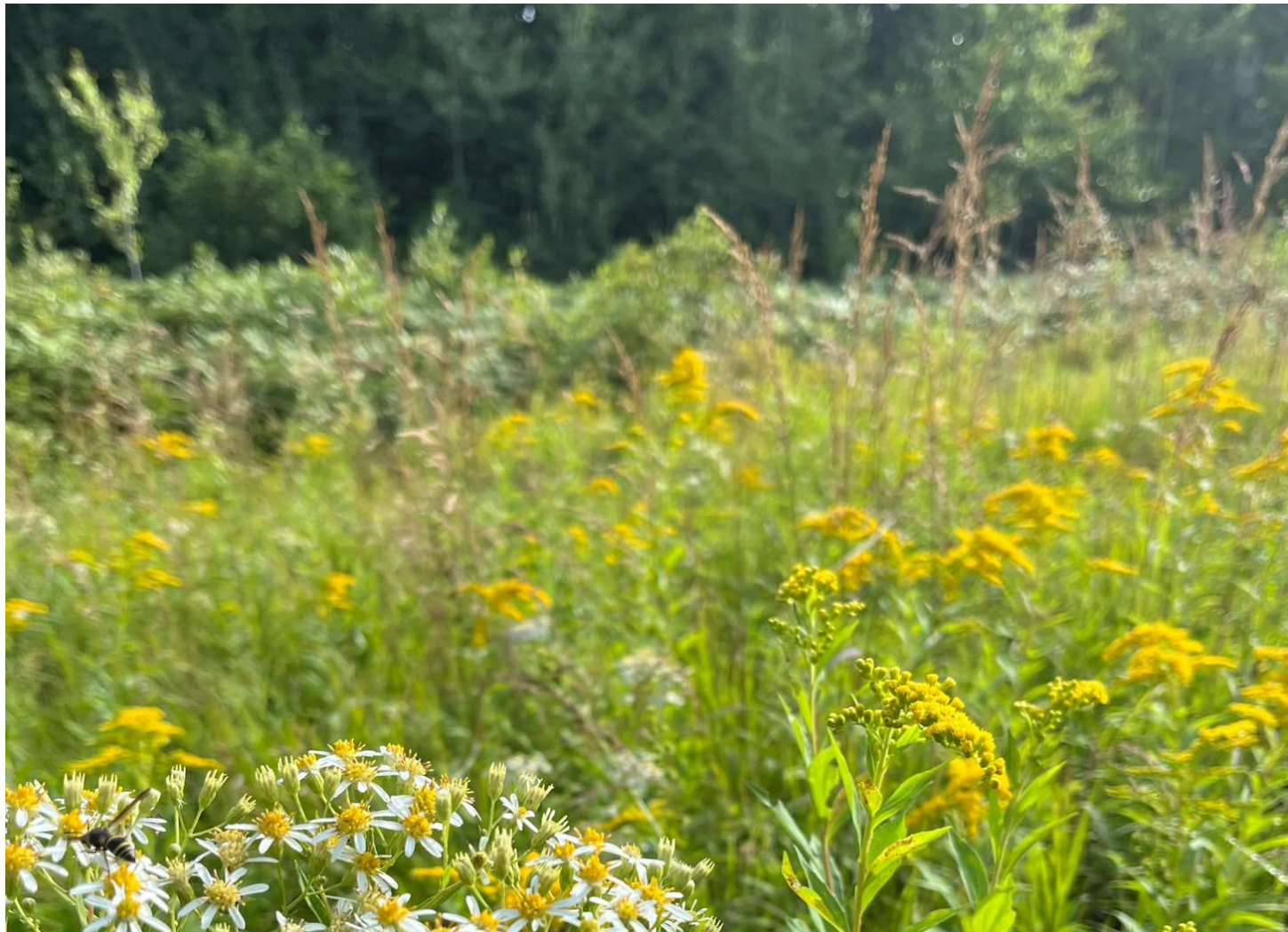
strategies, including University management, co-management, and Tribal management. A cost-benefit analysis was conducted to demonstrate possible University and Tribal costs and benefits of different management strategies of the Preserve.

**Story map:** Appendices provide further information. Appendix A contains a link to the third and final deliverable, an ArcGIS Story map that provides the ecological and historical context for why the Tribe should steward the land as a public-facing multimedia narrative. This is framed by Anishinaabe migration stories, and traces relationships with and of the area to present day, including existing research. Appendix B provides rationale and process documentation for the story map.

Appendix C is a historical background document created by Tribal and University leaders and updated by the student group. Appendix D details community gathering and participatory mapping sessions conducted in November 2023. A list of species documented on the Preserve in June 2023 are listed in Appendix E.



A sign at the Homestead Road entrance of the Chase S. Osborn Preserve in April 2024.



**CHAPTER ONE:**

**ECOLOGICAL RELATIONSHIPS OF  
SAULT TRIBE AND SUGAR ISLAND:  
FOCUSING ON THE CHASE OSBORN  
PRESERVE**



# CHAPTER ONE: ECOLOGICAL RELATIONSHIPS OF SAULT TRIBE AND SUGAR ISLAND: FOCUSING ON THE CHASE OSBORN PRESERVE

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# 1.1 INTRODUCTION

## OVERVIEW

This project was an extension of efforts initiated by the Sault Ste Marie Tribe of Chippewa Indians (Sault Tribe) and in collaboration with the University of Michigan (University) with beginning discussions provided in a historical document published in 2019 by Knute Nadelhoffer (University of Michigan), Christine McPherson (Executive Director, Sault Tribe), Eric Clark (Sault Tribe Wildlife Program), Nicholas Reo (Sault Tribe Member), and Dr. Robin Michigiizhigookwe Clark (Sault Tribe Natural Resources Department and Sault Tribe Member). In 2022, the project was proposed as a master’s capstone project for the University of Michigan School for Environment and Sustainability (SEAS) and upon request from the Sault Tribe, the historical document was updated in June of 2023 (Nadelhoffer et al, 2019). For the revised historical document see (Appendix B). This chapter outlines the historical and current ecological conditions of the Chase Osborn Preserve and emphasizes the relationship and inseparable ties of the Sault Tribe and Sugar Island. Components of this report and its contents were conducted upon request by the Tribe in an attempt to expand capacity and efforts towards tribal self-determination, reciprocity, and continued relationship building with the University.

## SCOPE

Sugar Island (Island) is located between the St. Mary’s River between Ontario, Canada and the eastern Upper Peninsula of Michigan, consisting of approximately 31,630 acres. The Chase Osborn Preserve (Preserve) is located on the southern end of Sugar Island consisting of approximately 3,000 acres (Figure 1). Although the project is centered around the Preserve on Sugar Island in the Upper Peninsula of Michigan, the geographical scope of this report extends beyond the Preserve and includes the larger Bahweting area and the 1836 Treaty of Washington ceded territory. Bahweting, meaning the “the gathering place” or “place of the rapids” in Anishinaabemowin, includes the region surrounding the shores on both sides of the St. Marys River (Figure 2).

## PURPOSE

The purpose of this report is to describe the ecological history and existing conditions of the Preserve, which is located on Sugar Island and currently owned by the University of Michigan. This document will also provide an overview of current and ongoing research happening on Sugar Island and the larger Sault Ste. Marie/ Bahweting region. It includes a literature review of ecological research previously and currently being conducted by the Sault Sault Tribe and the University, both on the Preserve and in the surrounding area. This document shares considerations moving forward based on the student teams research and feedback from the Sault Tribe community. This document aims to establish a common understanding of the ecological conditions of the larger Bahweting area, to support the case for increased Tribal management of the Preserve, and increased research collaborations in the ceded territory.

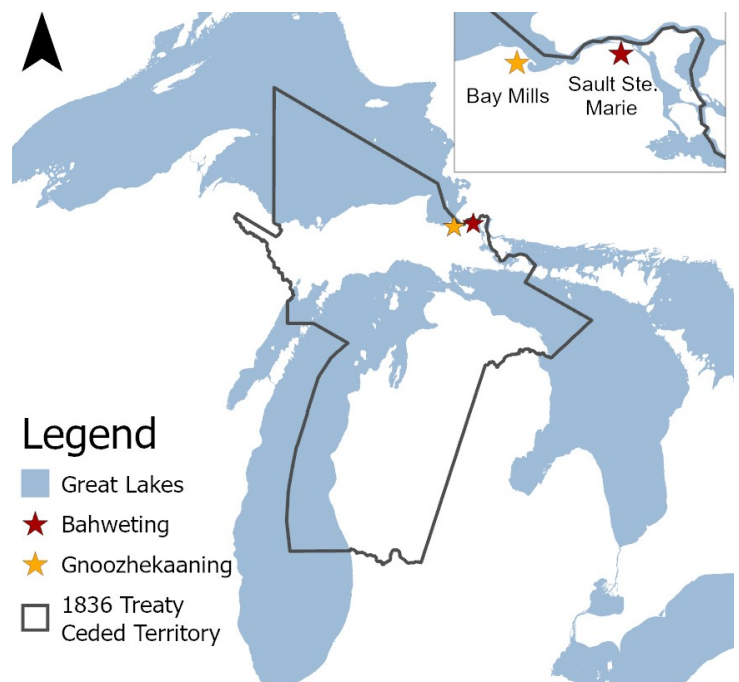


Figure 2: Bahweting, Gnoozhekaaning, 1836 Ceded Territory, and the Great Lakes Region (Clark et. al 2022).

# METHODS

The methodology for this report included a literature review, historical archival review, and qualitative data analysis in the form of interviews and a listening session. Archival research was collected from a variety of collections, including the UM Bentley Library, the UM Biological Station Library and Archive, the Lake Superior State University Kenneth J. Shouldice Library, and municipal archives. For all qualitative data analysis and community engagement processes, an Institutional Review Board (IRB) was conducted for both the University of Michigan and the Sault Ste. Marie Tribe of Chippewa Indians. A total of eight informal interviews were conducted for this project. None of the interviews were recorded and only hand notes were taken at the time of the interview. One listening session was also conducted with additional activities such as a community mapping exercise where participants were able to mark up the map of the Preserve with sticky notes containing stories, specific locations, and priorities under increased tribal access.



Figure 1: This map shows the research area, the Chase Osborn Preserve, outlined in purple at the southeast end of Sugar Island. Mid-island is the forty-acre Sault Tribe’s Mary Murray Culture Camp, named for the Tribal member who donated the land. The island is roughly fifty square miles, with a year-round population of just under 700.

# 1.2 HISTORICAL RELATIONSHIPS OF SAULT TRIBE TO SUGAR ISLAND

## MOVEMENT FOR FEDERAL RECOGNITION ON SUGAR ISLAND

The Anishinaabeg, meaning “Original People,” have lived in the Great Lakes area for millennia (Sault Tribe, 2017; Overview, 2021). Anishinaabe is an overarching name for a number of sovereign nations including the Ojibwe, Odawa, Potawatomi, and Mississauga. The Sault Tribe are a nation of Ojibwe(Chippewa). These ancestors of the Sault Tribe formed fishing settlements around the upper Great Lakes (Lake Superior, Lake Michigan, and Lake Huron), the St. Marys River (including Sugar Island) and the Straits of Mackinac. The Sault Tribe lived amongst the land, fishing, hunting, and conducting ceremonies as a sovereign nation (Sault Tribe, 2017). European contact and subsequent loss of land drastically affected the Anishinaabeg.

In the 1836 Treaty of Washington, the Sault Tribe Anishinaabeg were forced to cede over 13.8 million acres (21,621 square miles) of land to the United States, which is now a large portion of northern Michigan. (See Figure 1). This treaty designated Sugar Island as tribal land and the Anishnaabeg of the Sault were expected to receive 250,000 acres and cash payments. Unfortunately this never came to fruition due to continued expansion of colonial settlement (Arbic, 1992). Within this treaty with the United States, the Anishinaabe retained their ancestral rights to hunt and fish on the ceded lands and waters. However, the lack of enforcement and privatization of land often made it difficult to exercise these rights.

To gain access to more resources, groups of Anishinaabe began to seek federal recognition. In the 1930’s with pressure from the United States to relocate a group of Anishinaabe making up the Gnoozhekaaning (Bay Mills Indian Community) moved 30 miles west. After moving they were granted federal recognition and received many benefits including 3,000 acres of reservation lands. Due to a lack of resources and services, the Anishinaabe of Sugar Island gathered and decided to push for federal recognition as a sovereign tribe themselves. On December 24, 1953 the Sugar Island residents became known as the “Original Bands of Chippewa Indians and Their Heirs” (Sault Ste. Marie Tribe, 2021). This included members from six historical Ojibwe bands, both American and Canadian: Sugar Island, Sault Ste. Marie, Drummond Island, Grand Island, Point Iroquois, and Garden River. Due to a lack of land ownership, however, the federal government considered the Original Bands and Their Heirs to be members of the Bay Mills. Issues of representation and provision of services motivated the Anishinaabe of Sugar Island to pursue their goal of federal recognition as a separate tribe.

Many residents of the island lacked employment opportunities or safe housing, and federal recognition would provide support with basic services from the federal government (Sault Ste. Marie Tribe, 2021). The Sugar Island group faced significant hurdles in achieving federal recognition due to limited resources, political backing, and knowledge of federal procedures. Despite these challenges, they conducted extensive archival research in the 1960s, meticulously compiling historical documents to support their case. Utilizing colonial records, they pieced together their history, advocating for the acknowledgment they rightfully deserved. Their quest for acknowledgment was not merely bureaucratic, but was a fight to reclaim their past, present, and future as a people, with Sugar Island at the center. In 1972, the University of Michigan sold forty acres of land owned by the university on Sugar Island to the Original Bands and Their Heirs for \$1,700. After the sale was finalized, leaders of the six bands traveled to Washington D.C. to present their historical records and legal arguments. As the Original Bands had now acquired a land base, the Tribe was eligible for federal recognition status. (“Sault Tribe of Chippewa

Indians” 2017).

The movement for federal recognition of the Sault Tribe can be directly traced back to Sugar Island and the importance of community and family gatherings on the Island. Sugar Island is not only the birthplace of discussions regarding federal recognition, but has been a sacred place of strong ancestral and ecological ties to the land for the Sault Tribe since time immemorial. Despite deep roots to the area, the Tribe owns less than approximately 4,500 acres of land throughout ceded territory (Michigan Advance, 2024; Bureau of Indian Affairs). Sault Tribe members have shared strong historical ties to Sugar Island, and most specifically the Preserve area. Many noted that their families have been on the island “forever,” and are able to account for six or more generations residing on the island in the past. On several occasions, Sault Tribe members mentioned Sugar Island as being distinct from the mainland and Sault Tribe as a whole, notably as a separate identity (See Appendix C).

## **SAULT TRIBE RELATIONALITY TO THE LAND AND SUGAR**

When Anishinaabeg look into the forest, they see their relatives; the trees are their teacher elders, communicating by being in relationship with one another (Clark et al, 2022 and Anishinabek Nation). Centering ecology with Indigenous lifeways means all habitats and ecosystems can be better understood as a society, composed of relations and kin, where the connections between the entities are more important than the entities themselves (Tynan, 2021). The Anishinaabeg convey a world where “nature is understood as full of relatives not resources, where inalienable rights are balanced with inalienable responsibilities and where wealth itself is measured not by resource ownership and control, but by the number of good relationships we maintain” on this earth (Tynan, 2021: pg. 603).

Anishinaabeg have a deeply rooted relationship with the land, the living and nonliving beings residing on it (Alfred and Corntassel 2005; Dunbar-Ortiz 2014; Long and Lake 2018; Trospen 2007; Whyte 2018a). For Sault Tribe gatherers of Giizhik (Northern white cedar), there have been generational decreases in access due to settler-colonial processes that restrain Sault Tribe Anishinaabe lifeways through structures of land ownership and authoritative management (Clark et al, 2022). Distancing and isolations from lands have resulted in the severing of relationships and relationality to their relatives, as well as ways of being (Tynan, 2021). Without close access to culturally relevant species that historically grew in areas local to communities, tribal members must travel further distances to maintain cultural practices (Clark et al, 2022).

The Sault Tribe’s historic connection to Sugar Island is outlined in Appendix B. Those sharings describe the deep ancestral and spiritual ties the Sault Tribe has with Sugar Island and the needs for increased access for ceremonial practices, restoration, and relationality.

Dr. Kyle Whyte, Anishinaabe scholar, introduces a concept he calls “collective continuance” (2019). This term speaks to how societies create capacities to survive, which “considers existence as emanating from relationships between humans and nonhumans that are in constant motion, embracing of diversity and constituted by reciprocal responsibilities. When these relationships flourish, they can facilitate a society’s resilience or its members’ capacity to self-determine how to adjust to changes and challenges in ways that avoid preventable harms and support their freedom and aspirations (including those of nonhumans)” (Whyte, 2019: 55). Experiences and actions are based in relationships of responsibility to humans and nonhumans, self determination can only exist when entities are able to conduct their responsibilities to these relationships in a good way, resulting in increased resilience for society as a whole.

Sault Tribe Anishinaabe pursue collective continuance of their nation formally through extensive

membership services available to their community and also pursue collective continuance informally through relational networks of care. The main threat to Sault Tribes collective continuance is colonization, and specifically land dispossession. Loss of land access breaks their relationships with their lands and non-human relatives that

*“The Anishinaabe see governing as a responsibility to protect all people, all creatures, and all natural resources including land, air, and water. It does not mean do not take, but rather honor the earth by only taking what you need”  
(Tynan 2021)*

## **HEMI-BOREAL FOREST AND SUGAR ISLAND**

This section describes the hemi-boreal forest and its relationship with Sugar Island, as well as the types of species that are typical or common amongst that habitat. The species mentioned below are also found within the hemi-boreal forest, as well as Sugar Island, and are culturally significant to the Sault Tribe. Maintenance and preservation of these species are vital to the continuation of Anishinaabe teachings, culture, and lifeways.

Sugar Island consists of largely hemi-boreal and boreal remnant forests, which also extend across the eastern Upper Peninsula of Michigan and portions of Minnesota, Maine, and across Canada. Hemi-boreal forests are to the south and west of the boreal forest ecosystems and are transitional with temperate forests, except in Alberta and British Columbia, where it is transitional to mountainous forests (Ahmed, 2020). The soils of hemi-boreal forests range from moist to dry, are characterized by sand and sandy loam, and are typically moderately acidic to neutral in pH, but can also be highly acidic or alkaline soils (Cohen et al, 2020).

The canopy of boreal forests features mostly evergreen tree species; the dense closed canopy prevents most light from transmitting through, resulting in a scattered understory with sparse ground cover. The canopy is typically dominated by balsam fir (*Abies balsamea*), white spruce (*Picea glauca*), and northern white cedar (*Thuja occidentalis*), with a small portion of paper birch (*Betula papyrifera*) and quaking aspen (*Populus tremuloides*). Other less prevalent canopy tree species include white pine (*Pinus strobus*), balsam poplar (*Populus balsamifera*), and hemlock (*Tsuga canadensis*), black spruce (*Picea mariana*), red pine (*Pinus resinosa*), jack pine (*Pinus banksiana*), and red maple (*Acer rubrum*). Additional understory or tall shrub species include round-leaved dogwood (*Cornus rugosa*), tag alder (*Alnus incana*), and soapberry (*Shepherdia canadensis*). Characteristic low shrubs include American fly honeysuckle (*Lonicera canadensis*), bearberry (*Arctostaphylos uva-ursi*), Canadian yew (*Taxus canadensis*), prickly gooseberry (*Ribes cynosbati*), and common juniper (*Juniperus communis*) (Cohen et al, 2020). Michigan’s hemi-boreal forests and associated communities also provide critical feeding, roosting, and perching habitat for migrating shorebirds, waterfowl, and songbirds in the spring and fall. Hemi-boreal and boreal remnant ecosystems are not only a defining component of the Upper Great Lakes Region, but are essential to the Sault Tribe and other Anishinaabeg worldviews, cultural practices, knowledge systems, and resource management (Johnston, 1976).

Species commonly found in hemiboreal forests include big game like black bear, elk, moose, wolves and smaller species such as beavers, snowshoe hares, marten, red squirrels, and voles. The species described below are common species found in hemi-boreal ecosystems but also serve as vital relatives to the Sault Tribe’s ways of being.

## WAABIZHESHI (MARTEN)

Marten (*Martes americana*), or Waabizheshi in Anishinaabemowin, are largely nocturnal, medium-sized carnivores in the Mustelidae (weasel) family. They are found primarily in forested regions throughout Alaska, Canada, and just south of the conifer tree line in the hemiboreal forests in the U.S. Their regional habitat range today includes the northwestern portions of Minnesota, the Upper Peninsula of Michigan, the upper northeastern ranges of Wisconsin and Ontario, Canada. However, Waabizheshi have become locally extinct, from the lower Great Lakes region due to the fur trade. While waabizheshi populations are secure in Ontario and Minnesota, populations are vulnerable in Michigan due to reduced amounts of snow from climate change, and loss of forest habitat from logging and fur trapping. Waabizheshi is largely associated with climax conifer forests and other mature hardwoods, and require large amounts of undergrowth and canopy cover for protection from predators such as raptors or larger mammal carnivores. Waabizheshi has been reported to be historical and currently present on the Island.



Photo by Brad Silet

Waabizheshi is a culturally significant species for the Sault Tribe and is known for being a doodem (clan) animal. The waabizheshi is one of the chosen totem animals, respected by the Ojibwe People for being a fierce fighter and hunter. Those that reside in the Waabizheshi clan are known for being the warriors of the Ojibwe.



Photo by Brad Silet

## WAABOOZ (SNOWSHOE HARE)

Snowshoe hare (*Lepus americanus*), or Waabooz in Ojibwe, is a culturally significant species to the lifeways of the Sault Tribe and is central to the story of Creation. In addition to being a culturally important species to the Sault Tribe, snowshoe hares are also an important component of predator-prey communities, particularly at northern latitudes. Hares also help sustain numerous mesocarnivores and raptors such as Canada lynx (*Lynx canadensis*), red fox (*Vulpes vulpes*), American marten (*Martes americana*), fisher (*Martes pennanti*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), red-tailed

hawk (*Buteo jamaicensis*), and great horned owl (*Bubo virginianus*) (Carreker 1985). The importance of hares is also strongly correlated and vital to predator prey dynamics of boreal forests and can be used as an indicator of climate change.

## GIIZHIK (NORTHERN WHITE CEDAR)

Northern-white cedar (*Thuja occidentalis*), or Giizhik in Ojibwe, maintains an essential role in Sault Tribe Anishinaabe teachings, ceremony, and lifeways. Giizhik is an evergreen tree that grows in a narrow pyramid shape and contains scale-like needles, which are flat and fan shaped. They provide food for whitetail deer and other small mammals (i.e. snowshoe hares), and provide nesting habitats for birds like robins and finches. Giizhik is also used by the Anishinaabe for canoe making, bark and bole harvesting.



Photo by Dr. Robin Clark

However, over the last century, Giizhik has declined in abundance across their range due to climate change, logging, draining of wetlands, catastrophic wildfires, and other stressors.

The Anishinaabeg at Bahweting, and other communities have maintained adaptive, spirit-centered, and experiential relationships with Giizhik through tremendous changes, such as climate change and migrations. For the Anishinaabe, stories of creation, “when humankind was in trouble, Bear and Otter asked for and were given the cedar tree, to open up the line of communication between man and the rest of creation.” This creation story instructs the Anishinaabe to respect, engage, and care for Giizhik for facilitating communications among beings in Creation.

The Anishinaabe relationship to Giizhik is essential to the well-being of both people and plants, according to several academic studies, reduced indigenous community harvesting of some plant species can reduce plant populations. According to Dr. Robin Clark’s dissertation on Gathering Giizhik in a changing landscape, seven harvesting relationality practices of care for Giizhik can be demonstrated by the Anishinaabe through the following (Clark 2021):

1. *need* - prerequisite of need for Giizhik’s gifts, identified by people, plants, or other beings
2. *preparation* - harvesting with a good mind and heart, committing to take care of the harvest
3. *communication and consent* - communicating the purpose/future of the harvest, offering asemaa, and abiding by the permission of the tree and/or forest
4. *mutual benefit* - ensuring that Giizhik and the forest benefit from harvest
5. *sharing* - sharing harvests and harvesting opportunities in larger systems of responsibility and reciprocity
6. *minimizing harm* - adapting harvest to tree, forest, and landscape, minimizing harm to individual Giizhik, forest communities, and future generations
7. *honoring Creation* - observing, learning from, and following the paths of other beings in Creation

These practices aim to protect forest community wellbeing by facilitating long-term Giizhik-Anishinaabe relationships and informing broader forest management efforts, guided by the wisdom of past, present, and future generations.

## COASTAL WETLANDS

In addition to hemiboreal and boreal forests, Bahweting features herbaceous wetland communities along its shorelines and in tributary watersheds, known as Great Lakes Coastal Wetlands. These areas play a crucial role in ecological functions and offer various economic and cultural benefits. National and International efforts recognize the unique value of the coastal wetlands and there are many initiatives to preserve them. Even with such efforts, the impact of water level fluctuations, influenced by shipping and industrial activities, jeopardize these vulnerable habitats. Furthermore, these sensitive coastal wetland habitats face degradation and threats from shoreline erosion, pollution, invasive species, urban development, and agricultural drainage. Where once there was over a million acres of coastal wetlands in the Great Lakes watershed, today approximately only 530,000 acres remain, with 30,000 acres of this in Bahweting (EPA).

The Great Lakes sustain almost 200 fish species, with over 90 percent relying on coastal marshes at various life stages. Numerous fish species spawn within these wetlands during the early spring, encompassing well-known game fish like northern pike, muskellunge, yellow perch, and largemouth bass (Albert, 2003: page 96). Whitefish, known as Adikameg in Anishinaabemowin, utilize the coastal wetlands. Adikameg, also called “caribou of the sea,” are an important relative to the Sault Tribe Anishinaabe, providing a staple food for generations. (Sault Tribe Member, personal communication, April 14, 2024). Wild rice, or Manoomin, also calls the coastal wetlands home, growing in the slow moving and protected waters. Manoomin, or good berry, is vital to the Ojibwe origins (GLIFWC n.d.). Tradition is that the Ojibwe were told by the Creator to travel east until they reach where the food grows on the water. This journey eventually guided them to the shores of Lake Superior and the northern inland lakes of Michigan, Wisconsin, and Minnesota, where vast expanses of Manoomin thrived abundantly. Regarded as a gift from the Creator, Manoomin became a nutritious staple in the Ojibwe diet and remains an important element of culture and ceremonies today (GLIFWC n.d.). In the Bahweting region, changes in hydrology from dredging and shipping activities as well as pollution have disturbed the Manoomin conditions and suitable habitat is rare now (GLIFWC n.d.).



Duck Lake beaver lodge in April 2024.



# 1.3 HISTORICAL AND EXISTING ECOLOGICAL CONDITIONS OF THE PRESERVE

## HISTORICAL AND EXISTING VEGETATION COVER

Historically the island had suffered from heavy logging, Sault Tribe members shared stories about this era and also mentioned that historically there was less residential development. The Preserve has not been heavily developed, though it has been logged long ago, it's currently the largest protected forest on Sugar Island. According to the Michigan Natural Features Inventory (MNFI), the vegetation cover of the preserve from 1816 to 1856 was predominantly aspen birch forest with a combination of smaller portions of mixed conifer swamp, shrub swamp/emergent marsh, and hemlock white pine forest (MNFI, 1997). In 1934, one of the more notable features of the Preserve that was described was the “terrace-like series” of ancient beaches from older and higher lake or river levels, which appeared to have a significant influence on the forest cover and other vegetation (Steere, 1934).

The highest and most well-drained portions of the shore was covered by maple forest, while the lower terraces which were often quite flat resulted in poor drainage and various types of bogs and swamps characterized by cedar, spruce, and black ash. Tamarack-alder swamps and open bogs and marshes typically occur above the present river and lake level. Extensive stands of pine were not commonly noted during that time and are typically limited to sandy or stony ridges (Steere, 1934).

The southern end of the Island, where the preserve is located, the area is historically described as made up of erratic boulders and rock fragments ranging in size from pebbles to blocks six feet high. These present a favorable habitat for many bryophytes (Steere, 1934). As a result of the humid forests and boulders, the Preserve is peculiarly rich in mosses and hepatics. It was noted in 1934 that mosses previously only known to be present on Isle Royale, MI were found on Sugar Island (Steere, 1934). A thorough survey is needed of the Preserve to evaluate existing vegetation. From walking interviews on the Preserve, Sault Tribe members identified many important species and were especially impressed with the big White pines which are rare to find on the Island. A member of the student team conducted a brief reconnaissance plant survey on the main preserve trails, see Appendix D for species list and results.

## HISTORICAL AND EXISTING ANIMAL HABITATS

The following section provides an overview of the historical animal records and narratives discovered within the preserve. Snowshoe hare and marten are two small mammals known to historically and currently exist on Sugar Island (de Vos et al, 1951). Sightings of moose, lynx, gray wolf, white-tailed deer, marten, snowshoe hare, coyote, and ermine have been described by Sault Tribe members. In 1949, four main types of small mammal habitats were recorded on the Preserve:

1. Mixed upland forest of spruce, balsam, white pine, and paper birch, with an understory of moose-wood, mountain maple, and sugar plum
2. nearly mature bog forest of spruce, balsam, red maple, and black ash
3. upland rocky hillsides with an open forest of large toothed aspen, white pine, paper birch, balsam, and spruce
4. black spruce bog.

A study of occurrence records of large mammals on the Preserve was conducted primarily in 1951 by Joseph Andrews, Sault Tribe member and caretaker of the Preserve, in collaboration with Professor W. F. Ramsdell (School of Natural Resources, University of Michigan) and Dr. C. W. Creaser (Wayne State

University) (De Vos et al., 1951).

During the informal interviews, several tribal members noted how a large percentage of their food came from small and large game on the Island. On the Preserve, participants also talked about trapping and hunting small game, such as mink or muskrat, as well as white tailed deer and waterfowl on Duck Lake. Fishing was also a consistent occurrence on the Preserve for Sault Tribe members (Interviews and Listening Session, 2023).



A fern understory and mixed conifer overstory on the northwest portion of the Preserve in July 2023.

# 1.4 CURRENT AND ONGOING RESEARCH IN THE EASTERN UPPER PENINSULA OF MICHIGAN

## SAULT TRIBE NATURAL RESOURCES DEPARTMENT

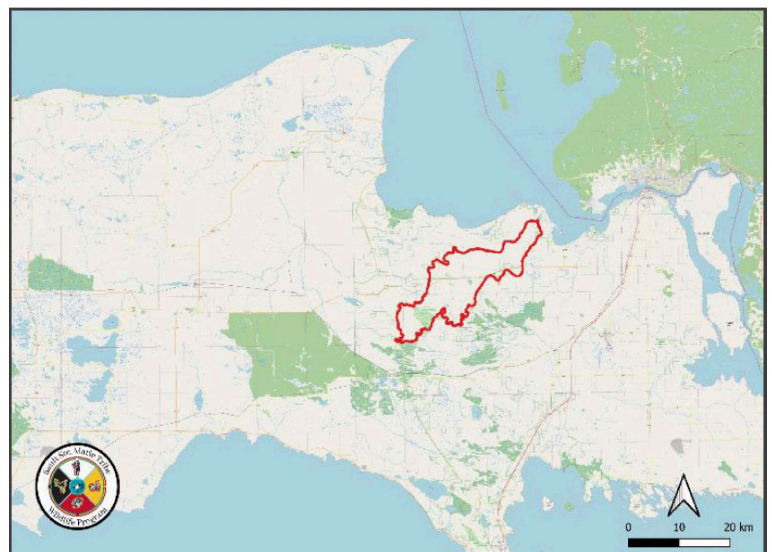
Founded in 2008, the Sault Tribe Inland and Fisheries Wildlife Department (Wildlife Department) conducts extensive research, monitoring, and permitting in the 1836 ceded territory, particularly in the eastern Upper Peninsula and St. Marys River waterways. The Wildlife Department has dozens of research projects and over 30 research partners including the Bureau of Indian Affairs, Environmental Protection Agency, United States Forest Service, Bureau of Land Management and several Universities. The target species of the research are crucial to the coastal wetland and hemiboreal habitats of the region, and vital to Sault Tribe’s collective continuance responsibilities to their non-human kin.

The following section outlines current and ongoing work conducted by the Wildlife Department. The geographic scope for this research includes the western portion of Bahweting, near the Raco Sandplains and eastward towards Sugar Island and its surrounding waters.

## HEMI-BOREAL FOREST RESILIENCE

Much of Sault Tribe research has been focused on restoring hemi-boreal forests. Over the past decade, the Sault Tribe has collaborated with the U.S. Forest Service (USFS) on various projects. In 2023, the Sault Tribe entered into a Tribal Forest Protection Act (TFPA) agreement with the USFS, allowing for co-management of approximately 900,000 acres of the Hiawatha National Forest, located about 30 miles from Sault Ste Marie. As the majority of the Hiawatha Forest has historically been planted for timber harvest, the focus of the TFPA is to enhance and restore boreal remnant communities through cultural fire and silvicultural practices (TFPA, 2022).

In 2019, the Sault Tribe Wildlife Program initiated the Ishkode Project, in collaboration with the USFS and the Inter-Tribal Council of Michigan. Ishkode, meaning fire in Anishinaabemowin, is an essential component in Sault Tribe Anishinaabe life, creation stories, and teachings. The Ishkode project area is entirely within the Hiawatha National Forest in the Bahweting region (see Figure 1), consisting of seventy-two sites that were monitored for vegetation abundance, regrowth, and mammal occupancies. Tribally-important species, such as gray wolf, sharp-tailed grouse, white-tailed deer, and snowshoe hare were all detected in the burned Ishkode Project areas (Sault Tribe Wildlife Program, 2019). The Ishkode Project aims to build and implement adaptive strategies that are based on indigenous and western science based information. The framework was built



**Figure 4:** Ishkode Project area. *Ishkode Project Ecological Monitoring Framework: Field Data Collection.* (2022). Sault Ste Marie Tribe of Chippewa Indians.

on Indigenous relational understandings of ecological systems and relationships with people, plants, wildlife, and ecosystem dynamics as having agency, dependency, and reciprocity towards one another.

A community engagement report was conducted by the Sault Tribe Wildlife Program and the Inter-Tribal Council of Michigan staff with elders, cultural staff, and regional Anishinaabeg to:

1. better understand past and present Anishinaabe relations with Ishkode on the land
2. enhance Wildlife Program and local Anishinaabeg communication and collaboration on Wildlife Program activities
3. guide Wildlife program fire management planning on tribal and federal forest lands

The Ishkode community engagement report was used to inform and advise the Ishkode fieldwork report based predominantly on Western science field methodologies.

As discussed in Section 1.2, Dr. Robin Michigiizhigookwe Clark, Sault Tribe Natural Resource Director, has conducted significant research with Giizhik relatives (2021; Clark et al 2022). Her research discusses the importance of understanding site conditions and strategies that promote Giizhik recruitment. A key strategy shared are exclosures or tree protectors to reduce herbivory pressures. Giizhik are known as elder beings and teachers, who share medicines, materials, and teachings with Anishinaabe and other Peoples in North America. Survey methods revealed that large diameter Giizhik are more likely to exist on federal and state lands than Tribal, partially due to reservation lands usually being less desirable parcels (Clark, 2021). Management recommendations to promote Elder beings include: Multi-scale forest management planning, Support intergenerational forest community wellbeing, and Inventory cedar and manage harvest. Dr. Clark's ongoing impactful work has resulted in an outcome of official Giizhik harvest protocols for the Tribe in 2024. Having these clear protocols for harvesting will promote continued sustainable relationships between Anishinaabeg and Giizhik. Additionally, the Wildlife Department has conducted several research projects with Giizhik relations including deer exclosures to examine herbivory effects of white tailed deer, and Giizhik seedling propagation for restoration efforts.

## **COASTAL WETLANDS**

***Non-local being removal*** Sault Tribe has implemented many strategies to conserve and restore coastal wetlands and Bahweting waterways like non-local being management and fish rearing. A major threat to these habitats are non-local animals and plants because they crowd out native species and change habitat conditions. Their presence is often a result of human actions and habitat alterations. The Wildlife department seeks to encourage native species establishment by implementing restoration practices. These practices are informed by the monitoring research conducted. The Wildlife department has surveyed non-local beings within the public coastline from the Sault Locks to Dunbar, MI. As of 2023, the Wildlife department has treated nearly forty acres of non-local beings from coastal wetlands without herbicide use, including narrow leaf cattail, European frogbit, and purple loosestrife. Treatment of these waters benefits many species. Marsh birds can be used to indicate habitat quality in the region. The Wildlife department tracks occupancy of marsh birds and waterfowl at thirty sites along the coastline. The treatment of the non-local beings restores migratory bird nesting and foraging habitat and potential sites for Manoomin (wild rice) restoration. This research aims for populations to become healthy enough to meet ecosystems and tribal collective continuance needs. The Wildlife department continues to monitor seeding areas in an attempt to restore the culturally significant food source of Manoomin. In partnership with University of Wisconsin, Sault Tribe researchers have conducted water and sediment sampling to examine Manoomin chemical and environmental preferences, such as optimal planting density and depth, and predation by fish and wildlife.

Starting approximately in 2020, Sault Tribe has been seeding coastal wetland areas with Manoomin. To date there are nearly thirty acres seeded, with several sites having been re-seeded in subsequent years to bolster the emerging populations. Sites of the Manoomin seeding include Round lake in the Hiawatha National Forest, Munuscong Bay and Allards Bay off the St Marys, and Baie De Wasai and Shingle bay on Sugar Island. In 2021, more Manoomin work was done on Sugar Island, including on the Preserve. The Sault Tribe is not only focused on restoring healthy Manoomin populations but also actively fostering inter-Tribal cooperation in Manoomin stewardship. Through initiatives like the Midwest Tribal Wild Rice Collaborative, Tribes are collaboratively setting goals and objectives aimed at establishing a framework for Manoomin restoration and conservation across the Great Lakes region. The ultimate aim is to publish a comprehensive regional Manoomin stewardship plan, developed in partnership with Tribes from across the Midwest.

***Giigoonh (fish) restoration*** The treatment of non local beings benefits the birds, Manoomin, fish, and others. Many Giigoonh (fish) use the coastal wetlands and surrounding tributaries as a nursery and for food. Adikameg, or whitefish, is culturally and ecologically significant to the Sault Tribe, they even have a role in the creation story for the Tribe. The introduction of non-local species such as quagga mussels have reduced Adikameg populations since the 1980s. Quagga mussels filter zooplankton from the water, which is the food source for immature Adikameg; with reduced food sources the population has suffered. Through the use of an underwater remote operated vehicle that records video and photo, Sault Tribe has been able to better understand the effects of non-local mussels in Ceded territory waters. Visuals produced by their work have revealed wall-to-wall mussels on the lake bed. To monitor populations in the ceded territory Giigoonh populations are estimated via gillnet surveys, electro fishing and hook and line collection. This data also helps inform when and where spawning sites are located. All of this information helps inform Giigoonh restoration efforts. The Sault Tribe has a very successful fish hatchery operation for walleye and Adikameg. In total, an estimated 6,000 fish have been raised in the Sault Tribe's whitefish grow-out ponds. As of 2024, the rearing of whitefish in grow-out ponds is a novel approach and the Sault Tribe is the only wildlife department in the country attempting it.

## **UNIVERSITY RESEARCH ON THE CHASE OSBORN PRESERVE**

A timeline of the University's work on the Preserve was produced by the team through research and faculty outreach efforts. The team connected with the former director of the University of Michigan Pellston Biostation (Pellston Biostation), who was able to share about the few activities that happened on the preserve during their tenure from 2003 to 2010. During this time Pellston Biostation facilitated numerous classes, researchers, and even the School for the Environment and Sustainability new student orientation every August. A group of approximately five PhD students conducted research at the Pellston Biostation and periodically stayed at the Gander Cabin on Chase Osborn Preserve during the summer months. Although sporadic, University researchers continue to utilize the cabins on the Chase Osborn Preserve. Another project on the Preserve was a weather monitoring research project that took place, although details regarding its leadership and outcomes were not possible for the research team to obtain. Equipment from this past project still stands along the downshore trail leading from the Gander cabin to Duck Island.

During 2001 and 2015, The Pellston biostation facilitates numerous classes, researchers, and even the School for the Environment and Sustainability new student orientation every August. But use of the Chase Osborn Preserve is very sporadic. We know there was a weather monitoring research project that took place, although details regarding its leadership and outcomes remain elusive. Equipment from this past project still stands along the downshore trail leading from the Gander cabin to Duck Island. During

2003 to 2010, there was a small group of approximately five PhD students conducting research at the Pellston biostation and periodically stayed at the Gander Cabin on Chase Osborn Preserve during the summer months. Although sporadic, UM researchers continue to utilize the cabins on the Preserve, albeit without a steady presence.

The team has identified one current ongoing research project on the Preserve: a tree survivorship study advised by Dr. Ibanez since 2014. The study measures trees across two plots, one located within the forest and one by the cabin, once a summer. The plot within the forest has had 100% mortality while the tree plot near the cabin is ongoing. It was mentioned with researchers on this project that the more than 10,000 acres of forest at the Pellston Biostation is a closer site for tree research and therefore more utilized instead of the Chase Osborn Preserve.

Conversations with members of the family who used to live on the Preserve as caretakers revealed that there was a time in the mid 1900s when Governor Chase Osborn was present the University was utilizing the preserve for summer research, including students staying at the preserve for extended periods.

## **SAULT TRIBE AND UNIVERSITY OF MICHIGAN COLLABORATIVE RESEARCH IN THE EASTERN UPPER PENINSULA**

The Sault Tribe and the University are currently working on expanding their partnership through collaborative projects in the Eastern Upper Peninsula, including gray wolf monitoring, Indigenous fire stewardship, and Manoomin.

1. Dr. Paige Fisher leads the Western Forest Fire Initiative (WFFI) at the University of Michigan. The WFFI has been working with the Sault Tribe, USFS, and Michigan Technological University since 2023 to develop models for restituting indigenous fire stewardship, elevate tribal priorities in federal land management, and produce strategy planning resources for other tribes interested in restoring indigenous and cultural fire practices.
2. University of Michigan Ph.D student Jason Hagani is working with the Sault Tribe Wildlife Department to use remote sensing to monitor the effects of prescribed fire regimes on gray wolf and prey populations in the eastern Upper Peninsula, showing the interconnected relationships between the fire and these species.
3. The University has a team of master's students working with the aforementioned Midwest Tribal Wild Rice Collaborative on a 2024-2025 project to help develop a framework for guiding Manoomin restoration and conservation in the Great Lakes region. Sault Tribe is an active member within this collaborative.

We see here the breadth of research and management being done in the region by the Sault Tribe Anishinaabe, who have been managing these landscapes since before the ice age (DeVoy, 2023). Sault Tribe Anishinaabe scholar Dr. Robin Michigiizhigookwe Clark writes "The forests that serve as models for forest restoration were co-developed by Indigenous peoples, plants, wildlife, wind, water, and fire, as cited in (Kimmerer 2000, Turner et al. 2000, Kimmerer and Lake 2001). Anishinaabeg were responsible for co-developing many of the standards that contemporary forest restoration seeks within the Great Lakes region" (Clark, 2021). This shares how today's standards of restoration are based on ecosystems that have always been actively managed by Indigenous Peoples. The Sault Tribe Natural Resources department is prepared to oversee additional lands and has formulated research projects. Following discussions regarding the Preserve between UM and the Sault Tribe, the Tribe bought the neighboring parcel for \$1 million, anticipating future collaboration.

## 1.5 FINDINGS AND RECOMENDATIONS

The following section states overall findings and recommendations to the University of Michigan discovered through our ecological literature review. The following recommendations were compiled from a review of past, present, and future conditions and uses of the Preserve under the University of Michigan ownership and management. Our findings suggest that a change in tribal ownership of the Preserve would help restore tribal relationships and connections to the land, as well as support research aiming to revitalize and promote effective management of key hemiboreal species and ecosystems.

**FINDING 1:** Sugar Island is foundational to Anishinaabe history, culture, and origins of the Sault Tribe of Chippewa Indians

**RECOMMENDATION 1:** The University should increase tribal lands to restore relationality and support efforts for collective continuance for the Sault Tribe.

**FINDING 2:** The Anishinaabe has been pivotal in the cultivation of the hemiboreal forest and coastal wetland ecosystems in Bahweting for millenia, which are currently in decline from displacement and dispossession of lands caused by settler colonialism, which have only been further exacerbated by climate change.

**RECOMMENDATION 2:** The University should increase tribally-led monitoring for these species on the Preserve for restoration and preservation of hemiboreal forest and coastal wetland ecosystems.

**FINDING 3:** The Sault Tribe Natural Resource Department is currently among the leading natural resource departments across the Upper Peninsula with demonstrated expertise in monitoring, permitting, and management of land spanning over 14 billion acres of the 1836 Treaty of Washington ceded territory. The Natural Resources Department has extensive research and management knowledge of the regional area and has clear capacity to steward and manage the Preserve.

**RECOMMENDATION 3:** The University should extend ownership, stewardship, and management of the Preserve to the Sault Tribe for continued research, management, and collaboration in Bahweting.

**FINDING 4:** The Sault Tribe Natural Resources Department has also been invited into multiple collaborative partnerships with the USFS, BIA, and BLM for expanded research and management opportunities on large contiguous parcels of land such as the Hiawatha National Forest. Engaging in research partnerships has been mutually beneficial for the Sault Tribe and its partners.

**RECOMMENDATION 4:** The University should extend a partnership with the Sault Tribe Natural Resources Department on the Chase Osborn Preserve for collaborative indigenous-led research, such as the Center for Cooperative Ecological Resilience (CCER).

**FINDING 5:** In the past, the University has conducted research and class trips on the Preserve but is currently less active.

**RECOMMENDATION 3:** Continued research and restoration of the Preserve would be stronger under Sault Tribe ownership and stewardship. A formal public commitment would accelerate tribal ownership of the Preserve and bolster a development work plan for collaborative partnerships on the Preserve. Partner and collaborate on more projects through CCER with the Sault Tribe on the Preserve.



Pink lady slipper flower (*Cypripedium acaule*) blooming on the Preserve in June 2023.



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**CHAPTER TWO:**

**PRELIMINARY ECONOMIC  
ASSESSMENT OF OPTIONS FOR  
THE STEWARDSHIP OF THE CHASE  
OSBORN PRESERVE**

# CHAPTER TWO: PRELIMINARY ECONOMIC ASSESSMENT OF OPTIONS FOR THE STEWARDSHIP OF THE CHASE OSBORN PRESERVE

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## **2.1 INTRODUCTION**

### **PURPOSE**

This report presents a preliminary qualitative economic assessment of strategies for managing the Chase Osborn Preserve, a 3,000-acre property on Sugar Island. Since 1930, the University of Michigan (UM) has overseen the Preserve, currently under the management of the University of Michigan Biological Station (Biostation) (Arbic, 1992). The current scenario, where the Preserve is managed by the University of Michigan Biological Station (Biostation), will be compared to a scenario where the Sault Ste Marie Tribe of Chippewa Indians (Sault Tribe) owns the land. The methods of analysis include a qualitative Cost-Benefit Analysis (CBA) and an evaluation informed by Indigenous economics. Western and Indigenous methods are used to analyze the multifaceted ways that people are in relationship with this land. This document was prepared for the Sault Tribe leadership and community, in hopes that it will be useful in their engagement with the University of Michigan and other stakeholders. This analysis was prepared as part of a University of Michigan School for Environment and Sustainability capstone project, over the period of January 2023-April 2024.

### **METHODS**

The research methodology involved conducting interviews and community listening sessions with Sault Tribe members and community stakeholders. This was supplemented by archival research including the UM Bentley Library, the UM Biological Station Library and Archive, the Lake Superior State University Kenneth J. Shouldice Library, and municipal archives, and consultations with advisors. The estimates about University of Michigan usage were based on information gathered at a June 2023 meeting of UM and Sault Tribe leadership on Sugar Island, and conversations and exchanges with current and former UM Biological Station Directors Dr. Aimee Classen (current) and Dr. Knute Nadelhoffer (2003-2020).

Interviews formed the cornerstone of the analysis, conducted with Sault Tribe members having ancestral ties to Sugar Island. Interview summaries were reviewed and approved by participants, and informed a listening session held at the Mary Murray Culture Camp in November facilitated community engagement and participatory mapping exercises. Consent protocols were meticulously established and adhered to throughout the research process, ensuring transparency and respect for participant autonomy. The listening session, which included breakout discussions and participatory mapping, provided an opportunity for community members to share their histories and future hopes for Chase Osborn Preserve management.

### **CONSENT PROTOCOLS**

The team established and executed consent protocols regarding information from the archives, interviews, and qualitative data. Before initiating interviews, participants were briefed on the process, with the research team documenting conversations and providing summaries for review. Follow-up calls and email correspondence ensured accuracy and participant validation. Final outputs, including interview notes and session insights, were shared with participants, who were assured of the voluntary nature of their involvement and their right to withdraw at any time. Consent was obtained verbally or via email, with a commitment to anonymize any shared findings, quotes, or themes. Plans are in place to transfer relevant materials to Tribal members or their relatives.

## 2.2 CHASE OSBORN PRESERVE: HISTORY AND PRESENT USES

### BACKGROUND AND HISTORY

The Anishinaabeg (“Original People” or “Good Beings”), indigenous to the Great Lakes region for millennia, have stewarded Zisibakwato Minis, or Sugar Island, and the surrounding area known as Bahweting, for generations (Benton-Banai, 1988; Sault Tribe, 2021). The Sault Tribe’s ancestors were originally Anishinaabeg fishing tribes whose settlements specifically spanned the upper Great Lakes (Lake Superior, Lake Michigan, and Lake Huron), the St. Marys River, and the Straits of Mackinac (Sault Tribe, 2021). Historically, Sugar Island was a key part of a thriving regional economy involving manoomin harvesting, birchbark and dugout canoe making, and more (Arbic, 1992). Despite enduring threats from colonial forces, including the loss of sovereignty and land, the Anishinaabeg persisted, eventually forming what is now known as the Sault Ste. Marie Tribe of Chippewa Indians (Sault Tribe) (Arbic, 1992; Sault Tribe, 2017).

Families of current Sault Tribe members have been on Sugar Island for periods of time ranging from seven generations back to simply “forever” (Interviews, 2023). Anishinaabeg have a deeply rooted relationship with the land and the living and nonliving beings residing on it (Whyte 2018). Potawatomi scholar and activist Dr. Kyle Whyte introduces the concept of collective continuance as “a society’s overall adaptive capacity to maintain its members’ cultural integrity, health, economic vitality, and political order into the future and avoid having its members experience preventable harms.” (2018: 355). Distancing and isolations from lands have resulted in the severing of relationships and relationality to their relatives, as well as ways of being as it disrupts ancestral connections and access to land (Tynan, 2021; Whyte 2018).

Sault Tribe has the largest number of enrolled members (55,000) east of the Mississippi River, but maintains roughly 4,500 acres of land in trust, or under a tenth of an acre per member (Sault Tribe 2021). However, Sault Tribe actively preserves its cultural heritage and stewards over 5 million acres of ceded lands in Michigan’s Upper Peninsula (Sault Tribe, 2021). Practices of collective continuance are evident through governance structures and community networks of care. The ongoing threat of colonization, particularly land loss, undermines the Anishinaabeg’s relational ties to their ancestral lands and non-human kin, imperiling their societal resilience (Whyte, 2019).

### UNIVERSITY OF MICHIGAN HISTORY AND CURRENT USES

For nearly 100 years, the University of Michigan has managed the land of the Chase Osborn Preserve, donated by former . Regent of the University of Michigan (1908-1911) governor of Michigan (1911-1913) Chase Salmon Osborn (Governor Chase Salmon Osborn [1860 - 1949]). Osborn bought multiple parcels of land on Sugar Island from different owners, totaling roughly 3,000 acres (Arbic, 1992). He spent summers living on the island, and had multiple buildings constructed near Duck Lake and Duck Island, on the eastern side of the Preserve, including cabins and a library. Osborn presented the land that would become the Chase Osborn Preserve (Preserve) as a gift to the University of Michigan in 1929, with the intent to use the Preserve for research, and the UM School of Forestry and Conservation began administering the land in 1930 (Shackelford, 1982). The Preserve now falls under the management of the University of Michigan Biological Station (Biostation), a part of the Literature, Science, and the Arts program (LSA)

The main Biostation property is located in Pellston, MI, and is a fully operational, 10,000-acre research facility, with over 150 buildings, including a laboratory, a molecular lab, atmospheric research towers, and student lodgings (Research Facilities, 2024). The Preserve is the Biostation's only auxiliary property, about 100 miles north of the main campus in Pellston.

The Biostation is used by hundreds of students yearly, as well as professors and other researchers; usage of the Preserve is much more sporadic. From 2003 to 2010, PhD students conducted research at the UM LSA Biostation and spent a few weeks on the Preserve (Nadelhoffer, 2024). Although UM researchers use the Preserve occasionally, there is not a consistent group of researchers using the area now. In 2014 Dr. Ines Ibanez, a SEAS faculty member, directed the planting of two tree plots on the Preserve, one of which is monitored yearly (Ibanez, 2024).

Maintenance of the Preserve has dwindled since the latter 20th century. Osborn and, later, the University, hired Sault Tribe members as Preserve caretakers, but since the mid-1990s, there has been no full-time staff on site. Biostation employees have acted as part-time caretakers for the Preserve over the past 20 years, with approximately \$10,000 of their salaries going to Preserve work (Salary History, 2021). The Biostation has occasionally spent money on maintenance: lawn mowing, removing trees, and other discrete tasks ( Nadelhoffer, 2024). The University of Michigan Biostation website references the Stellanova and Chase S. Osborn Endowment fund which is used to support research and preserve maintenance costs (Research Facilities, 2024).

The Preserve, distinguished by its unique hemiboreal and coastal wetlands ecosystems, stands as a vital ecological asset within the region, and the Preserve is the largest contiguous protected area on Sugar Island (Great Lakes Access, 2016). Designated as a "Nature Resource Area," its protection from extensive manipulation or development is ensured by the University of Michigan (Research Facilities, 2024). A majority of the Biostation land, including the Preserve, is designated as "Nature Resource Areas" (a designation created by UM) to preserve the natural space. The designation prevents manipulative research experiments, development, and harvesting on a large scale, enforced by UM itself (Research Facilities, 2024; Nadelhoffer, 2024). However, its remote location poses challenges for research utilization by UM

## **SAULT TRIBE USES OF THE PRESERVE**

Though owned by the University of Michigan for nearly a century, the Preserve (and Sugar Island more broadly) hold significant cultural and historical importance for the Sault Tribe, and many families continue to reside and engage in traditional activities on the island (Interviews, 2023). Chase Osborn employed at least two Sault Tribe members on the Preserve, who served as Osborn's personal caretaker and the Preserve caretaker: brothers Charles and Joseph Andrews, respectively. Both brothers continued maintaining the Preserve after Osborn's death in 1949.

During the Chase Osborn era and after, engagement on the Preserve by Tribal residents and non-Tribal visitors was high, though it was on Osborn's terms. Joe Andrews and his wife raised eleven children on the Preserve, living in one cabin for the summer and another for the winter. Two of his children succeeded him in the role of Caretaker of the Preserve (Interviews, 2023). They previously had a sugarbush at the south end of the Preserve, and many Sugar Island residents and Sault Tribe members recall fond memories of Joe showing them around Duck Lake (Interviews, 2023). Traditionally, Sugar Island provided sustenance and resources for the community, with activities like fishing, gathering, hunting, and sugarbushing ingrained in the island's cultural history (Listening Session, 2023).



Today, individual members of the Sault Tribe are legally able to use the Preserve for recreation without any expenditure on their part, and some Tribal members do (Listening Session, 2023). Tribe members noted various ways they are aware of the tribal community accessing the Preserve at present, including hiking, hunting, and fishing (Listening Session, 2023). However, this is sporadic and limited: some interviewees mentioned avoiding the Preserve, in its current, less-maintained state, while others, some of whom grew up on Sugar Island, had never visited (Listening Session, 2023).

Today, while some Tribal members utilize the Preserve for recreational purposes, access barriers such as ferry costs and private land restrictions hinder broader engagement (Listening Session, 2023). Without close access to culturally relevant species that historically grew in areas local to communities, tribal members must travel further distances to maintain cultural practices (Clark et al, 2022).

As one example, the ability to grow and access manoomin (wild rice) was guaranteed to Anishinaabe people in treaties they signed in the 19th century—not just any rice, but the ability to grow wild rice on their ancestral land that is the “very essence of the resource” (Whyte 2018: 347). This is of paramount importance to Anishinaabe people: “Twentieth century scholars have maintained that the entire indigenous legal system designed by the Anishinaabe was for to protect wild rice in its habitat, noting that ‘what serves the rice is law; what harms the rice is illegal’” (Andow et al, 2009). Sault Tribe members have memories of manoomin growing on Duck Lake in the past, but it has not been found on Sugar Island as a whole for most of this century (Listening Session, 2023). Although there are many Anishinaabe bands in the Great Lakes region still able to grow wild rice on their ancestral lands, including the Bay Mills Indian Community, just 30 miles west, for the Sault Tribe this connection has been broken.

Despite limited land, the Sault Tribe Natural Resources Department is engaged in projects in the Bahweting area, the Hiawatha National Forest, and throughout the eastern Upper Peninsula. The Wildlife Program is working to assess ruffed grouse habitat use in the face of climate change, understand the ecological response to prescribed fire, and restore the St. Mary’s River coastal marsh, and has access to significant amounts of grant funding to implement these projects (Wildlife Program, 2024). As a result, the department engages in this work by negotiating with state and federal land agencies to harvest plants, conduct prescribed burning, and contribute to stewarding the land for present and future generations.

## 2.3 INDIGENOUS AND WESTERN APPROACHES TO ECONOMICS

The impact of settler-colonialism has shaped the economic landscape for Indigenous peoples, necessitating engagement with Western market economies. Dr. Ronald Trosper, economist and member of the Confederated Salish and Kootenai Tribes of the Flathead Indian Reservation, in *Indigenous Economics* (2022), demonstrates how Indigenous peoples maintain their multifaceted understanding of personhood, relationships, and land (2022:88). Acknowledging that the vocabulary is imperfect, this paper uses a variety of terms to attempt to capture relationships to land.

Indigenous economies are centered on relationality and reciprocity, “grounded in the social, political, and ecological relationships to which they are held accountable” (Pasternak, 6). Trosper demonstrates the wide-ranging implications of viewing economic theory through the lens of relationships: the ultimate goal is “buen vivir” (the good life in Spanish) or *Minobimaadiziwin* in Anishinaabemowin.

There is a robust body of knowledge and western research literature that demonstrates that Indigenous practice and governance of lands and landscapes generally outperform private and government-held lands on biodiversity and climate-related metrics (Blackman and Veit, 2018, Ellis et al 2021, Fischer et al 2023, Pearce, 2023). Notably, the land that the Tribe manages shows a higher proportion of native species: 600 acres of land in the town of Sault Ste. Marie have bear and snowshoe hare populations because of the way the Tribe stewards the land (Interviews, 2024). For the Sault Tribe, preserving land, water, and all beings is paramount, reflecting reciprocal approaches to environmental justice and sustainability. Essential to adapting and living with climate change is the accumulated and shared knowledge of Indigenous people over millennia (Fischer et al, 2023).

## 2.4 ANALYSIS OF STEWARDSHIP OPTIONS

### QUALITATIVE COST–BENEFIT ANALYSIS

The following analyses evaluate impacts of transferring management of the Chase Osborn Preserve to Sault Tribe. The first is a qualitative cost-benefit analysis that examines benefits and costs of full Tribal ownership to both the University and Sault Tribe. Unlike a traditional cost-benefit analysis, value is not monetized; the qualitative nature of this analysis is intentional.. Some benefits of Tribal management are tangible, such as an increased number of foods that tribe members have access to from natural sources (Harvest and Effort Report). Others, such as increased ability to pass down knowledge, are difficult to measure. The table is an attempt to summarize and consolidate the knowledge that Tribal members shared over a series of interviews and community gatherings in 2023 and 2024.

Though analysis was conducted on the full ownership scenario, many of these benefits and costs would be present under co-management. The degree to which many of the benefits can be realized would depend on the terms of the co-management agreement.

## Cost-Benefit Analysis: Land Returned to Sault Tribe Management and Ownership

Indicator	Benefits to UM	Costs to UM
<b>Ecological/ Land management</b>	Opportunity for UM to learn and partner with Sault Tribe to learn land management techniques informed by Traditional Ecological Knowledge (TEK)	Loss of some use value: UM will lose the opportunity to unilaterally control present and future uses of the Preserve
<b>Research</b>	Opportunity for UM affiliates to learn about Indigenous management and conduct research in partnership with the Sault Tribe, in a Tribally managed research forest. Eliminates distance as a limiting factor for research when partners are close by and deeply motivated	UM will not be able to solely dictate research priorities
	Providing increased Indigenous-led research opportunities could result in more Native students at UM	
<b>Cultural</b>	A start in reconciling historical injustices associated with UM founding: Anishinaabe people were first ones to endow the University with land, and the treaty they made was not upheld	
	UM has a stake in the wellbeing of MI residents, and this will increase wellbeing	
	Opportunity for UM to position itself as a leader in University-Tribal land relations.	UM may perceive this as opening the door to other discussions of land return.
<b>Economic</b>	Possibility of leveraging the Tribal partnership to bring in new funding streams for the University	Loss of option value: UM would no longer be able to use the land as collateral or profit from its theoretical sale
	UM will no longer be responsible for caretaking and maintenance costs	
<b>Ecological/ Land management</b>	Sault Tribe can prioritize restoring healthy ecosystems of culturally important plants such as manoomin (wild rice) and giizhik (Northern white cedar), in areas of their historic range where they are not currently present	Increased land management and maintenance costs to Sault Tribe
	Tribe can conduct restoration measures like prescribed burning and other land management techniques informed by Traditional Ecological Knowledge (TEK), that will increase ecosystem resilience and carbon sequestration potential	
	Tribe can expand and deepen projects working to protect threatened species like ruffed grouse and snowshoe hare, as well as coastal wetland habitat restoration—they are already working to do this on state and federal land	

Indicator	Benefits to Sault Tribe	Costs to Sault Tribe
<b>Research</b>	Increased opportunities for Sault Tribe students and scientists to conduct place-based, Indigenous research, investigating questions and employing techniques that are meaningful to their communities	Increased research costs (money, time, etc) for Sault Tribe
	Sault Tribe can demonstrate to the larger ecoregion how to manage forest health in a way that doesn't just look at timber production, but from a holistic ecosystem perspective.	
	Having a Tribally-managed research forest and consortium opens up new research possibilities and partnerships, as well as funding streams	
<b>Cultural</b>	A start in reconciling historical injustices associated with UM founding	
	Food: Access to land for hunting and gathering food species could increase the number of meals that Tribe members get from natural sources, which is something the Tribe is already measuring (Harvest and Effort Report).	
	Medicine: Tribal members would be able to freely gather medicine on the Preserve, without having to go through state and federal regulations	Increased permitting and tracking through Sault Tribe DNR
	Ceremony: The Tribe currently lacks sufficient space for fasting and release ceremonies on Sugar Island, and this would allow for those as well as increased culture camps on Tribal land	Monetary costs associated with increased programming
	More opportunities for Tribal elders to pass down knowledge of plants, animals, human history on Chase Osborn Preserve.	
<b>Economic</b>	More land to work on means more opportunities for projects, which means more opportunity to apply for and receive outside funding, and hire and retain internal staff, which leads to more money, which can be used to buy more land, etc. Based on the amount of grant funding that the Natural Resources Department is already able to leverage, this could be on the order of millions of dollars a year	Increased financial costs for Sault Tribe, for land management and research.
	Sault Tribe will have more power to determine economic priorities for land, to orient around culturally relevant species such as giizhik (Northern white cedar) and manoomin (wild rice)	
	With increased land access there is more opportunities for self-determination of all members of the community, to self-determine "how to adjust to changes and challenges in ways that avoid preventable harms and support their freedom and aspirations (including those of nonhumans)." (Whyte 2019)	

## INDIGENOUS ECONOMIC ANALYSIS: TROSPER RELATIONALITY

In this section, the fifth chapter of Trospers' book *Indigenous Economics* (2022) is used to analyze the current and projected future relationships surrounding the Preserve. Economist Elinor Ostrom found that adherence to the principles listed in the table resulted in better land and public goods management, and Trospers builds on that framework by arguing that the same indicators can also be applied to the creation of relational subjects (Trospers 2022: 134). The value created from relationships, though seemingly nebulous, has tangible outcomes for all parties.

The table that follows rates the current UM management case, as well as projects for a co-management structure and full Tribal control, on the presence or absence of relationality indicators. Relationality and trust are extremely important metrics for collective continuance: Whyte notes that “[s]ocieties with high degrees of collective continuance are societies rich in reciprocal relationships across human and nonhuman members” (2019:56).

In his book *Indigenous Economics*, Trospers defines relationships as follows:

The persons in a relationship focus on creating and sharing relational goods that allow them to act in their mutual interest. Relational goods are trust, cooperation, peace, and similar primarily subjective things that contribute to sociability. When nature is included, the relational goods create a sense of stewardship that in turn promotes high productivity of the land, ecological resilience to external shocks, and the flourishing of all species. (pg. 5)

The indicators chosen for this analysis are based on those that Trospers identifies. The following table includes five indicators that address the formation of good relationships: collective choice arrangements, monitoring of users, monitoring of resource conditions, graduated sanctions, and conflict resolution. Five more indicators are simultaneously characteristics of relational goods and consequences of good relationships: “trust, identity, fairness, equity, and reciprocity” (Trospers 2022:130). Two additional indicators are related to governance: the minimal recognition of the rights of relational subjects to organize, with the state respecting their autonomy; and nested governance, or the idea that governance and the relationships between subjects exist in many layers (Trospers 2022:137). Reciprocal analyses of costs and benefits are supported by empirical evidence, with studies showing that empowered local governance is associated with positive outcomes in carbon sequestration and forest management (Fischer et al., 2023).

The “Under UM Management” column is an analysis of the current situation, while the other two columns are projections based on conversations with Tribal members, review of UM documents, and other research. In each column, relationality indicators are ranked on a scale from -2 (Not present) to 2 (Present). This ranking system is inspired by the *MauriOMeter*, a system developed by Maori scholars to measure the presence or absence of lifegiving attributes in an ecosystem (Morgan, 2017).

Indigenous Economics: Relationality Analysis of Chase Osborn Preserve			
Indicators	Under UM Management	Under UM/ Tribe Co-management	Under Full Tribal Ownership
	<i>Currently: Not present (-2), somewhat present (0), or present (2)</i>	<i>Likely to be: Not present (-2), somewhat present (0), or present (2)</i>	<i>Likely to be: Not present (-2), somewhat present (0), or present (2)</i>
<b>Overall: Forming good relationships</b>	Relationships between UM and Sault Tribe/ Sugar Island community were once present, but have eroded over the years with decreased UM engagement and investment on the land, and increasing barriers to community access. UM relationship to the land and its inhabitants is minimal, and Sault Tribe relationship to those beings has been lessened over time through perceived and real lack of access to the Preserve	Both parties, at a meeting in June in Sault Ste. Marie, expressed interest and hope at the prospect of future collaboration. There has been some renewed collaboration between Biostation employees and Sault Tribe members, beginning in the early 2010s.	Tribal members are still in relationship with Sugar Island, and the Chase Osborn Preserve to a lesser extent. Under full tribal stewardship, the Tribe will have the autonomy needed
Collective choice arrangements: "all persons affected by the operational rules of a common pool arrangement can participate in making and changing the rules"	Not present (-2): Sault Tribe members have no decision making power in managing the Preserve. Gates within the Preserve are closed, UM conducts maintenance it deems necessary, Biostation faculty and staff have infrequent contact with Tribal members.	Present (-1, 0, 1): An MOU would outline the terms of co-management, and the Tribe would have joint decision making power in determining Preserve usage	Present (2): Sault Tribe would be able to implement processes and structures to include "all persons affected," which could be interpreted more broadly than simply humans
Monitoring of users, by users or by appointed representative	Not present (-1): In the past, Sault Tribe members and, later, University staff served as caretakers for the Preserve, monitoring both resources and user behavior, but there has been no full-time caretaker and little monitoring since the late 1990s or early 2000s; one Biostation employee was listed as a .25 FTE on the Preserve until 2021 (Salary History, 2021). The University has installed gates on the Preserve, but rules around Preserve usage are not transparent. Signage notes that it is "Preserved for Teaching and Research" but does not make it clear that it is open to the public.	Present (1): Interviewed Tribal members expressed hope that, with whatever happens on the Preserve, there would once again be a caretaker for the Preserve. With increased community usage of, and investment in, the Preserve, and with more relational characteristics being present, more monitoring could be expected even without an officially designated person. (See Appendix 2)	Present (2): The Tribe would be able to install a caretaker, or whatever monitoring system they deemed appropriate, and would have the right to determine rights of different users
Monitoring of resource condition	Not present (-1): University of Michigan is not investing significantly in maintenance for the Preserve; trails are overgrown and difficult to find.	Present (1): Sault Tribe Natural Resource Department is ready and willing to engage deeply in management of the Preserve, to whatever degree they are able.	Present (2): Sault Tribe Natural Resource Department is ready and willing to engage deeply in management of the Preserve.
Graduated sanctions: minor consequences for uncooperative behavior serve to remind users of value derived from relationships	Not present (-2): There are signs around the Preserve prohibiting ATV use, but it is unclear to what degree this is enforced. No other rules are clearly laid out.	Present (1): With more activity on the Preserve, including Sault Tribe staff and possibly a caretaker, as well as a co-management outlining terms of the relationship between the Tribe and UM, there would necessarily need to be more clarity about usage by Sault Tribe and the public.	Present (2): The Tribe would have autonomy to determine sanctions and more stake in maintaining relationships due to proximity to the Preserve
Conflict resolution: users are able to resolve disputes among themselves	Not present (-2): There is currently no process for conflict resolution within the Preserve, at least partly due to lack of UM communication and presence – UM has installed gates, and Tribe and community members use the Preserve sporadically. There is no common channel for UM to hear about disputes or problems.	Present (1): With local management of the Preserve, a co-management arrangement, and more activity in general, there would be a higher likelihood for disputes to arise. With local management, structures will be in place to address issues in a more timely manner.	Present (2): With full ownership, there is higher motivation to do relational work necessary to resolve conflicts

Indicators	Under UM Management	Under UM/ Tribe Co-management	Under Full Tribal Ownership
	<i>Currently: Not present (-2), somewhat present (0), or present (2)</i>	<i>Likely to be: Not present (-2), somewhat present (0), or present (2)</i>	<i>Likely to be: Not present (-2), somewhat present (0), or present (2)</i>
<b>Overall: Characteristics of relational goods and consequences of good relationships</b>	Most of these indicators are currently not present, since they are consequences of strong relationships	These conditions are not guaranteed, and require a significant amount of investment from both UM and Sault Tribe	Sault Tribe would have the ability to regain severed relationships with the land, and seek out new partnerships
Trust	Not present (-2): the University has not invested time or communication on the Preserve in recent years, although there has been increased communication on the topic of co-management since the early 2010s.	Somewhat present (0): Some faculty have expressed enthusiasm about the project; there are masters students (the authors) working with the Tribe currently; and in fall 2024 there will be a new group of students engaging in similar projects.	Present (2): Sault Tribe is not a monolith, but the ability of individuals and groups to interact with the land has the potential to build trust about maintaining the resource. Bringing the land and people back into balance and relationship will build trust.
Identity: clarity of boundaries around who is a user of the resource and the specific resource being shared is clearly delineated from other areas	Somewhat present (0): the boundaries of Chase Osborn Preserve are clear on maps, and the Biostation has the data, but maps are hard to find and there is not much signage on the Preserve. Users are not defined anywhere that is accessible.	Present (1): Any co-management agreement would likely make usage regulations and boundaries more public, and through the process of determining what co-management will look like, the Tribe and UM will refine them further. Tribe members raised the idea of increased historical signage.	Present (2): Sault Tribe would have direct investment in Tribe members understanding usage rights, responsibilities, and boundaries.
Equity: reciprocity, congruence, sharing with all beings	Not present (-2): UM affiliates do not visit the Preserve frequently, and Tribe members do not feel welcome on their ancestral lands. The Preserve has been managed by Anishinaabe people for millennia, with fire and other technologies, and the absence of that management has likely diminished the Preserve's populations of native species.	Somewhat present (0): Depending on the terms of the co-management arrangement, and whether it was understood to be fair for all parties.	Present (2): Members of Sault Tribe, along with staff from Sault Tribe agencies, have expressed deep feelings for the land and beings that comprise the Preserve, and have described past management practices that are aligned with equity, reciprocity, and congruence. Having access and decision making power on this land allows for the implementation of those practices once again.
<b>Overall: Governance</b>	Strong centralized governments can erode the rights of local institutions. Currently, UM is the main enforcing body on the Preserve.	Enshrining Sault Tribe's right to governance of the Preserve, and ensuring that right is not infringed on by larger governments, will be important to the success of any co-management arrangement	Sault Tribe having full ownership of the Preserve provides the most secure protection of this indicator
Rights to organize	Not present (-2): Local users of the Preserve do not have the ability to make their own rules or influence University rulemaking decisions.	Somewhat Present (0): Under co-management, Sault Tribe members would have the ability to influence decisions made on the Preserve, and as authorized users, their voices would carry more weight.	Present (2): Sault Tribe would have full rights to organize.
Nested governance: the idea that governance and the relationships between subjects exist in many layers, from micro to macro	Somewhat present (0): UM owns the Preserve, and the Biological Station, a division of LSA, manages it. The Preserve is subject to state and federal laws. Sault Tribe, as the ancestral stewards of the land, do not have decision making power at any level.	Present (1): Depending on the terms of the arrangement.	Present (2): Sault Tribe is not a monolith. Relevant relational subjects include the Sugar Island community, Sault Tribe as a whole, the Natural Resources Department, and the Tribal government. Stewarding Chase Osborn Preserve would happen in different ways at all of those levels of management.
<b>Total</b>	<b>-14</b>	<b>Between 5 and 7</b>	<b>20</b>

## DISCUSSION OF ANALYSES

This qualitative assessment demonstrates possibilities with different management structures of the Preserve. Sault Tribe management promotes collective continuance and resilience for the land and all the beings that are in relationship with it. The community's values suggest many different economic uses of the land that are tied to ecological, cultural, social, and political purposes, as well as services, benefits, and financial gains. The Tribal values offer an expansive vision of community-economic development that contrasts with how the University has valued the land in the past and effects on the Tribal community.

The restoration of collective history emerges as a key theme, prompting suggestions for interpretive signage and cultural centers to honor and platform ancestral memory and heritage (Interviews, 2023). Increased Sault Tribe involvement would bring numerous research opportunities and ecological benefits. The Tribe's deep relational expertise enriches land management, rendering it distinct from conventional approaches (Norgaard, 2014). Opportunities for cultural practices that the Tribe's Culture Camp hosts, such as fasting and ceremonies, would increase with greater access to the Preserve. The transformative potential of Tribally-led forest restoration, rooted in generations of stewardship and co-development with nature, is immense (Clark, 2021). Such benefits are pivotal for collective continuance, particularly in cultural revitalization efforts, as seen in proposals for cultural camps, medicine and food gathering, and ceremonial spaces (Listening Session, 2024).

Sault Tribe Anishinaabe scholar and director of the Natural Resources Department Dr. Robin Michigiizhigookwe Clark writes that "The forests that serve as models for forest restoration were co-developed by Indigenous peoples, plants, wildlife, wind, water, and fire, [as cited in (Kimmerer 2000, Turner et al. 2000, Kimmerer and Lake 2001)]. Anishinaabeg were responsible for co-developing many of the standards that contemporary forest restoration seeks within the Great Lakes region" (2021). Bahweting Anishinaabe Peoples have stewarded this land for generations, developing expertise through deep relationships with the human and nonhuman beings that inhabit it. Currently, the Natural Resources Department is applying those principles to non-Tribal land where possible. However, having land of their own to manage as a Tribally-led research forest, would be transformative for the land, the Tribe, and all of their research partners. Some of these benefits will be present under any type of co-management scenario; the more control the Tribe has over outcomes on the Preserve, the more benefits will be realized. For example, having guaranteed access to the Preserve for individual and group ceremonies would be a cultural benefit, but the ability to build a sweat lodge for ceremonies would be transformative for the Tribe (Community Gathering, 2024).

A combination of traditional management expertise and a robust Tribal Natural Resources Department position the Sault Tribe to steward the Preserve well: "knowledge and management are about culture. Part of understanding why knowledge cannot be readily 'picked up and used' by other agencies has to do with the nature of indigenous knowledge not as a static, one size fits all rulebook or recipe book for actions on the landscape, but rather how that knowledge is generated through an ongoing process that involves not only observations and actions over time, but moral and spiritual components as well as 'social license' of knowledge practitioners. Thus traditional knowledge is fundamentally part of management" (Norgaard, 2014). UM has an opportunity to uplift Indigenous ecological research and partner with the Sault Tribe to conduct this research, an arrangement that could benefit both parties.

Despite potential monetary costs, the Tribe's strong commitment underscores the value of stewardship and land management rights for their collective continuance (Listening Session, 2023). The desire to purchase adjacent land in order to eventually merge parcels with the Preserve demonstrates their dedication to expanding their stewardship responsibilities (Interviews, 2024). Ultimately, Sault Tribe ownership holds



promise for transformative outcomes, not only for the Tribe but also for the land and its living and nonliving inhabitants. The value of stewardship and land management rights, for the Tribe and their collective continuance, cannot be overstated.

The relationality analysis demonstrates the profound impact that increased Sault Tribe management would have on Chase Osborn Preserve. Under the framework, where indicators were ranked based on presence, there is a 34-point difference in degree of relationality indicators between the status quo and full Tribal management. It is not just Sault Tribe that has a relationship with this land—UM has managed it for nearly 100 years. However, for the reasons detailed previously in this report, including distance, this relationship has proven challenging for UM affiliates to invest in. Partnering with Sault Tribe would address many of the challenges associated with maintaining and stewarding the Preserve, and provide the University an opportunity to promote collective continuance for Michigan residents.

Sault Tribe’s relationship to the Preserve has been challenged, but the potential is there to restore significant relationships to human and nonhuman beings. While challenging to quantify, testimonies from interviews and listening sessions illuminate the deep connections between the Tribe, the Preserve, and Sugar Island, with hopes for strengthened bonds in the future (Interviews, 2023). All interviewees expressed interest and excitement over the potential for increased Tribal management of the Preserve, with one interviewee noting, “I know there’s medicine there” (Interviews, 2023). Beyond cultural significance, relationality holds ecological value, as evidenced by studies showing that harvesting sweetgrass can enhance plant health (Kimmerer, 2015: 163). The relationship between the Anishinaabe people, the land, and its inhabitants depends on interaction and management according to time-honored principles of respect and reciprocity.

## **FUTURE POSSIBILITIES**

The Center for Cooperative Ecological Resilience (CCER), spearheaded by client Eric Clark, aims to merge Anishinaabe and Western science to combat climate change and uphold cultural traditions (Trofatter, 2022). Originally based at Michigan State University, CCER will soon expand to UM, fostering a network of demonstration forests showcasing Indigenous-led land management practices (Interview, 2024). The Chase Osborn Preserve could serve as a focal point for this initiative, highlighting the benefits of Tribal stewardship across diverse landscapes and offering new research opportunities for UM (Interview, 2024).

At the same time, potentials for cultural restoration are immense with greater Sault Tribe management. The Sault Tribe has recently partnered with the Michigan Department of Natural Resources, Mackinac Straits Health System, and Lake Superior State University to reinterpret Father Marquette National Memorial in St. Ignace to center Indigenous narratives and more accurately represent the complexities of the region’s history (Michigan Department of Natural Resources 2024; James 2024; King 2024). The Gchi Mshiikenh Deh Minising initiative demonstrates the Tribe’s commitment to cultural revitalization and strengthening partnerships (Michigan Department of Natural Resources 2024; James 2024; King 2024).

Moving forward, the focus of this research effort will be on refining actionable strategies to support Tribal and University research, aiming to redefine land relationships and empower the Sault Tribe’s self-governance on the Preserve (Interview 2024).

## 2.5 CONCLUSION

A majority of the benefits the University of Michigan is receiving from the land would be maintained or increased if the Sault Tribe had greater management control, and maintenance costs to the University would be lessened. For the Sault Tribe, the opportunity to manage land would create opportunities for new funding and governance structures through increased land area, and allow for the potential of transformative research and cultural continuation. Having the ability to generate revenue from the land, and make decisions for the long-term about management, would allow the Sault Tribe to determine the economic future they want to prioritize. Under Tribal stewardship of the Preserve, the University of Michigan would lead by example as a university engaging in tribal stewardship land practices within the United States. This would also foster restoration and preservation of native species through Tribal management practices. Tribal stewardship of the Preserve would increase research opportunities for UM students and enrich the current programs and curriculum at the University. It would also be a model for Universities and Tribes nationwide, and could demonstrate one path forward for advancing Indigenous land rights and Tribal stewardship around the world.



Facing northeast from the footbridge connecting Duck Island to the Gander Cabin in June 2023.

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# CONCLUSION

The work and findings of the Sugar Island Project underscores the support for the Sault Tribe to assume stewardship of the Chase Osborn Preserve. This imperative is grounded in the enduring reciprocity between the Sault Tribe Anishinaabe and the Bahweting ecosystems. However, these historically significant relationships have been disrupted by colonial land dispossession, resulting in the underutilization of the Chase Osborn Preserve as ancestral lands of the Sault Tribe. Formal documentation of findings emphasizes the necessity for action. As advocates for progressive University-Tribal relations, we propose that the University relinquish stewardship and research responsibilities to the Sault Tribe. This initiative would establish a precedent for mutually beneficial collaboration in land management and conservation endeavors.



# APPENDICES

# APPENDICES

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# APPENDIX A:

## STORY MAP AND REPORT

<https://storymaps.arcgis.com/stories/0d4be7e03d-794a78988b36c40f3c661e>

### INTRODUCTION

Story maps are used as a communication tool that combines narrative elements with maps and multimedia visuals. Web-based Geographic Information System (GIS) tools allow for interactive learning experiences (Antoniou et al 2018). The potential of maps to tell stories has been widely acknowledged, and there is increasing utilization of story mapping to convey complex and layered narratives (Caquard and Cartwright 2014).

Primary sources are an important part of a story map effectively communicating a narrative. Narrative elements are enhanced by visual media (such as maps, paintings, and etchings) and written media (such as journals, correspondence, or news reports). Creating a story map, much like other genres within the emerging field of data journalism, involves collecting and filtering through these primary sources to create the narrative (Song et al 2022).

University libraries and archives are key parts in a system of remembrance, and are often first points of contact in searching for primary source material. Historically, archival libraries at major research institutions have extensive anthropological collections. Many artefacts related to Indigenous peoples of the Great Lakes region are in the University of Michigan Museum of Anthropological Archaeology (UMMA-A), and paper materials are largely held in the University's Bentley Historical Library or William L. Clements Library. These archives and collections are largely off-limits to the public, limiting anyone but researchers to view materials. Indigenous concerns of archives and collections have become a focus of information management in the last three decades, leading many universities to reconsider their collections policies for items with Native American provenance (Christen 2015).

In the face of movements for more open archives, many institutions grappled with questions of collections management to “[recognize] the conditions that led to their acquisition and [create] new possibilities for renegotiating their access, curation, and circulation” (Christen 2015). Collections of focus are often those of anthropological origin, such as UMMA-A; however, items related to Indigenous communities – albeit perhaps a bit more distantly – ought to be made available.

In the case of this project, most relevant primary source materials resided in the UM Bentley Historical Library or the UM Biological Station archive. The Biostation archive is not available to the public, and, as of 2024, is part of the ongoing strategic planning process for the Station.

It is important to note that the majority of archival materials collected and digitized in this project were ecological surveys and reports, land records, correspondence and communications, work and maintenance records, and other miscellaneous materials related to history and operation of a natural preserve. As Sault Tribe members and their ancestors were employed by the University and assisted in



the operation of the Preserve and associated research, it is a safe assumption that there are likely more items in collections. Many of the materials viewed by the researchers relate to the Tribe, whether through a mention in a report or a direct record such as a photograph.

Creating greater methods to access records beyond ethnographic records related to Native Americans would challenge existing Tribal-University dynamics. As Bruna (2020) notes, “sharing all research data with tribes presents an opportunity to decolonize the discipline’s history of exploitative research by challenging disciplinary notions of control, ownership, and management of ethnographic data.” This is an opportunity for the University to be a leader in data sharing. As the University continues to engage in partnerships with Tribal nations such as the Sault Tribe, open sharing of information will only help to build trust and strengthen relationships.

## **RATIONALE FOR A STORY MAP**

There is a rising trend in data visualization of environmental injustices, particularly in tools like the Environmental Protection Agency’s EJ SCREEN. These stories often disregard the voices of the community actually affected, removing their agency and prioritizing quantitative data without which their oppression is invalid. Story maps are a way to counter this by incorporating community narratives alongside maps and documents.

Interactive story maps give the audience agency in the pace at which they are presented with information, which can improve both retention of facts and comprehension of the overall message (Song et al 2022). Story maps can incorporate a variety of data forms, meeting different audience preferences, and presenting data in a more accessible format for non-academic audiences.

The Sugar Island Project Team was invited to create a storymap by their client, the Sault Tribe, to demonstrate the historical context of land dispossession and the ecological support for why the Sault Tribe should be stewarding the Chase Osborn Preserve. The integration of ecological and archival data with the narrative makes this a more effective case study than if the story had been provided in a report

## **SCOPE AND METHODS**

A web-based GIS tool will be utilized to demonstrate the history of Anishinaabe people in the St Marys River Region, including exploring connections that the Sault Ste Marie Tribe of Chippewa Indians has on Sugar Island. This storymap demonstrates the unique flora and fauna of the area, in conversation with oral and written histories of use and management. Particular cultural and traditional relationships to different species will be highlighted, such as gizhiik (Northern white cedar, *Thuja occidentalis*).

Though the Anishinaabeg live across the Great Lakes Region, we are focusing on the St Marys River Region, also known as Bahweting in Anishnaabemowein, for this story map. In selecting a specific location, the narrative is ‘locked’ to an area (Caquard and Cartwright 2014).

Documenting the GIS processes and tools used to create the maps is necessary so that they can be replicated by researchers. The archival documents presented in the storymaps were found and digitized through visits to the University of Michigan’s Bentley Historical Library, the University Biological Station Library, and the Lake Superior State University Kenneth J. Shouldice Library. Materials relevant to the Tribe and to Tribal members have been shared, if applicable.

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# **APPENDIX B: SAULT STE. MARIE TRIBE OF CHIPPEWA INDIANS AND THE UNIVERSITY OF MICHIGAN: PARTNERSHIP THROUGH LAND TENURE RESTORATION AND INDIGENOUS KNOWLEDGE ENGAGEMENT IN RESEARCH**

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We are writing to initiate discussions concerning the future of certain properties owned by the University of Michigan in Chippewa County, Michigan. For reasons outlined in this document, we propose that the University of Michigan (UM) consider a powerful vision and strategy toward advancing the social, economic, educational, and research impacts of the properties. UM ought to investigate the transfer of ownership of these lands, most specifically the 3,000 acre Chase Osborn Preserve, to the Sault Ste. Marie Tribe of Chippewa Indians (“Sault Tribe”), with stipulation that the lands remain open to UM faculty and students for purposes of place-based, relational research, education, and collaboration.



Figure 1: Metigininni (Joseph Gurnoe) and Maria Joseph circa turn of the century. Courtesy of Sault Tribe.

## **SUGAR ISLAND, BAAWITING ANISHINAABEK, AND SAULT TRIBE**

Prior to European colonization, the St. Mary’s River was a place of abundance and nourishment for the original peoples of the Great Lakes, the Anishinaabek. Anishinaabek call the River’s main rapids Baawiting. The river sustains world-class fisheries and important waterfowl migration paths, and has served as a hub for Native exchange and socialization. The St. Mary’s River is a central feature of life for the Indigenous families from the area who are known as “Baawiting Anishinaabek” or the “original people of the rapids.” The islands in the river, particularly Sugar Island, are integral parts of Baawiting Anishinaabek homelands and identity.

Colonization of North America by Euro-Americans resulted in severe loss of land by the Indigenous nations, particularly for the Baawiting Anishinaabek. Federal policies of treaty-making, Indigenous removal, and allotment systems reduced the land tenure status of the Baawiting Anishinaabek. In the late 1890s, Chief Pi aw be daw sing led a band of Baawiting Anishinaabek in reserving land allotment plots on the north end of Sugar Island. Their requests for plots on the south end of the island were denied in allotment selection. Over the following years, Baawiting Anishinaabe families maintained a web of relations on the mainland at Sault Ste. Marie, Michigan and Ontario, and with Sugar Island as the center. The original families who remained on Sugar Island worked to secure political affirmation from the U.S. in the 1940s-1970s. In 1972, the U.S. affirmed federal recognition as the Sault Ste. Marie Tribe of

Chippewa Indians (“Sault Tribe”). For the Sault Tribe, Sugar Island is among its most important places politically, culturally, historically, and socially.

Prior to European colonization, the St. Mary’s River was a place of abundance and nourishment for the original peoples of the Great Lakes, the Anishinaabek. Anishinaabek call the River’s main rapids Baawiting. The river sustains world-class fisheries and important waterfowl migration paths, and has served as a hub for Native exchange and socialization. The St. Mary’s River is a central feature of life for the Indigenous families from the area who are known as “Baawiting Anishinaabek” or the “original people of the rapids.” The islands in the river, particularly Sugar Island, are integral parts of Baawiting Anishinaabek homelands and identity.

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## **LAND TENURE, ECOLOGICAL RESILIENCE, AND CO-LEARNING**

Anishinaabek are stewards of the lands and waters of the Great Lakes region. Their giikendaasowin (knowledges) and bimaadiziwin (ways of life, land ethics, and traditional values) have created deep roots in ecological understanding, ecological relationships, and commitment to care for their homelands, waters, and all of Creation. However, U.S. settlers endorsed land tenure practices in the Upper Peninsula that have eroded the ability of the Baawiting Anishinaabek to maintain and utilize their understanding, relationships, and commitment to steward the ecological systems on which they depend. The Sault Tribe’s lack of land management authority is a specific major impediment to their ability to reconnect traditional practices, understandings, and relationships of land stewardship.

Sault Tribe reservation consists of under 1,500 acres of forestland, arranged in fragmented parcels across the Eastern Upper Peninsula. Less than one hundred acres of these land holdings are on Sugar Island. This includes the Mary Murray Culture Camp, a 40 acre hub for Tribal cultural education and activity. Though no longer owned by the Tribe, the Chase Osborn Preserve is used frequently as an important part of Sault Tribe Culture Camp activities, which are often space-limited. This lack of forest land has prompted Sault Tribe to prioritize co-management activities, as well as land re-acquisition. The Sault Tribe Wildlife Program has played an increasingly important role in the management of State and Federal lands within the 1836 Treaty Ceded Territory, due to the signing of the 2007 Inland Consent Decree between the United States, State of Michigan. In addition, the Sault Tribe has recently entered into a Tribal Forest Protection Act Proposal with the Hiawatha National Forest for a management partnership of lands in the Upper Peninsula.

Through engagement in resource management processes, Sault Tribe has sought to incorporate management practices based on community giikendaasowin and bimaadiziwin. Connecting these traditional ecological understandings with contemporary western science could demonstrate that the land management community can realize alternative futures that are more ecologically resilient, sustainable,

and mutually beneficial. The 3,000 acres of the Chase Osborn Preserve would provide space for the Sault Tribe to implement a holistic approach to land management and increase community resilience through opportunities for cultural practices. This partnership would provide an ecological classroom for Tribal resource managers, practitioners, University of Michigan researchers, and students to engage in co-learning strategies and multiple ways of knowing.

## ESTABLISHING HONORABLE RELATIONS THROUGH A HISTORIC GIFT

In 1929, former Michigan governor and UM regent Chase Salmon Osborn donated over 3,000 acres of forested land on the south end of Sugar Island to the University of Michigan, with the stipulation that the lands be used for educational and research purposes. The Preserve is currently under the purview of the University of Michigan Biological Station and its Director.

In 1972, the University of Michigan sold a 40-acre parcel (Figure 1) of land on Sugar Island to the Sault Tribe. This land acquisition allowed for the Tribe to gain federal recognition under Federal Tribal Statute. Gaining federal recognition allowed the Tribe to receive federal benefits and services, in addition to formal recognition of the Tribe's sovereignty.

We propose that the University return the Osborn Preserve lands to the Sault Ste. Marie Tribe of Chippewa Indians via a historic gift, in part to honor the anniversary of the land transfer that allowed for Sault Tribe to gain federal recognition. Such a gift would establish a new Tribal-University relationship, where the University honors Baawiting Anishinaabek connections to ancestral

homelands. This would create a unique opportunity for the University and Tribe to lead and learn together about environmental ethics and ecosystem management in relationship with these lands.

A transfer of the Chase Osborn Preserve on Sugar Island would not represent the University saying goodbye to these lands; on the contrary, the gift of land would mark the beginning of a new chapters in University-Tribal relation where University of Michigan students and researchers cultivate new relationships with the land alongside Baawiting Anishinaabek to enhance research and educational opportunities. We anticipate that more members of the University of Michigan community will spend more time on these lands as a result of this gift and historic partnership. unique opportunity for the

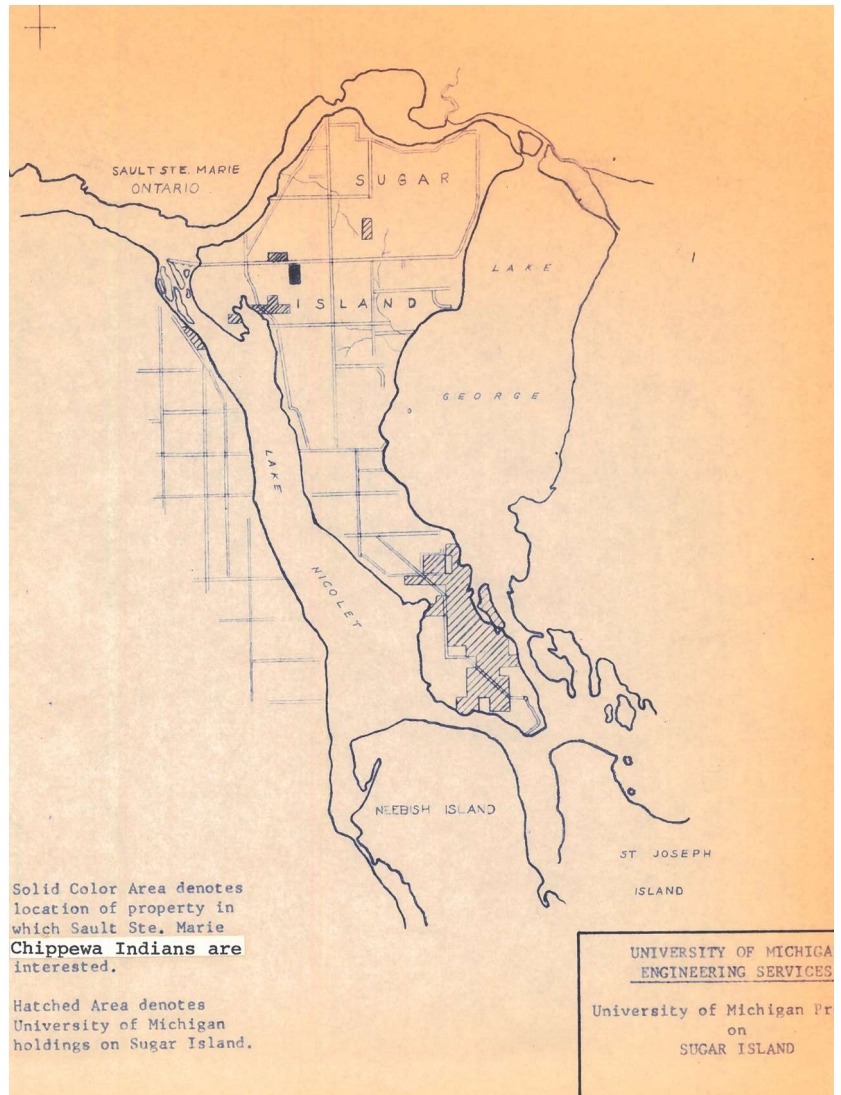


Figure 2: Original 40-acre parcel sold to the Sault Tribe on Sugar Island. Courtesy of University of Michigan's Bentley Historical Library.

University and Tribe to lead and learn together about environmental ethics and ecosystem management in relationship with these lands.

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## **LOOKING FORWARD**

We request the formation of a committee to consider the transfer of ownership of the Chase Osborn Preserve and related lands from the University to the Tribe. We also propose the development of a formal agreement to facilitate collaborative research and education between the University and the Sault Tribe.

## **ACKNOWLEDGMENTS**

This report would not have been possible without the work of Dr. Kyle Whyte, Eric Clark, Dr. Robin Clark, Dr. Andy White, and the Sault Tribe at large. We thank them for their contributions.



Figure 3: 1998 Sugar Island Powwow Honor Guard. Courtesy of Sault Tribe.



# APPENDIX C:

## COMMUNITY GATHERING AND INTERVIEW SUMMARIES

Community engagement was central to the research team’s methodologies to ensure that the work being conducted was determined by the Tribe’s needs. For the community engagement processes, an Institutional Review Board (IRB) was conducted for both the University of Michigan and the Sault Ste. Marie Tribe of Chippewa Indians. This section details the research teams’ methods and process as well as a summary of common sharings, themes, and stories are discussed. In October of 2023, the student research team conducted informal interviews, and in November of 2023, the team held a listening session; details for both are provided below. As per the consent statement, no names are used and sensitive story details like specific locations are confidential. For additional details regarding this project and stories shared, please reach out to SugarIslandProject@umich.edu.

A total of eight informal interviews were conducted in October of 2023 for this project with Sault Tribe members; the interviewees were identified by the project client because of being prominent members of the community with strong ties to Sugar Island. The student researchers reached out and scheduled in person conversations, ranging from 80 minutes to more than 3 hours; one even included a half hour long hike on the preserve. Rather than recording and coding the interviews, the student researchers took notes during the interview, which were sent back to interviewees for approval. After approval a list of themes was pulled from the stories. No formal coding was conducted to identify themes. See section below for informal interview questions list.

The community gathering listening session was conducted in November 2023 by the University of Michigan Masters Student team on the Sugar Island Project. The event was for the Sault Ste. Marie Tribe of Chippewa Indians at the Mary Murray Culture Camp on Sugar Island, Michigan. The event was held as an opportunity for Sault Tribe members and Sugar Island community members to gather and share stories on Sugar Island in the hopes of generating ideas for a potential research and community plan for the Chase Osborn Preserve under shared tribal ownership with the University. The event started off with an invocation, opening remarks by project client contact Eric Clark and was followed by introductions from the University project team. After lunch and some intermingling, the twenty eight attendees were divided into three breakout groups for discussion, see questions below. Once the breakout groups concluded, attendees had a chance to walk

around the room and add to maps of Sugar Island and the Chase Osborn Preserve, a seasonal round, and a timeline. Finally, attendees were given sticky notes on which to write their priorities for the Island and the Chase Osborn Preserve, and these were collectively assembled onto large printed maps of the Island and the Preserve.

## COMMON THEMES AND SHARINGS

### PAST REFLECTIONS OF SUGAR ISLAND AND THE PRESERVE

***Strong ties to the Preserve*** Many of the participants shared the strong historical ties to Sugar Island, and most specifically the Preserve area. Many noted that their families have been on the island “forever,” and are able to account for six or more generations residing on the island in the past. People mentioned that life for folks on the island is distinct from mainland and Sault Tribe as a whole, notably as a separate identity.

***Spiritual connections*** Numerous participants mentioned the strong manidoo (spirit) of Sugar Island. It’s a place to connect with yourself and creator through the land and away from the pace of mainland life. Some participants discussed fasting and releasing on Sugar Island, noting limited participation due to the 40-acre size constraint of the Mary Murray Culture camp fast site. One interview participant said, “*this island pulls the garbage, it pulls the sickness out of you.*”

***Seasonality and gathering on the Preserve*** Life on Sugar Island is oriented around seasonality, with much of the warm months being spent preparing for winter via hunting, fishing, gardening, gathering, and various means of food preservation. Residents are accustomed to times of with no power or communication infrastructure.

At least two participants mentioned explicitly that there was a point when they were growing up where their families got a significant amount of their food from the island. Duck Lake is known as an abundant fishing spot, with participants sharing that it is their preferred location to harvest perch. Numerous Duck Lake fishing stories were shared, including how one participant fell in love with her husband on their fishing dates on Duck Lake.; siblings spending their summers using bubble gum or macaroni as fishing bait; a time a sturgeon was rescued from the rocks.

Duck Lake was used as hunting grounds for many species including white-tailed deer. Duck Island was used as a place to push deer for hunting, where people would walk in a line across the island pushing deer to the far side where a shooter would be positioned (back then the island was less forested). The Preserve has been used as a site for trapping small mammals as a means of food and income such as rabbit, muskrat, and mink. In addition to harvesting animals, participants mentioned gathering berries and medicines on the preserve, and at one time there was a family sugarbush set on in the southern portion of the Preserve.

***Family gatherings and cultivating safe communities*** Sugar Island is a significant place for many Sault Tribe families. Many participants remembered times of large family gatherings on the island, where food and stories were shared between families and generations. One participant stated about gathering to tell stories “when your roots are here, and you get kids, grandkids, friends together, then everyone knows your family from way back. That’s the only way to pass these things on. You share and hope some of it sticks.”-Listening Session participant, 2023. Stories shared tell of a time when children were allowed to

roam freely, with community care so strong someone was always nearby to assist the children. Participants mentioned this feeling of safety seemed unique to the Island and is not the same when on the mainland. In conversation with the family who grew up on the Preserve, the sentiments were the same. The Island feels safe and kids are free to wander and explore.

## PRESENT CONDITIONS

**Settler interactions** The social and economic landscape of Sugar Island has drastically shifted over the last century, with more summer homes being bought by down-state residents. With this has come loss of access to traditional sites for gathering, accessing water and medicines, and visiting ancestors. One participant commented that “[on the Island you can] run into people who are entitled and feel ownership, when they [the Tribe] have been there for thousands of years.” Ownership of land is antithetical to Anishinaabe beliefs, where land is a grounded relationship not a property item. With this shift in Island residents, there comes a shift in the next generation of settlers, who are generally more willing to work with the Tribe than previous generations. However, participants shared concerns that the preserve shows how settlers may mean well but are not connected enough to the land to know the right actions.

Access to culturally significant practices is of great concern for participants and Sault Tribe members more generally. The Preserve was once the site of a large eagle nest where Tribal members harvested feathers. Several decades ago a Boy Scouts troop decided it would be a good community project to create an established path to the eagles nest. They built a trail and marked it with red rocks that can still be seen today. With all the hustle and bustle of creating a formal trail and increased foot traffic, the eagles were scared away and abandoned the Preserve nest.

**Preserve access** A common thread in discussions was access to Preserve property. Many participants remembered when the University put up locked gates, and described how that deterred people from visiting while potentially helped with vandalism. The gates are generally seen as an act following the trend of settlers reducing access to land on the island, where residents and Tribal members like the preserve is not for them even with significant connections to the land. One participant expressed gratitude that the University owned the Preserve, and concern of development had it been under different ownership. Another barrier for accessing the Preserve are increasing ferry prices to get onto Sugar Island.

The need for further respect of the Tribe’s cultural practices from the University was also expressed, as well as generating a safe and welcoming space for all indigenous peoples.

**Historical education** Many interviewees expressed some variation on the wish to see buildings and land preserved in more or less their current state—perhaps with expanded opportunities for recreation, trails, more signage and historical marking, some management of the forest to keep it healthy, through fire, survey, etc.

**Need for Land for Ceremony** Interviewees noted that there is limited space for ceremony on Sugar Island, mainly at the 40-acre Mary Murray Culture Camp, and the Preserve would be a huge opportunity. It could be a place for fasting and releasing- various participants said it’s hard to find quiet places to be alone, either sitting or hiking, at the culture camp, due to its small area and short trail system. Duck Lake is one of the few places you can be away from the sounds of the road or other people, and it’s spacious enough to accommodate groups or individuals for fasting or releasing. It has been utilized for this already, in unofficial ways.

**Youth Development** Interviewees mentioned the possibility of using the preserve as a place to teach, share knowledge. In order to effectively pass down traditional knowledge, you need land to practice on.

## FUTURE ASPIRATIONS

At the end of the community listening session participants were asked to share their aspirations for the future of the Preserve. Below is a summary of the themes that arose.

**Increased access to the Preserve** Several attendees discussed the need for increased access. Many community members have deep ancestral ties with the Island and have countless memories of family gatherings, berry picking, fishing, sugarbushes, and other outdoor activities all along the Island. Attendees spoke of the increase of restrictions to the Island through the years, particularly in the form of increased gates on Chase Osborn Preserve and more private ownership, particularly by water.

**Maintenance of natural state of the Preserve** There was a strong consensus among attendees to maintain and keep the preserve in its natural state. Several attendees mentioned the protection and maintenance of the land and water of the preserve, as well as the preservation of the natural plants, animals, and ecology. There was a clear need for proper maintenance of the trails, no motorized vehicles, promotion of canoeing, and a desire for minimal development. A “leave it like you found it” and a “pack in pack out” policy was suggested as well.

**Restoration and Protection** There was also a desire to restore the preserve through native plantings and protection of old growth forests. Multiple participants shared that they would like to see the planting of culturally important and ecologically beneficial species such as giizhik (northern white cedar, *Thuja occidentalis*), wiikenh (sweet flag, *Acorus americanus*), and ozaawijiibik (goldentthread, *Coptis trifolia*).

**Youth development and cultural education** There was a clear need for Sault Tribe youth development and public education. Multiple participants expressed their desire for space to conduct traditional teaching in the form of a youth camp. There was also a clear need for continued education of people visiting the island, acknowledgement and respect. Attendees expressed interest in an interpretation center and additional signage to educate and guide visitors. The need for further respect of the Tribe’s cultural practices from the University was also expressed.



Looking east over the St Marys River from under the porch of the Gander Cabin in April 2024.

## PROMPTS FOR INFORMAL INTERVIEWS

- Can you share a little bit about yourself? What places feel like home to you? What do you see as your role in this community?
- What memories or stories can you recall on Sugar Island? Feel free to write on the map if that's easier, for any of these questions.
  - Any specific stories related to either the water, land, animals, or ecosystems located within that area?
  - Do you have family members who spent time on the island?
  - What words come to mind when you think of that place? (English is limiting in meaning/expressions maybe have folks write the Anishinaabemowin word on a whiteboard/chalkboard)
- Do you currently spend time on Sugar Island or the Chase Osborn Preserve? At the Culture Camp? Why or why not?
  - Is there strong community ties to the island still? Do you think youth are able to have those sorts of connections?
  - What are the barriers to being on Sugar Island or in the forest generally?
- What does tribal management of land mean to you?
  - What would be different for you or the community if the Tribe owned more forest land?
- How can the University of Michigan better show up for the Tribe?
  - What is your perception of the Tribe/UM relationship currently, or in the past?
  - What would a successful relationship look like to you?
  - What would you like to see from the University of Michigan? What does UM need to do?
  - Any specific priorities or areas of research you would like to see focused on that would help support the tribe that the University could help support in the future?
- Anything else you would like to share?
- Anyone else you think would be good to reach out to?

## PROMPTS FOR COMMUNITY LISTENING SESSION

- Name, and favorite memory of Sugar Island or what you would hope to do on the Island - specifically Duck Lake, if you have spent time there? Feel free to write on the map if that's easier, for any of these questions.
- Past-relationship to land and water to COP and sugar island
- Present-Current uses and what is meaningful to you right now? What do you wish you had more access to?
- Future- If the Tribe were to have ownership and shared access to the land, what would be different for you?
- What would you like the relationship between the Tribe and the university to look like going forward?

## PARTICIPATORY MAPPING

A common thread in discussions was access to Preserve property. Many participants remembered when the University put up locked gates, and described how that deterred people from visiting while potentially helped with vandalism. The gates are generally seen as an act following the trend of settlers reducing access to land on the island, where residents and Tribal members like the preserve is not for them even with significant connections to the land. One participant expressed gratitude that the University owned the Preserve, and concern of development had it been under different ownership. Another barrier for accessing the Preserve are increasing ferry prices to get onto Sugar Island.

The need for further respect of the Tribe's cultural practices from the University was also expressed, as well as generating a safe and welcoming space for all indigenous peoples.

# APPENDIX E: CHASE OSBORN PRESERVE RECONNAISSANCE SURVEY AND PLANT SPECIES LIST

This Reconnaissance Survey was conducted by Deanna Geelhoed on June 25, 27, 28, 2023. Methods included walking the three trails on the Preserve and identifying species; writing them down or using the Seek phone application to create a species list. Deanna walked the Bradshaw trail from trailhead (46.343159,-84.147067) to mid meadow and back, the Fisherman's trail from the trailhead (46.368892, -84.164366) at Homestead to Duck Lake and back, and the Duck Island main Trail from the trailhead at the end of the main drive (46.353315,-84.136558) around the island and back. Geelhoed confirmed all species identified with the Seek app to ensure they were correct to the best of her ability. The species richness was 125 species including trees, shrubs, and herbaceous plants. Then using the Universal Floristic Quality Assessment Calculator, the master species list was submitted and the following outputs were calculated.

Floristic Quality Assessments (FQAs) are measurements of either a natural area's habitat condition or quality, or a specific natural community's condition or quality at a site. FQAs are widely used by government agencies and conservation groups to inform land management decisions.

The FQI score for the Chase Osborn Preserve was 39.1. Areas with a FQI higher than 35 possess sufficient conservatism and richness that they are floristically important from a statewide perspective. However, a more thorough survey is needed, Deanna only walked a couple miles along trails within the larger 3,000ac Preserve. However even with the small survey conducted there were many species with high coefficients of conservatism(rareness) and culturally significant plants present.

Notable species include: the rare Orange fringed orchid, Pipsissewa, and Black ash.

## Chase Osborn Master List

### Date & Location:

2023-06-28

Chase Osborn Preserve

Sugar Island Township

Chippewa, Michigan, USA

Bradshaw Trail, Fisherman's trail, Duck Island trail

### FQA Database Information:

**Region:** Michigan

**Year Published:** 2014

**Description:** Reznicek, A.A., M.R. Penskar, B.S. Walters, and B.S. Slaughter. 2014. Michigan Floristic Quality Assessment Database. Herbarium, University of Michigan, Ann Arbor, MI and Michigan Natural Features Inventory, Michigan State University, Lansing, MI. <http://michiganflora.net>

Details:

**Practitioner:** Deanna Geelhoed

**Weather Notes:** Smoky

**Community Type Notes:** Meadow, Cedar Swamp, Coastal Wetland, Upland Hemiboreal woods

### Conservatism-Based Metrics:

Total Mean C: 3.5

Native Mean C: 4.2

Total FQI: 39.1

Native FQI: 43

Adjusted FQI: 38.5

% C value 0: 19.2%

% C value 1-3: 23.2%

% C value 4-6: 51.2%

% C value 7-10: 6.4%

Native Tree Mean C: 4

Native Shrub Mean C: 4.5

Native Herbaceous Mean C: 4.1

### Species Richness:

Total Species: 125

Native Species: 105 (84%)

Non-native Species: 20 (16%)

### Species Wetness:

Mean Wetness: 0.2

Native Mean Wetness: -0.3

### Physiognomy Metrics:

Tree: 17 (13.6%)

Shrub: 23 (18.4%)

Vine: 1 (0.8%)

Forb: 58 (46.4%)

Grass: 4 (3.2%)

Sedge: 10 (8%)

Rush: 0 (0%)

Fern: 12 (9.6%)

Bryophyte: 0 (0%)

### Duration Metrics:

Annual: 2 (1.6%)

Perennial: 118 (94.4%)

Biennial: 5 (4%)

Native Annual: 2 (1.6%)

Native Perennial: 102 (81.6%)

Native Biennial: 1 (0.8%)

» Species								
Scientific Name	Common Name	Family	Acronym	Native species?	C	W	Physiognomy	Duration
<i>Abies balsamea</i>	balsam fir	Pinaceae	ABIBAL	native	3	0	tree	perennial
<i>Acer pensylvanicum</i>	striped maple	Sapindaceae	ACEPEN	native	5	3	tree	perennial
<i>Acer rubrum</i>	red maple	Sapindaceae	ACERUB	native	1	0	tree	perennial
<i>Acer saccharum</i>	sugar maple	Sapindaceae	ACESAU	native	5	3	tree	perennial
<i>Acer spicatum</i>	mountain maple	Sapindaceae	ACESPI	native	5	3	tree	perennial
<i>Achillea millefolium</i>	yarrow	Asteraceae	ACHMIL	native	1	3	forb	perennial
<i>Actaea rubra</i>	red baneberry	Ranunculaceae	ACTRUB	native	7	3	forb	perennial
<i>Alnus incana; a. rugosa</i>	speckled alder	Betulaceae	ALNINC	native	5	-3	shrub	perennial
<i>Amelanchier arborea</i>	juneberry	Rosaceae	AMEARB	native	4	3	tree	perennial
<i>Anemone canadensis</i>	canada anemone	Ranunculaceae	ANECAN	native	4	-3	forb	perennial
<i>Apocynum androsaemifolium</i>	spreading dogbane	Apocynaceae	APOAND	native	3	5	forb	perennial
<i>Aquilegia canadensis</i>	wild columbine	Ranunculaceae	AQUCAN	native	5	3	forb	perennial
<i>Aralia nudicaulis</i>	wild sarsaparilla	Araliaceae	ARANUD	native	5	3	forb	perennial
<i>Betula alleghaniensis</i>	yellow birch	Betulaceae	BETALL	native	7	0	tree	perennial
<i>Betula papyrifera</i>	paper birch	Betulaceae	BETPAP	native	2	3	tree	perennial
<i>Bolboschoenus maritimus; scirpus paludosus</i>	bulrush	Cyperaceae	BOLMAR	non-native	0	-5	sedge	perennial
<i>Carex crinita</i>	sedge	Cyperaceae	CXCRIN	native	4	-5	sedge	perennial
<i>Carex hystericina</i>	sedge	Cyperaceae	CXHYST	native	2	-5	sedge	perennial
<i>Carex intumescens</i>	sedge	Cyperaceae	CXINTU	native	3	-3	sedge	perennial
<i>Carex lacustris</i>	sedge	Cyperaceae	CXLACU	native	6	-5	sedge	perennial
<i>Carex scoparia</i>	sedge	Cyperaceae	CXSCOP	native	4	-3	sedge	perennial
<i>Carex stipata</i>	sedge	Cyperaceae	CXSTIP	native	1	-5	sedge	perennial
<i>Carex vulpinoidea</i>	sedge	Cyperaceae	CXVULP	native	1	-5	sedge	perennial
<i>Centaurea stoebe; c. maculosa</i>	spotted knapweed	Asteraceae	CENSTO	non-native	0	5	forb	biennial
<i>Chimaphila umbellata</i>	pipsissewa	Ericaceae	CHIUMB	native	8	5	shrub	perennial
<i>Cirsium palustre</i>	marsh thistle	Asteraceae	CIRPAL	non-native	0	-3	forb	biennial
<i>Clinopodium vulgare</i>	wild-basil	Lamiaceae	CLIVUL	native	3	5	forb	perennial
<i>Clintonia borealis</i>	bluebead-lily; corn-lily	Convallariaceae	CLIBOR	native	5	0	forb	perennial
<i>Comandra umbellata</i>	bastard-toadflax	Santalaceae	COMUMB	native	5	3	forb	perennial
<i>Convallaria majalis</i>	lily-of-the-valley	Convallariaceae	CONMAJ	non-native	0	5	forb	perennial
<i>Coptis trifolia</i>	goldthread	Ranunculaceae	COPTRI	native	5	-3	forb	perennial
<i>Cornus canadensis</i>	bunchberry	Cornaceae	CORCAA	native	6	0	shrub	perennial
<i>Corylus cornuta</i>	beaked hazelnut	Betulaceae	CORCOR	native	5	3	shrub	perennial
<i>Cypripedium acaule</i>	pink lady-slipper; moccasin flower	Orchidaceae	CYPACA	native	5	-3	forb	perennial
<i>Dendrolycopodium dendroideum; lycopodium d.</i>	tree clubmoss	Lycopodiaceae	DENDEN	native	5	3	fern	perennial
<i>Dendrolycopodium obscurum; lycopodium o.</i>	ground-pine	Lycopodiaceae	DENOBS	native	5	3	fern	perennial
<i>Dichanthelium oligosanthes; panicum o.</i>	panic grass	Poaceae	DICOLI	native	5	3	grass	perennial
<i>Diervilla lonicera</i>	bush-honeysuckle	Diervillaceae	DIELON	native	4	5	shrub	perennial
<i>Doellingeria umbellata; aster u.</i>	flat-topped white aster	Asteraceae	DOEUMB	native	5	-3	forb	perennial



Scientific Name	Common Name	Family	Acronym	Native species?	C	W	Physiognomy	Duration
<i>Dryopteris carthusiana</i>	spinulose woodfern	Dryopteridaceae	DRYCAR	native	5	-3	fern	perennial
<i>Dryopteris intermedia</i>	evergreen woodfern	Dryopteridaceae	DRYINT	native	5	0	fern	perennial
<i>Equisetum sylvaticum</i>	woodland horsetail	Equisetaceae	EQU SYL	native	5	-3	fern	perennial
<i>Erigeron annuus</i>	daisy fleabane	Asteraceae	ERIANN	native	0	3	forb	biennial
<i>Eupatorium perfoliatum</i>	boneset	Asteraceae	EUPPER	native	4	-3	forb	perennial
<i>Eurybia macrophylla; aster m.</i>	big-leaved aster	Asteraceae	EURMAC	native	4	5	forb	perennial
<i>Euthamia graminifolia</i>	grass-leaved goldenrod	Asteraceae	EUTGRA	native	3	0	forb	perennial
<i>Fragaria virginiana</i>	wild strawberry	Rosaceae	FRAVIR	native	2	3	forb	perennial
<i>Frangula alnus; rhamnus frangula</i>	glossy buckthorn	Rhamnaceae	FRAALN	non-native	0	0	shrub	perennial
<i>Fraxinus nigra</i>	black ash	Oleaceae	FRANIG	native	6	-3	tree	perennial
<i>Galium triflorum</i>	fragrant bedstraw	Rubiaceae	GALTRR	native	4	3	forb	perennial
<i>Gaultheria procumbens</i>	wintergreen	Ericaceae	GAUPRO	native	5	3	shrub	perennial
<i>Geum aleppicum</i>	yellow avens	Rosaceae	GEUALE	native	3	0	forb	perennial
<i>Geum canadense</i>	white avens	Rosaceae	GEUCAN	native	1	0	forb	perennial
<i>Gymnocarpium dryopteris</i>	oak fern	Cystopteridaceae	GYMDRY	native	5	3	fern	perennial
<i>Hieracium aurantiacum</i>	orange hawkweed	Asteraceae	HIEAUR	non-native	0	5	forb	perennial
<i>Hieracium pilosella</i>	mouse-ear hawkweed	Asteraceae	HIEPIA	non-native	0	5	forb	perennial
<i>Huperzia lucidula</i>	shining clubmoss	Lycopodiaceae	HUPLUC	native	5	0	fern	perennial
<i>Ilex mucronata; nemopanthus m.</i>	mountain holly	Aquifoliaceae	ILEMUC	native	7	-5	shrub	perennial
<i>Ilex verticillata</i>	michigan holly	Aquifoliaceae	ILEVER	native	5	-3	shrub	perennial
<i>Impatiens capensis</i>	spotted touch-me-not	Balsaminaceae	IMPCAP	native	2	-3	forb	annual
<i>Iris versicolor</i>	wild blue flag	Iridaceae	IRIVER	native	5	-5	forb	perennial
<i>Larix laricina</i>	tamarack	Pinaceae	LARLAR	native	5	-3	tree	perennial
<i>Leersia virginica</i>	white grass	Poaceae	LEEVIR	native	5	-3	grass	perennial
<i>Leucanthemella serotina; chrysanthemum s.</i>	giant daisy	Asteraceae	LEUSER	non-native	0	5	forb	perennial
<i>Leucanthemum vulgare; chrysanthemum leucanthemum</i>	ox-eye daisy	Asteraceae	LEUVUL	non-native	0	5	forb	perennial
<i>Lonicera canadensis</i>	canadian fly honeysuckle	Caprifoliaceae	LONCAN	native	5	3	shrub	perennial
<i>Lonicera reticulata</i>	grape honeysuckle	Caprifoliaceae	LONRET	non-native	0	5	vine	perennial
<i>Lycopus americanus</i>	common water horehound	Lamiaceae	LYCAME	native	2	-5	forb	perennial
<i>Lycopus uniflorus</i>	northern bugle weed	Lamiaceae	LYCUNI	native	2	-5	forb	perennial
<i>Maianthemum canadense</i>	canada mayflower	Convallariaceae	MAICAN	native	4	3	forb	perennial
<i>Maianthemum racemosum; smilacina r.</i>	false spikenard	Convallariaceae	MAIRAC	native	5	3	forb	perennial
<i>Malva moschata</i>	musk mallow	Malvaceae	MALMOS	non-native	0	5	forb	perennial
<i>Medeola virginiana</i>	indian cucumber-root	Convallariaceae	MEDVIR	native	10	3	forb	perennial
<i>Melampyrum lineare</i>	cow-wheat	Orobanchaceae	MELLIN	native	6	3	forb	annual
<i>Melilotus albus</i>	white sweet-clover	Fabaceae	MELALB	non-native	0	3	forb	biennial
<i>Mitchella repens</i>	partridge-berry	Rubiaceae	MITREP	native	5	3	forb	perennial

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<i>Myrica gale</i>	sweet gale	Myricaceae	MYRGAL	native	6	-5	shrub	perennial
<i>Onoclea sensibilis</i>	sensitive fern	Onocleaceae	ONOSEN	native	2	-3	fern	perennial
<i>Osmunda cinnamomea</i>	cinnamon fern	Osmundaceae	OSMCIN	native	5	-3	fern	perennial
<i>Pastinaca sativa</i>	wild parsnip	Apiaceae	PASSAT	non-native	0	5	forb	biennial
<i>Phalaris arundinacea</i>	reed canary grass	Poaceae	PHAARU	native	0	-3	grass	perennial
<i>Phegopteris hexagonoptera;</i> <i>thelypteris h.</i>	broad beech-fern	Thelypteridaceae	PHEHEX	native	8	3	fern	perennial
<i>Phleum pratense</i>	timothy	Poaceae	PHLPRA	non-native	0	3	grass	perennial
<i>Pimpinella saxifraga</i>	burnet-saxifrage	Apiaceae	PIMSAX	non-native	0	5	forb	perennial
<i>Pinus strobus</i>	white pine	Pinaceae	PINSTR	native	3	3	tree	perennial
<i>Platanthera ciliaris;</i> <i>habenaria c.</i>	orange fringed orchid	Orchidaceae	PLACIL	native	10	-3	forb	perennial
<i>Populus balsamifera</i>	balsam poplar	Salicaceae	POPBAL	native	2	-3	tree	perennial
<i>Populus grandidentata</i>	big-tooth aspen	Salicaceae	POPGRA	native	4	3	tree	perennial
<i>Populus tremuloides</i>	quaking aspen	Salicaceae	POPTRE	native	1	0	tree	perennial
<i>Prunella vulgaris</i>	self-heal	Lamiaceae	PRUVUL	native	0	0	forb	perennial
<i>Prunus virginiana</i>	choke cherry	Rosaceae	PRUVIR	native	2	3	shrub	perennial
<i>Pteridium aquilinum</i>	bracken fern	Dennstaedtiaceae	PTEAQU	native	0	3	fern	perennial
<i>Quercus rubra</i>	red oak	Fagaceae	QUERUB	native	5	3	tree	perennial
<i>Quercus velutina</i>	black oak	Fagaceae	QUEVEL	native	6	5	tree	perennial
<i>Ranunculus acris</i>	tall or common buttercup	Ranunculaceae	RANACR	non-native	0	0	forb	perennial
<i>Rosa palustris</i>	swamp rose	Rosaceae	ROSPAL	native	5	-5	shrub	perennial
<i>Rubus acaulis</i>	dwarf raspberry	Rosaceae	RUBACA	native	10	-3	shrub	perennial
<i>Rubus canadensis</i>	dewberry	Rosaceae	RUBCAN	native	2	5	shrub	perennial
<i>Rubus occidentalis</i>	black raspberry	Rosaceae	RUBOCC	native	1	5	shrub	perennial
<i>Rubus pubescens</i>	dwarf raspberry	Rosaceae	RUBPUB	native	4	-3	shrub	perennial
<i>Salix bebbiana</i>	bebb's willow	Salicaceae	SALBEB	native	1	-3	shrub	perennial
<i>Salix petiolaris</i>	slender willow	Salicaceae	SALPET	native	1	-3	shrub	perennial
<i>Sanicula marilandica</i>	black snakeroot	Apiaceae	SANMAR	native	4	3	forb	perennial
<i>Scirpus atrovirens</i>	bulrush	Cyperaceae	SCIATV	native	3	-5	sedge	perennial
<i>Scirpus cyperinus</i>	wool-grass	Cyperaceae	SCICYP	native	5	-5	sedge	perennial
<i>Scutellaria galericulata</i>	marsh skullcap	Lamiaceae	SCUGAL	native	5	-5	forb	perennial
<i>Scutellaria lateriflora</i>	mad-dog skullcap	Lamiaceae	SCULAT	native	5	-5	forb	perennial
<i>Sium suave</i>	water-parsnip	Apiaceae	SIUSUA	native	5	-5	forb	perennial
<i>Solidago rugosa</i>	rough-leaved goldenrod	Asteraceae	SOLRUG	native	3	0	forb	perennial
<i>Sparganium androcladum</i>	bur-reed	Typhaceae	SPAAND	native	6	-5	forb	perennial
<i>Sparganium eurycarpum</i>	common bur-reed	Typhaceae	SPAEUR	native	5	-5	forb	perennial
<i>Spinulum annotinum;</i> <i>lycopodium a.</i>	stiff clubmoss	Lycopodiaceae	SPIANN	native	5	0	fern	perennial
<i>Spiraea alba</i>	meadowsweet	Rosaceae	SPIALB	native	4	-3	shrub	perennial
<i>Stellaria graminea</i>	starwort	Caryophyllaceae	STEGRE	non-native	0	5	forb	perennial
<i>Streptopus lanceolatus;</i> <i>s. roseus</i>	rose twisted-stalk	Convallariaceae	STRLAN	native	5	3	forb	perennial
<i>Thalictrum dasycarpum</i>	purple meadow-rue	Ranunculaceae	THADAS	native	3	-3	forb	perennial

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<i>Thuja occidentalis</i>	arbor vitae	Cupressaceae	THUOCC	native	4	-3	tree	perennial
<i>Trientalis borealis</i>	star-flower	Myrsinaceae	TRIBOR	native	5	0	forb	perennial
<i>Trifolium hybridum</i>	alsike clover	Fabaceae	TRIHYP	non-native	0	3	forb	perennial
<i>Trifolium pratense</i>	red clover	Fabaceae	TRIPRA	non-native	0	3	forb	perennial
<i>Trillium cernuum</i>	nodding trillium	Trilliaceae	TRICER	native	5	0	forb	perennial
<i>Vaccinium angustifolium</i>	low sweet blueberry	Ericaceae	VACANG	native	4	3	shrub	perennial
<i>Vaccinium myrtilloides</i>	canada blueberry	Ericaceae	VACMYR	native	4	-3	shrub	perennial
<i>Verbena hastata</i>	blue vervain	Verbenaceae	VERHAS	native	4	-3	forb	perennial
<i>Viburnum opulus</i>	european highbush-cranberry	Adoxaceae	VIBOPU	non-native	0	-3	shrub	perennial

