



Treaty Rights and Subsistence Fishing in the U.S. Waters of the Great Lakes, Upper Mississippi River, and Ohio River Basins

June 2012



**U.S. Army Corps
of Engineers**
Product of the GLMRIS Team

The Great Lakes and Mississippi River Interbasin Study (GLMRIS) Team consists of a regional, collaborative effort led by the U.S. Army Corps of Engineers (Corps), including various District and Division offices, as well as Corps Centers of Expertise and Research Laboratories. Products of the GLMRIS Team are also made possible in collaboration with various federal, state, local, and non-governmental stakeholders.

Page intentionally left blank.

**TREATY RIGHTS AND SUBSISTENCE FISHING IN THE U.S. WATERS OF THE
GREAT LAKES, UPPER MISSISSIPPI RIVER, AND OHIO RIVER BASINS**

Prepared by

Angela Kappen, Timothy Allison, and Bruce Verhaaren
Environmental Science Division
Argonne National Laboratory

for

The GLMRIS Fisheries and Economics Team
U.S. Army Corps of Engineers
Chicago District

June 2012

Prepared by Angela Kappen, Timothy Allison, and Bruce T. Verhaaren, Environmental Science Division, Argonne National Laboratory, Argonne, Ill. Work supported under Military Interdepartmental Purchase Request W81G6602391126 from the U.S Department of Defense, Department of the Army, Corps of Engineers Chicago district, through U.S. Department of Energy contract DE-AC02-06CH11357.

About Argonne National Laboratory

Argonne is a U.S. Department of Energy laboratory managed by UChicago Argonne, LLC, under contract DE-AC02-06CH11357. The laboratory's main facility is outside Chicago at 9700 South Cass Avenue, Argonne, Illinois 60439. For information about Argonne, see www.anl.gov.

CONTENTS

ACKNOWLEDGMENTS	vii
NOTATION.....	viii
SUMMARY.....	1
1 INTRODUCTION.....	3
1.1 Study Methods.....	8
1.2 Great Lakes Basin.....	9
1.3 Upper Mississippi River Basin.....	11
1.4 Ohio River Basin.....	11
1.5 Treaties.....	12
1.5.1 Big Tree Treaty of 1797.....	12
1.5.2 Treaties with the Chippewa and Ottawa, 1836–1854.....	13
1.5.2.1 1836 Treaty.....	13
1.5.2.2 1837 Treaty.....	14
1.5.2.3 1842 Treaty.....	15
1.5.2.4 1854 Treaty.....	15
1.6 Defining Subsistence.....	15
2 TRADITIONAL SUBSISTENCE ACTIVITIES.....	18
2.1 Fishing Techniques Used in the Past.....	19
2.1.1 Nets.....	19
2.1.2 Weirs and Traps.....	22
2.1.3 Fish Spears.....	22
2.1.4 Angling.....	23
2.1.5 Other Fishing Methods.....	24
2.1.6 Traditional Target Fish Species.....	24
2.1.7 Preparation Techniques and Preservation.....	25
2.2 Plant Resources.....	26
2.2.1 Wild Rice.....	27
2.2.2 Other Gathering.....	28
2.3 Hunting and Trapping.....	28
3 PRESENT-DAY SUBSISTENCE PRACTICES OF TREATY TRIBES.....	30
3.1 Chippewa Ottawa Resource Authority.....	31
3.1.1 Grand Traverse Band of Ottawa and Chippewa Indians.....	35
3.1.2 Little River Band of Ottawa Indians.....	35
3.1.3 Little Traverse Bay Bands of Odawa Indians.....	36
3.1.4 Sault Ste. Marie Tribe of Chippewa Indians of Michigan.....	38

CONTENTS (Cont.)

3.1.5	Bay Mills Indian Community	38
3.2	Great Lakes Indian Fish and Wildlife Commission.....	39
3.2.1	Keweenaw Bay Indian Community	41
3.2.2	Lac Vieux Desert Band of Lake Superior Chippewa Indians.....	41
3.2.3	Bad River Band of Lake Superior Chippewa Tribe.....	47
3.2.4	Red Cliff Band of Lake Superior Chippewa Indians of Wisconsin.....	47
3.2.5	Lac du Flambeau Band of Lake Superior Chippewa Indians of Wisconsin	48
3.2.6	Lac Courte Oreilles Band of Ojibwe	48
3.2.7	Sokaogon Chippewa Community	48
3.2.8	St. Croix Chippewa Indians of Wisconsin.....	49
3.2.9	Mille Lacs Band of Ojibwe.....	49
3.2.10	Fond du Lac Band of Lake Superior Chippewa Indians.....	49
3.3	1854 Treaty Authority.....	50
4	PRESENT-DAY SUBSISTENCE PRACTICES OF NON-TREATY TRIBES	54
4.1	Non-Treaty Tribes That Practice Subsistence Fishing.....	54
4.1.1	Notawaseppi Huron Band of the Potawatomi.....	54
4.1.2	Stockbridge-Munsee Community	55
4.1.3	Saginaw Chippewa Indian Tribe of Michigan	55
4.1.4	Seneca Nation of Indians	55
4.1.5	St. Regis Mohawk Tribe	56
4.2	Non-Treaty Tribes That Do Not Practice Subsistence Fishing.....	56
4.2.1	Contamination.....	56
4.2.2	Metropolitan Areas	57
4.2.3	Scattered Land Base.....	58
4.3	Non-Treaty Tribes Unavailable for Interviews.....	58
5	CATCH AND VALUATION ASSOCIATED WITH TREATY RIGHTS FISHING	59
5.1	Tribal Subsistence Fish Harvests	59
5.2	Tribal Subsistence Fishing Valuation	61
6	CULTURAL VALUES	64
6.1	Algonquin	64
6.2	Iroquois	66
6.3	Sensitive Areas and Religious Sites.....	66

CONTENTS (Cont.)

7	CONCLUSIONS	68
8	REFERENCES	69
	APPENDIX: TRIBAL CONTACT EFFORTS	78

FIGURES

1.1	GLMRIS Study Area	4
1.2	Indian Reservations in the Study Area.....	5
1.3	Areas Ceded by Treaty Where Subsistence Rights Were Retained.....	10
2.1	Gill Net.....	20
2.2	Basic Seine Net.....	21
2.3	Trap Net	21
3.1	Streams and Rivers within the Territory Ceded under the 1836 Treaty	33
3.2	Streams and Rivers within the Territory Ceded under the 1837 Treaty	43
3.3	Streams and Rivers within the Territory Ceded under the 1842 Treaty	45
3.4	Streams and Rivers within the Territory Ceded under the 1854 Treaty	51
3.5	Grand Portage Zone	53

TABLES

1.1	Federally Recognized Tribes within the Study Area	7
1.2	Tribes Residing in the Great Lakes Basin.....	9
1.3	Tribes Residing in the Upper Mississippi River Basin.....	11

TABLES (Cont.)

2.1	Aboriginal Food Fish in the Great Lakes, Upper Mississippi River, and Ohio River Basins	25
3.1	CORA Member Tribes.....	32
3.2	Fish Species Taken by Subsistence Harvesters	37
3.3	GLIFWC Member Tribes	39
3.4	Minnesota 1837 Ceded Territory Inland Spearing and Netting Harvest in Connected Water Bodies, 1998–2008	40
3.5	Species Harvested in the 2005–2009 Wisconsin Spring Spearing Season from Connected Water Bodies.....	42
3.6	1854 Treaty Authority Member Tribes.....	50
4.1	Non-Treaty Tribes That Practice Subsistence Fishing.....	54
4.2	Non-Treaty Tribes That Do Not Practice Subsistence Fishing.....	57
4.3	Non-Treaty Tribes Unavailable for Interviews.....	58
5.1	Reported Harvest for CORA-Licensed Subsistence Fishing in Michigan by Method: Annual Average Weight in Pounds, Over the Period 2006–2010.....	60
5.2	Subsistence Spear Fishing in Wisconsin Water Bodies, 2005–2009.....	61
5.3	Annual Individual Household Subsistence Activity Valuation (2011 dollars).....	63

ACKNOWLEDGMENTS

We are grateful that throughout our research, we were afforded the chance to work with knowledgeable professionals. We would like to thank all the representatives of the Native American tribes who took the time to sit with us and talk about their valuable resources:

- Vice-Chairman Marvin DeFoe, Subsistence Fisherman Charles Newago, Treaty Natural Resources Administrator Chad Abel, Fisheries Specialist Bryan Bainbridge, and Tribal Historic Preservation Officer Larry Balber of the Red Cliff Band of Lake Superior Chippewa Indians of Wisconsin;
- Water Resource Specialist Naomi Tillison, Fisheries Specialist Tim Wilson, Fishery Technician Ed Leoso, Subsistence Fisherman Michael Plucinski, and Tribal Historic Preservation Officer Edith Leoso of the Bad River Band of Lake Superior Chippewa Tribe;
- Director of Biology and Environment Seth Moore, Fish and Wildlife Biologist E.J. Isaac, and Chairman Norman Deschampe of the Grand Portage Band of Lake Superior Chippewa Indians;
- Natural Resources Director Thomas Howes and Tribal Historic Preservation Officer Leroy DeFoe of the Fond du Lac Band of Lake Superior Chippewa Indians; and
- Cecil Pavlat, Tribal Historic Preservation Officer for the Sault Ste. Marie Tribe of Chippewa Indians of Michigan.

We would like to thank the intertribal organizations for helping us to understand their roles in administering the different treaties and allowing us to interview them. We thank the Director of the Administration for Native Americans Program, H. James St. Arnold; Inland Fisheries Specialist, Joe D. Rose, Jr.; and Great Lakes Fisheries Specialist, Bill Mattes, of the Great Lakes Fish and Wildlife Commission. We also thank Executive Director, Sonny Myers, and Director of the Resource Management Division, Andy Edwards, at the 1854 Treaty Authority.

In addition, we would also like to thank the government agencies who were willing to share their information with us and guide us to the right places to gather our information. Special thanks go to the Michigan Department of Natural Resources, Fisheries Division, and to David Caroffino and Dennis Knapp at the Wildlife Division. We thank Fisheries Biologist, Scott Hanson, and Lake Superior Fisheries Team Supervisor, Peter Stevens, at the Wisconsin Department of Natural Resources as well.

Finally, we would like to thank Elizabeth Hocking, of Argonne National Laboratory, for her research on treaties and other legal issues and Hal Greenwood, also of Argonne, for creating the maps included in this report.

NOTATION

ANS	aquatic nuisance species
BMIC	Bay Mills Indian Community
CORA	Chippewa Ottawa Resource Authority
GIS	geographic information system
GLIFWC	Great Lakes Indian Fish and Wildlife Commission
GLMRIS	Great Lakes Mississippi River Interbasin Study
KBIC	Keweenaw Bay Indian Community
LRBOI	Little River Band of Ottawa Indians
NYSDEC	New York State Department of Environmental Conservation
SNI	Seneca Nation of Indians
UMR	Upper Mississippi River
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey

Page intentionally left blank.

TREATY RIGHTS AND SUBSISTENCE FISHING IN THE U.S. WATERS OF THE GREAT LAKES, UPPER MISSISSIPPI RIVER, AND OHIO RIVER BASINS

by

A. Kappen, T. Allison, and B. Verhaaren

SUMMARY

The U.S. Army Corps of Engineers (USACE), in consultation with other state and federal agencies and Native American tribes, is conducting the Great Lakes and Mississippi River Interbasin Study (GLMRIS) pursuant to the Section 3061(d) of the Water Resources Development Act of 2007. GLMRIS will explore options and technologies, collectively known as aquatic nuisance species (ANS) controls that could be applied to prevent ANS transfer between the Great Lakes, Mississippi River, and Ohio River Basins through aquatic pathways. As defined in the *Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990*, 16 U.S.C. § 4702(1), ANS are nonindigenous species that threaten the diversity or abundance of native species; or the ecological stability of infested waters; or commercial, agricultural, aquacultural, or recreational activities that depend on such waters. In support of GLMRIS, the USACE GLMRIS Fisheries Economics Team is conducting baseline studies of fisheries in the Great Lakes, Mississippi River, and Ohio River Basins. This study focuses on a unique sector of the fisheries — the subsistence fishery undertaken by Native American tribes under treaty rights.

Currently, 37 federally recognized tribes reside within the U.S. portion of the Great Lakes Basin, Upper Mississippi River Basin, and Ohio River Basin. These tribes, most of which are located next to or near the Great Lakes, are descendants of a larger indigenous population that was reduced and displaced by the arrival of Euro-American populations from the east. In the face of continued immigration, many tribes in the study area were forced to move west. Others sought to remain in their native lands and, through a series of treaties, ceded most of their traditional lands, retaining only small reserves.

Fishing, hunting, and gathering were important elements of their traditional lifeways, providing most or all of their subsistence. In some, but not all treaties, tribes reserved the right to hunt, fish, and gather on the lands they ceded, since they perceived that this right was essential to their survival and their ways of life. In spite of military, legal, and health challenges, 16 federally recognized tribes retain hunting, fishing, and gathering rights under the treaties. All of these tribes continue subsistence harvesting in the Great Lakes, Upper Mississippi River, and Ohio River Basins to greater or lesser extents. Among the other federally recognized tribes in the study area, those with reservations that provide access to major waterways and clean water still practice subsistence fishing. Many of the tribes that do not have access to rivers and streams on their reservation fish under the applicable state regulations on public land or are buying lakes for subsistence fishing purposes. In addition, the tribes that live close to contaminated waters have programs in place to help clean these waters in order to provide their members fishing

opportunities. The introduction of ANS is another component that could threaten their traditional ways of life. This study assesses the economic and cultural importance of subsistence harvesting for tribal communities in the Great Lakes, Upper Mississippi River, and Ohio River Basins.

Four separate treaties reserve subsistence hunting, gathering, and fishing rights for tribes in ceded territories in Michigan, Wisconsin, and Minnesota. Both the Ojibwe (Chippewa) and Ottawa bands retain these rights under the treaties, and both are also engaged in these subsistence activities. Although these communities and harvests associated with these activities are small, the activities do play a large role in the tribes' cultural identities. Typically, only a small number of tribal members are fully engaged in subsistence harvesting, but their harvest is shared with many throughout the community. They share their harvest with family, friends, and those in the community unable to fish. Typically, some of the people in the tribes are unable to purchase fish and would go without fish if they were not able to share in the subsistence harvest. Thus, subsistence harvesting is a core value for these bands, and the right to fish and hunt for subsistence is cherished by all, even those who are not presently engaged in the practice. It is part of the tribes' cultural identity and an indication of their status as sovereign entities.

Because of the importance of subsistence fishing, the tribes are concerned about the prospect of ANS damaging their fish harvest. The Algonquian tribes traditionally have seen themselves as having been placed along the Great Lakes and the Mississippi River by their Creator and given the responsibility of stewardship over their environment. The Iroquoian and Sioux tribes have also used the resources within the study area because they believe that those are the resources they have been given by their Creator to sustain themselves.

The valuation of subsistence harvests used a production cost model, which assumes that the value of subsistence fish harvests is equal to the cost of equipment, travel, and labor expended on subsistence activities. The annual value of subsistence activities to an individual household was estimated to be between approximately \$15,000 and \$16,500. Limitations associated with the production cost model meant that the amount of subsistence value that can be ascribed to social and cultural values, as distinct from food production, could not be determined.

1 INTRODUCTION

The U.S. Army Corps of Engineers (USACE), in consultation with other state and federal agencies and Native American tribes, is conducting the Great Lakes and Mississippi River Interbasin Study (GLMRIS) pursuant to the Section 3061(d) of the Water Resources Development Act of 2007. GLMRIS will explore options and technologies, collectively known as aquatic nuisance species (ANS) controls, that could be applied to prevent ANS transfer between the Great Lakes, Upper Mississippi River, and Ohio River Basins (see Figure 1.1) through aquatic pathways. As defined in the *Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990*, 16 U.S.C. § 4702(1), ANS are nonindigenous species that threaten the diversity or abundance of native species; or the ecological stability of infested waters; or commercial, agricultural, aquacultural, or recreational activities that depend on such waters. In support of GLMRIS, the USACE GLMRIS Fisheries Economics Team is conducting baseline studies of fisheries in the Great Lakes, Mississippi River, and Ohio River Basins. This study focuses on a unique sector of the fisheries — the subsistence fishery undertaken by Native American tribes in the study area.

Currently, 37 federally recognized tribes reside within the U.S. portion of the Great Lakes Basin, Upper Mississippi River Basin, and Ohio River Basin. Table 1.1 lists the tribes within the study area, and Figure 1.2 shows the locations of tribal reservations within the study area. These tribes, most of which are located next to or near the Great Lakes, are descendants of a larger indigenous population that was reduced and displaced by the arrival of Euro-American populations from the east. In the face of continued immigration, many tribes in the study area were forced to move west. Others sought to remain in their native lands and, through a series of treaties, ceded most of their traditional lands, retaining only small reserves.

Fishing, hunting, and gathering were important elements of these tribes' ways of life, providing most or all of their subsistence. In some, but not all, treaties, tribes reserved the right to hunt, fish, and gather on the lands they ceded, since they perceived that this right was essential to their survival and their way of life. In spite of military, legal, and health challenges, 16 federally recognized tribes retain hunting, fishing, and gathering rights under the treaties (see "Treaty Tribes" in Table 1.1). All of these tribes continue subsistence harvesting in the Great Lakes and Upper Mississippi River Basins to greater or lesser extents.

On the basis of information provided by other federally recognized tribes in the study area that were contacted for this study, those tribes with reservations that provide access to major water bodies and clean water still practice subsistence fishing. Many of the tribes that do not have access to rivers and streams on their reservations fish under the applicable state regulations on public land or are buying lakes for subsistence fishing purposes. In addition, the tribes that live close to contaminated waters have programs in place to help clean these waters in order to provide their members with fishing. The introduction of ANS is another component that could threaten their traditional way of life. This study assesses the economic and cultural importance of subsistence harvesting for tribal communities in the study area.

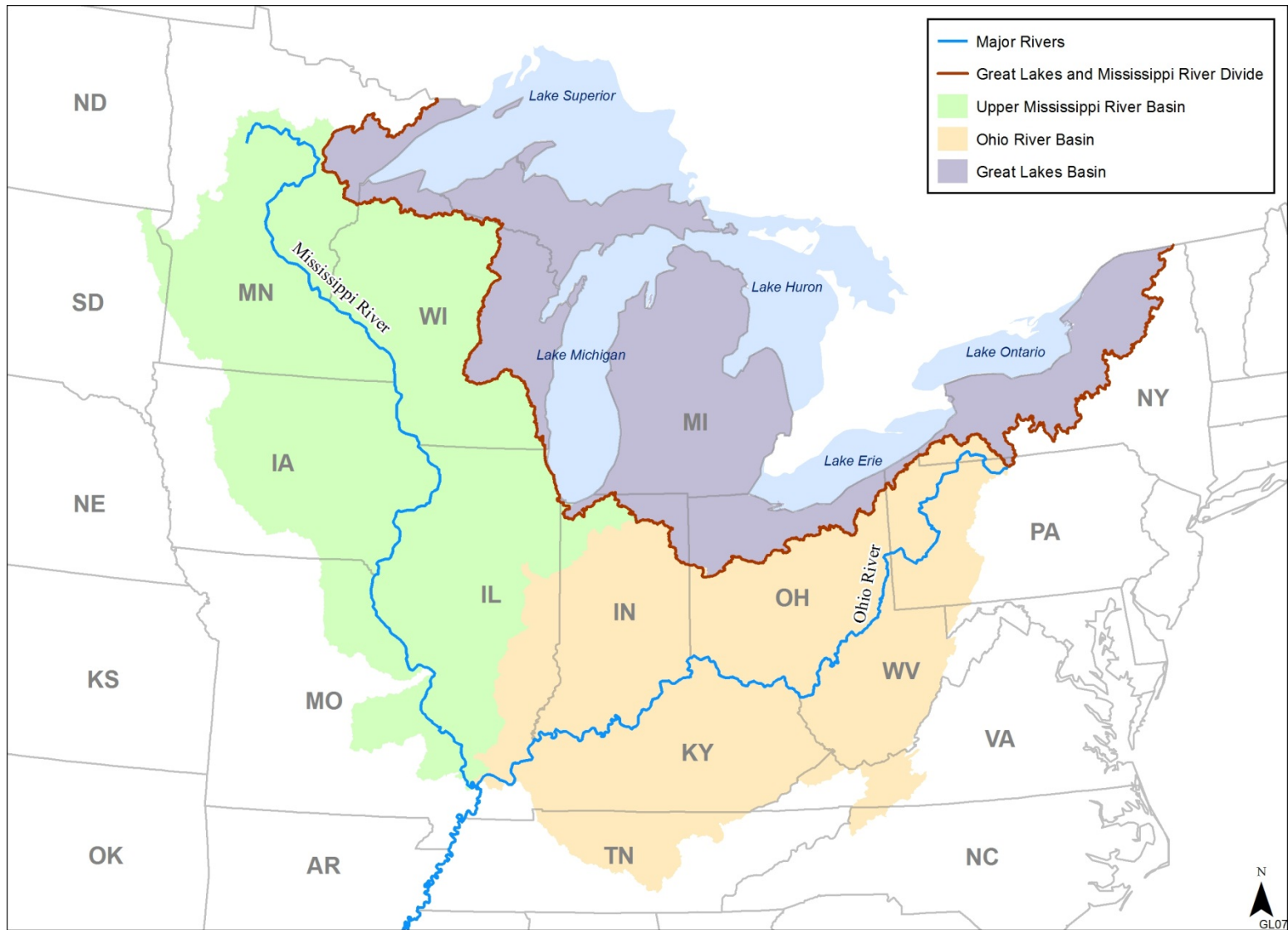


FIGURE 1.1 GLMRIS Study Area



FIGURE 1.2 Indian Reservations in the Study Area

Page intentionally left blank.

TABLE 1.1 Federally Recognized Tribes within the Study Area

Treaty Tribes	State
Grand Portage Band of Lake Superior Chippewa Indians	WI
Fond du Lac Band of Lake Superior Chippewa Indians	MN
Mille Lacs Band of Ojibwe	MN
St. Croix Chippewa Indians of Wisconsin	WI
Lac Courte Oreilles Band of Ojibwe	WI
Lac du Flambeau Band of Lake Superior Chippewa Indians	WI
Lac Vieux Desert Band of Lake Superior Chippewa Indians	MI
Bad River Band of Lake Superior Chippewa Tribe	WI
Red Cliff Band of Lake Superior Chippewa Indians	WI
Keweenaw Bay Indian Community	MI
Sokaogon Chippewa Community	WI
Sault Ste. Marie Tribe of Chippewa Indians	MI
Bay Mills Indian Community	MI
Little Traverse Bay Bands of Odawa Indians	MI
Little River Band of Ottawa Indians	MI
Grand Traverse Band of Ottawa and Chippewa Indians	MI
Non-Treaty Tribes	State
Prairie Island Indian Community	MN
Shakopee Mdewakanton Sioux Community	MN
Lower Sioux Indian Community	MN
Upper Sioux Community of Minnesota	MN
Sac and Fox Tribe of the Mississippi in Iowa	WI
Menominee Indian Tribe of Wisconsin	WI
Oneida Tribe of Indians of Wisconsin	WI
Ho-Chunk Nation	WI
Hannahville Indian Community	MI
Pokagon Band of Potawatomi Indians	MI
Nottawaseppi Huron Band of the Potawatomi	MI
Forest County Potawatomi	WI
Stockbridge-Munsee Community	WI
Saginaw Chippewa Indian Tribe of Michigan	MI
St. Regis Mohawk Tribe	NY
Seneca Nation of Indians	NY
Oneida Nation of New York	NY
Onondaga Nation	NY
Tuscarora Nation	NY
Tonawanda Band of Seneca Indians	NY
Cayuga Nation	NY

1.3 STUDY METHODS

This study analyzes tribal subsistence fishing in the Great Lakes, Upper Mississippi River, Ohio River and water bodies joined to them by unimpeded aquatic pathways that would provide access by aquatic nuisance species. To identify tribes in the Great Lakes, Upper Mississippi River, and Ohio River Basins (study area) and to verify the USACE tribal consultation list, maps and online databases were consulted. The Native American Consultation Database was reviewed for tribal contact information (NAGPRA 2011). Other maps that we consulted included the *Indian Land Areas Judicially Established* map (USGS 1978) and the *Early Indian Tribes, Culture Areas and Linguistic Stocks* map (USGS 1991). Relevant treaties were consulted to identify tribes that retain treaty rights within the study area. From this information, it was determined that there are very few tribes residing in the Upper Mississippi River Basin and Ohio River Basin when compared with the number that reside in the Great Lakes Basin.

Background information on traditional methods of subsistence fishing and on cultural values also was gathered. Background research including reviewing copies of treaties and studies on Native Americans was mainly conducted at the University of Wisconsin-Milwaukee Golda Meir library; the New Berlin, Wisconsin, public library; the University of Chicago library; and the Argonne National Laboratory library. Additional background research was conducted using the internet and by conducting personal interviews with tribal authorities on natural and cultural resources authorities.

To identify subsistence activities, we consulted state agencies, intertribal commissions, and tribal natural resource departments. This report describes the subsistence activities we evaluated as part of our study; it discusses the harvesting methods used, the locations of the fish being harvested, the names of the species being taken, and the costs associated with the harvests. The state agencies we consulted were the departments of natural resources and the environment for Minnesota, Michigan, Wisconsin, and New York. The intertribal commissions that we contacted were the 1854 Treaty Authority, Great Lakes Indian Fish and Wildlife Commission (GLIFWC), and Chippewa Ottawa Resource Authority (CORA). We also contacted tribal natural resource departments; Appendix A provides a list of them and briefly describes our efforts in this regard.

The valuation of subsistence harvests used a production cost model, which assumes that the value of subsistence fish harvests is equal to the cost of equipment, travel, and labor expended on subsistence activities. Limitations associated with the production cost model meant that the amount of subsistence value that can be ascribed to social and cultural values, as distinct from food production, could not be determined.

1.2 GREAT LAKES BASIN

More than half of the Native American tribes in the study area reside in the Great Lakes Basin (Table 1.2). Of these 27 tribes, 12 are part of negotiated treaty settlements with the U.S. Government. Figure 1.3 shows the ceded territory areas where subsistence rights have been retained. These treaty settlements have secured the tribes' rights to continue and uphold traditional way-of-life practices on the lands ceded to the U.S. Government (see Section 1.5).

The other 15 tribes within the Great Lakes Basin either continue to practice subsistence fishing on their reservations or have historically engaged in subsistence fishing but do not now. The non-treaty tribes consulted indicated that a few members do engage in subsistence fishing off their reservations on public land, under the appropriate state's fishing regulations.

TABLE 1.2 Tribes Residing in the Great Lakes Basin

Grand Portage Band of Lake Superior Chippewa Indians
Fond du Lac Band of Lake Superior Chippewa Indians
Red Cliff Band of Lake Superior Chippewa Indians
Bad River Band of Lake Superior Chippewa Tribe
Lac Vieux Desert Band of Lake Superior Chippewa Indians
Keweenaw Bay Indian Community
Sokaogon Chippewa Community
Sault Ste. Marie Tribe of Chippewa Indians
Bay Mills Indian Community
Little Traverse Bay Bands of Odawa Indians
Little River Band of Ottawa Indians
Grand Traverse Band of Ottawa and Chippewa Indians
Menominee Indian Tribe of Wisconsin
Oneida Tribe of Indians of Wisconsin
Hannahville Indian Community
Pokagon Band of Potawatomi Indians
Nottawaseppi Huron Band of the Potawatomi
Forest County Potawatomi
Stockbridge-Munsee Community
Saginaw Chippewa Indian Tribe of Michigan
St. Regis Mohawk Tribe
Seneca Nation of Indians
Oneida Nation of New York
Onondaga Nation
Tuscarora Nation
Tonawanda Band of Seneca Indians
Cayuga Nation



FIGURE 1.3 Areas Ceded by Treaty Where Subsistence Rights Were Retained

1.3 UPPER MISSISSIPPI RIVER BASIN

Ten Native American tribes reside in the Upper Mississippi River Basin (Table 1.3). Four of them are part of negotiated treaty settlements that allow subsistence fishing within the treaty ceded areas (Figure 1.3). Five of the tribes in the Upper Mississippi River Basin do not practice subsistence fishing. One tribe — Sac and Fox Tribe of the Mississippi in Iowa — chose not to share details regarding their subsistence fishing activities.

The five tribes residing in the Upper Mississippi River Basin that do not have subsistence treaty rights have abandoned subsistence fishing for many reasons. They have access to other food sources, but more importantly, without acknowledged treaty protection, members of these tribes fall under state fishing and hunting regulations that may limit or prohibit traditional harvesting methods. Legal subsistence practices may be limited to resources within reservation boundaries. The majority of these tribes have reservations in urban areas that provide employment opportunities and resources that allow tribal members to buy the fish they would historically have harvested. Contamination of the waters that are on or that flow through their reservations is another reason that tribal members have abandoned subsistence fishing. Furthermore, urban proximity often results in more pollution in the major waterways. The tribal reservations usually include only a small stretch of these waterways, and cleanup can be done only if there is cooperation from surrounding communities.

1.4 OHIO RIVER BASIN

Currently, one Native American tribe resides within the Ohio River Basin: the Seneca Nation of Indians (SNI). The members of this tribe occupy three separate reservations within New York State. The SNI Allegany Reservation is located on the border of New York and Pennsylvania and is in the Ohio River Basin. The other two SNI reservations are in the Great Lakes Basin.

TABLE 1.3 Tribes Residing in the Upper Mississippi River Basin

Mille Lacs Band of Ojibwe
St. Croix Chippewa Indians of Wisconsin
Lac Courte Oreilles Band of Ojibwe
Lac du Flambeau Band of Lake Superior Chippewa Indians of Wisconsin
Prairie Island Indian Community
Shakopee Mdewakanton Sioux Community
Lower Sioux Indian Community
Upper Sioux Community of Minnesota
Sac and Fox Tribe of the Mississippi in Iowa
Ho-Chunk Nation

According to tribal authorities, the SNI practice subsistence fishing in the Allegheny River, which is within the Ohio River Basin.

1.5 TREATIES

Specific Native American rights to fish and hunt in certain areas of the Great Lakes and Upper Mississippi River Basins are based upon rights reserved when tribes were negotiating the treaties by which they ceded land to the United States. The U.S. Constitution, treaties, statutes, Executive Orders, and federal court decisions recognize the unique relationship between the U.S. Government and federally recognized Indian tribes. Federally recognized Indian tribes exercise inherent sovereign powers over their members and territories (Executive Order 13175, 2000) and may retain reserved rights beyond current reservation boundaries.

Native American societies were sovereign nations governing themselves before the arrival of European settlers. The U.S. Constitution, treaties, statutes, Executive Orders, and federal court decisions recognize their sovereignty and uphold their rights as dependent sovereign nations. Treaties concluded between the U.S. Government and tribal nations that ceded lands to the United States sometimes include rights that the tribes reserve to themselves, such as access to traditional resources (including fisheries, wildlife, culturally important plants, and mineral resources). These rights are not granted by the U.S. Government; they are rights that the tribes had traditionally exercised and that they reserved to themselves in treaties. These treaties are binding, unless specifically abrogated by Congress.

The treaties discussed herein specifically reserve tribal rights to hunt, fish, and gather traditional resources in the ceded lands. The courts have generally upheld these rights. Rights have been upheld for portions of the Great Lakes and Upper Mississippi River Basins and, subsequently, for inland resources.

1.5.1 Big Tree Treaty of 1797

Over the years, many treaties have been concluded between Native American tribes inhabiting the study area and the U.S. Government, but only some of the treaties reserve the rights of the tribes to fish and hunt. The first of these treaties was the 1797 Big Tree Treaty with the Seneca. Under the terms of this treaty, the Seneca ceded large areas in western New York in exchange for a cash payment, but “excepting and reserving to them, the said parties of the first part [the Seneca] and their heirs, the privilege of fishing and hunting on the said tract of land hereby intended to be conveyed” (Agreement with the Seneca 1797).

Unlike subsequent rulings regarding later treaties with the Chippewa and Ottawa, in 1916, the U.S. Supreme Court ruled that the term “privilege of hunting and fishing” in this treaty only meant that tribal members could hunt and fish on the ceded lands to the same extent as anyone else who had purchased ceded lands (*Kennedy v. Becker* 1916). Every New York State resident, including members of the Seneca Nation, was therefore subject to New York State’s hunting and fishing rules and regulations.

1.5.2 Treaties with the Chippewa and Ottawa, 1836–1854

Similar language that reserves hunting, fishing, and gathering rights in later treaties ceding lands in Michigan, Wisconsin, and Minnesota has been interpreted differently, as courts have taken the view that treaties must be understood as the Native Americans who concluded the treaties understood them (Tierny 2011). This approach to interpreting treaties was established in 1832 (*Worcester v. Georgia* 1832).

Traditionally, the Chippewa and Ottawa had lived as fishers, hunters, and gatherers, moving in a seasonal round from resource area to resource area as the seasons and weather dictated. This way of life required the freedom to move over a relatively large area. In the treaties concluded during the 19th century, Native Americans retained relatively small parcels of land, which were insufficient to support a hunting, fishing, and gathering way of life. Therefore, Chippewa and Ottawa elders made sure in treaty negotiations that they retained access to natural resources located beyond reservation boundaries that were necessary for their survival and the continuation of their way of life.

1.5.2.1 1836 Treaty

A treaty with the Ottawa and Chippewa that concluded on March 28, 1836, ceded the northwestern third of Michigan's Lower Peninsula, the eastern portion of the Upper Peninsula, and adjacent areas of the Great Lakes within the United States (Figure 1.3). This treaty is known as the 1836 Treaty. Article First of the treaty specifies the boundaries of the land ceded to the United States. The land described in Article First is the ceded territory within the State of Michigan where the tribes retain their rights to hunt, fish, and gather by traditional means.

Article 13 of the treaty contains the statement, "The Indians stipulate for the right of hunting on the lands ceded, with the other usual privileges of occupancy, until the land is required for settlement" (Treaty with the Ottawa 1836). These rights of access and harvest are referred to as "Article 13 Rights" by the Ottawa and Chippewa tribes.

In 1979, the notion of settlement as stated in Article 13 was challenged. The court ruled that the waters of the Great Lakes would never be required "for settlement" and that the usual privileges or occupancy included the right to fish, on the basis of the importance of the Great Lakes fishery to the tribes' culture, subsistence, and livelihood (*United States of America v. State of Michigan* 1979).

Following the 1979 ruling and subsequent appeals, tribes were able to continue to use and to regulate traditional fishing methods (e.g., gill nets) in parts of the Great Lakes for subsistence and commercial purposes. Since the tribes had inherent sovereign powers over their members, they had the right to regulate tribal fishing, and the state could interfere only to prevent irreparable harm to fisheries in state waters (McRoy and Bichler 2011). Tribes demonstrated that they could manage the natural resources within their reservations, and they established intertribal organizations to regulate the hunting, fishing, and gathering activities of tribal members on ceded lands and waters beyond the borders of the reservations.

Six years later, in 1985, the tribes, the State of Michigan, the United States, and concerned citizen groups negotiated the conditions under which tribal members could exercise their Article 13 Rights. The federal courts recognized that the agreements were successful and issued a consent decree to govern tribal harvesting. The 1985 decree had a 15-year duration and dealt only with Great Lakes waters. The decree was renegotiated and reissued in 2000 with a 20-year duration; it is currently in force.

Negotiators of the 2000 consent decree mutually agreed to leave inland treaty rights to later adjudication. The 2000 decree is concerned mainly with commercial fishing by tribal members and serves to resolve differences over the allocation, management, and regulation of fishing in 1836 Treaty waters in Lake Michigan, Lake Superior, Lake Huron, and connecting waters. It allows for subsistence fishing by commercial fishers in the same waters where commercial fishing is allowed. However, the decree limits the size of nets and the take allowed for subsistence fishers. In addition, subsistence fishers must be licensed by tribes, and the tribes must report the subsistence take to CORA, which provides the information to the Michigan Department of Natural Resources. In response to these conditions, CORA has been delegated certain management and regulatory authority over treaty-based harvests of wild resources on the 1836 ceded lands. The Great Lakes Resources Committee of CORA also promulgates tribal fishing regulations in the Great Lakes.

In 2003, litigation began on “inland harvesting,” defined as subsistence harvesting on lands, lakes, and rivers within portions of Michigan’s Upper and Lower Peninsulas ceded under the 1836 Treaty. The purpose of the litigation was to establish whether inland Article 13 Rights existed, and, if so, where they could be exercised. An agreement in principle was reached in 2006, and the Inland Consent Decree was issued in 2007. Unlike the 2000 Consent Decree, the 2007 Inland Consent Decree was designed to last in perpetuity.

Under the 2007 Inland Consent Decree, Article 13 Rights are affirmed on most public and publicly accessible lands and waters in the ceded territories. The only time harvesting is not permitted within public lands is when an area is protected or deemed necessary for the maintenance and restoration of fisheries and other wildlife populations. The decree covers fishing, hunting, and gathering. In most cases, commercial harvesting is prohibited. Special consideration is given to species, such as elk and bear, that require allocation. These species have limited wild populations, and hunting permits must be allocated between tribal and non-tribal hunters. Bears are a special case. Each tribe is allotted an annual take of two individuals for medicinal/ceremonial purposes beyond the year’s hunting quota.

1.5.2.2 1837 Treaty

In the 1837 Treaty with the Chippewa, also known as the Pine Tree Treaty, inland portions of Wisconsin and Minnesota, including part of the Upper Mississippi Basin, were ceded to the United States (Figure 1.3) (Arnold 2011). Article 5 of the Pine Tree Treaty states, “The privilege of hunting, fishing, and gathering the wild rice, upon the lands, the rivers and the lakes

included in the territories ceded, is guaranteed to the Indians, during the pleasure of the President of the United States” (Treaty with the Chippewa 1837).

1.5.2.3 1842 Treaty

In the 1842 Treaty with the Chippewa, also known as the Copper Treaty, lands between the 1837-ceded territory and Lake Superior in northern Wisconsin and the western part of Michigan’s Upper Peninsula (Figure 1.3) were ceded. Article 2 of this treaty stated, “The Indians stipulate for the right of hunting on the ceded territory, with the other usual privileges of occupancy, until required to remove by the President of the United States” (Treaty with the Chippewa 1842).

Rights under this treaty were upheld in the 1983 Voigt decision when the Seventh Circuit Court of Appeals reversed a lower court decision and held that Native American usufructary rights (i.e., rights to hunt, fish, and gather) on ceded lands under the 1837 and 1842 Treaties were still in effect (*Lac Courte Oreilles Band of Lake Superior Chippewa Indians v. P. Voigt United States* 1983). A later decision ruled that those usufructary rights had been terminated on private land (*Lac Courte Oreilles Band of Lake Superior Indians v. State of Wisconsin* 1987).

1.5.2.4 1854 Treaty

The 1854 Treaty with the Chippewa, also known as the La Pointe Treaty, established permanent reservations for the Chippewa. Article 11 of the treaty states, “And such of them [Chippewas of Lake Superior] as reside in the territory hereby ceded, shall have the right to hunt and fish therein, until otherwise ordered by the President” (Treaty with the Chippewa 1854). In the 20th and 21st centuries, federal courts have ruled that Chippewa usufructary rights under the Treaties of 1837 and 1854 remain and that tribes could avoid interference by the state if they demonstrate that they can effectively regulate their own members (McRoy and Bichler 2011).

Several of the tribes who were signatories to the treaties of 1837, 1842, or 1854 formed the Great Lakes Indian Fish and Wildlife Commission (GLIFWC) and the 1854 Treaty Authority. These organizations are tribal resource management agencies with authority delegated from the tribes. The GLIFWC provides support to tribes in the exercise of their rights on ceded land, while protecting the natural resources of those lands. The Lakes Committee of GLIFWC, which represents the tribes that fish commercially in Lake Superior, recommends practices to manage the Lake Superior resources. Regulations on the take and seasons for each species are established under tribally adopted codes.

1.6 DEFINING SUBSISTENCE

The term “subsistence” as applied to Native American societies has not been consistently defined and applied. Subsistence takes into account the geographic area, the culture of the people in question, and the degree to which they rely on the resources that sustain them. This section of

the report attempts to define what subsistence means to the Native Americans in the GLMRIS study area.

The definition of subsistence as implied in *United States of America v. State of Michigan* (1979) is “the long term consistent pattern of use of the natural resources by Native Americans.” Since Indians long relied on fishing, hunting and gathering for their livelihood, they would have expected that reliance to continue on lands they ceded. In *United States of America v. Michigan*, the court relied on the testimony of expert witnesses to build its understanding of subsistence. By studying the history of negotiations and the entire history of the Michigan Indians, the expert witnesses found evidence that supported the abundance of fish in this region and the difficulty of agricultural practices. They showed that the Michigan Indians grew to depend on the fisheries and other wildlife to enable them to secure European goods and that their earliest participation in the European market economy rested on their knowledge of the resources that were available to them. It is this sort of evidence that the court had to evaluate in order to determine whether the Ottawa and Chippewa so depended upon subsistence of the natural resources at the time that they signed the treaty of 1836, they could not have knowingly signed away their right to fish, hunt and gather.

In *United States of America v. State of Michigan*, the court states:

Thus, the Indians impliedly reserved the right to subsistence and commercial fishing because of this resource’s importance to the Indian community at and before the time they entered into the treaty.

The definition of subsistence as defined in the 2000 Consent Decree and the 2007 Inland Consent Decree is “the taking of fish for personal or family consumption and not for sale or trade.” Both Consent Decrees recognize the signatory’s rights to practice traditional subsistence uses of natural resources and to utilize those natural resources in living off the land.

The U.S. Code of Federal Regulations, Title 36, Part 242.16 identifies certain criteria that are considered when making customary and traditional use determinations. These criteria were established for subsistence management on public lands in Alaska, however, there are many similarities that pertain to the treaty-ceded areas within Minnesota, Wisconsin and Michigan. The following eight criteria are considered a working definition of subsistence for GLMRIS as implied and defined in the above treaties and negotiations.

1. A long-term consistent pattern of use, excluding interruptions beyond the control of the community or area;
2. A pattern of use recurring in specific seasons for many years;
3. A pattern of use consisting of methods and means of harvest which are characterized by efficiency and economy of effort and cost, conditioned by local characteristics;
4. The consistent harvest and use of fish or wildlife as related to past methods and means of taking; near, or reasonably accessible from, the community or area;

5. A means of handling, preparing, preserving, and storing fish or wildlife which has been traditionally used by past generations, including consideration of alteration of past practices due to recent technological advances, where appropriate;
6. A pattern of use which includes the handing down of knowledge of fishing and hunting skills, values, and lore from generation to generation;
7. A pattern of use in which the harvest is shared or distributed within a definable community of persons; and
8. A pattern of use which relates to reliance upon a wide diversity of fish and wildlife resources of the area and which provides substantial cultural, economic, social, and nutritional elements to the community or area.

2 TRADITIONAL SUBSISTENCE ACTIVITIES

The area under investigation consists of the U.S. portions of the five Great Lakes and connecting waters; the Upper Mississippi River north from Cairo, Illinois; the Ohio River Basin; and any inland lakes, streams, and rivers with an unimpeded aquatic connection to the Great Lakes, the Upper Mississippi River, or the Ohio River, where subsistence fishing may take place (Figure 1.2). Before the arrival of Europeans, the study area was dominated by woodlands and prairies, crossed by numerous rivers and streams, and surrounded or bordered by large and small lakes. The ecozones created by this type of vegetation and landscape provided an abundance of natural resources that could be utilized in a seasonal round, in which indigenous bands moved to take advantage of resources, including fish, game, and wild rice.

The tribes who settled adjacent to and near the Great Lakes utilized similar natural resources; therefore, traditional subsistence strategies within the Great Lakes Basin did not vary greatly. Tribes who settled in the Upper Mississippi River and Ohio River Basins shared an environment similar to that of the tribes who settled near the Great Lakes but depended more on agricultural practices to sustain their communities. Subsistence patterns identified in the study area included fishing, hunting, gathering of wild rice, and agriculture. For some groups, such as the Algonquians (e.g., Chippewa/Ojibwe, Ottawa), fishing was more reliable than agriculture because the group occupied an area where fish were abundant and crop cultivation was constrained by the number of frost-free days (Tanner 1987). Other tribal groups, such as the Iroquoians, relied more heavily on cultivation because they lived in a more temperate climate (Tanner 1987). In the area west of Lake Michigan and south and west of Lake Superior, wild rice was an important food source (Tanner 1987). All groups included hunting in their subsistence base.

European contact initiated changes to the way indigenous populations utilized the available natural resources. The arrival of European fur traders caused the Native Americans to intensify their traditional hunting strategies in order to acquire furs to barter for European technology. Later, Euro-American population movements from the East Coast caused displacement of native communities, and they brought them new technology that would be used to modify natural resources (Tanner 1987). In the first half of the 19th century, natural resources began to decline as a result of logging and the introduction of exotic plant species. It was at this time that Native American subsistence patterns were greatly altered and that most land-ceding treaties discussed here were concluded (Tanner 1987).

Traditional subsistence resources utilized by Native Americans varied with the season and the local environment. For example, during the summer and fall seasons, Chippewa men would travel to and camp out at productive fishing sites; however, fishing was conducted year round. In the spring, three to four weeks were given to making maple sugar. In the fall, wild rice would be harvested along with the agricultural crops. Hunting would take place year round but was mostly conducted in summer and winter when the other subsistence resources were running low (Jenks 1900). Some fish species, such as herring and whitefish, could be preserved through winter by smoking and drying, since they were caught in the fall; spring sturgeon could not be preserved (White 1991). The preservation of fish was largely dependent on the climate. Fish

could not be preserved through the hot summer months because of the heat and humidity. When the weather was colder, as in the winter, fish would stay fresh longer. Tribes who lived near the Great Lakes fished only along or close to the shore since they used traditional methods and equipment and lacked equipment suited for deep-water fishing (Waukau 1987). They were greatly dependent on the weather. Challenges, such as storms during spawning season or weak ice during a warm winter, required tribes to utilize other resources to supplement the fish harvest.

Today, the tribes that continue to practice subsistence harvesting recognize the importance of maintaining a sustainable resource and, through the treaties, are able to regulate and monitor their own harvesting while still utilizing and promoting traditional fishing methods. The proportion of a tribe directly involved in subsistence harvesting is often small; however, the effects of even a small number of harvesters ripple through the community in important ways (M. DeFoe 2011; Newago 2011). Sharing the harvest is a core cultural value to the native communities, and having the fishing resource to use in this way is an intrinsic, identifiable cultural resource of the Great Lakes tribal communities.

The following sections discuss the traditional methods of fishing, the fish species that were being targeted prehistorically in the study area, and the types of preservation techniques that were traditionally used. A comparison between traditional methods and modern methods is also made, since most of the tribes in the study area practice traditional fishing methods. In addition, hunting, trapping, and plant resources are discussed, since they are important elements in the way of life of the tribes in the study area and, to some extent, can be affected by ANS. Also, the tribes that have treaty rights continue to utilize these resources in traditional ways within the ceded territories.

2.1 FISHING TECHNIQUES USED IN THE PAST

Native Americans fished any water body with an abundance of fish that was available to them. A favored fishing site was one where there was plenty of fish in all seasons. The following discussion provides a description of the various types of techniques used at all fishing sites.

2.1.1 Nets

The net was the most common tool used in fishing. Because nets could be used to catch many fish at once, including different species of fish, and could be used in any type of water, they were desirable tools. Many different types of nets were used, depending on the need of the fisher. Nets like gill nets, seine nets, and trap nets were used most often because of their potential for large catches. The gill net is the most common subsistence fishing method used today.

Gill nets are designed to let fish swim partially through the mesh until their gills become entangled in the netting, preventing them from escaping. Gill nets are “set” or suspended vertically in the water in a location where fish are likely to swim or to be pulled by the current into the net, where they become enmeshed (Figure 2.1). The bottom corners are weighted down

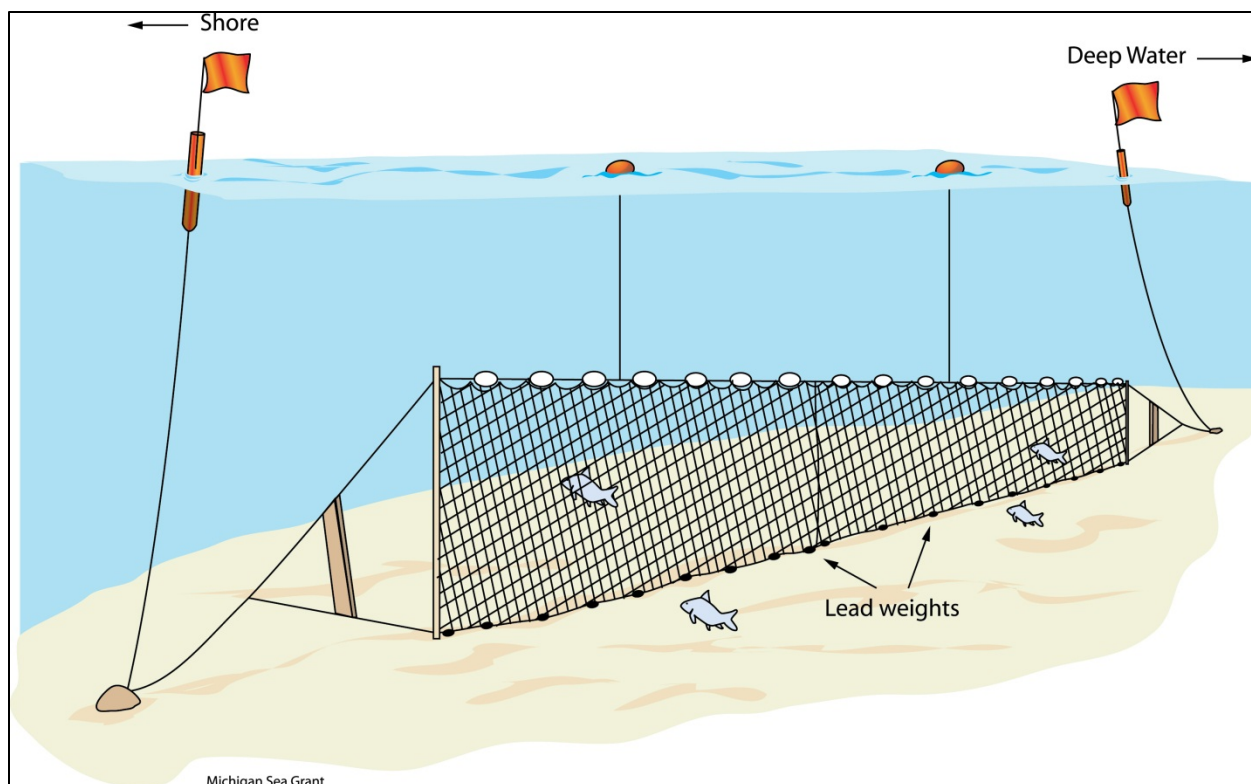


FIGURE 2.1 Gill Net (Michigan Sea Grant 2011)

with stones, and the top corners are suspended by floats at the surface of the water. The mesh size determines what size of fish will be caught.

Today, gill nets are the most commonly used nets by both tribal commercial and tribal subsistence fishers. Subsistence nets are limited in size, being 200 to 600 feet of 4¼-inch mesh. They are usually set in shallow water and, unlike commercial nets, can be set from the shore. Spots near known spawning areas are favored. Knowledge of the best sites to set nets is handed down within families. By unwritten rules, subsistence harvesters respect the sets of other tribal harvesters. Gill nets can also be set under the ice. Commercial fishers also can use their equipment to set subsistence nets, but these nets are limited in size and must be clearly marked as subsistence or home-use nets. The yield from these nets cannot be sold. Commercial fishers may keep non-target species trapped in their nets for home use.

Similar to a gill net, a seine net hangs in the water with weights on the bottom edge and floats on the top (Figure 2.2). However, unlike a gill net, a seine is designed to surround the fish on all sides as the net is being drawn to close. A traditional seine net would be operated by a fisher in a canoe or by two fishers on shore. Seine nets are used today by commercial and subsistence fishermen and are a permitted method of fishing in the ceded territories.

A trap net shares the design of the gill and seine nets in that it hangs in the water with weights on the bottom edge and floats on the top. Trap nets have wing nets that lead fish into a V-shaped heart and then into a box-shaped pot, where fish are captured (Figure 2.3). Grooved

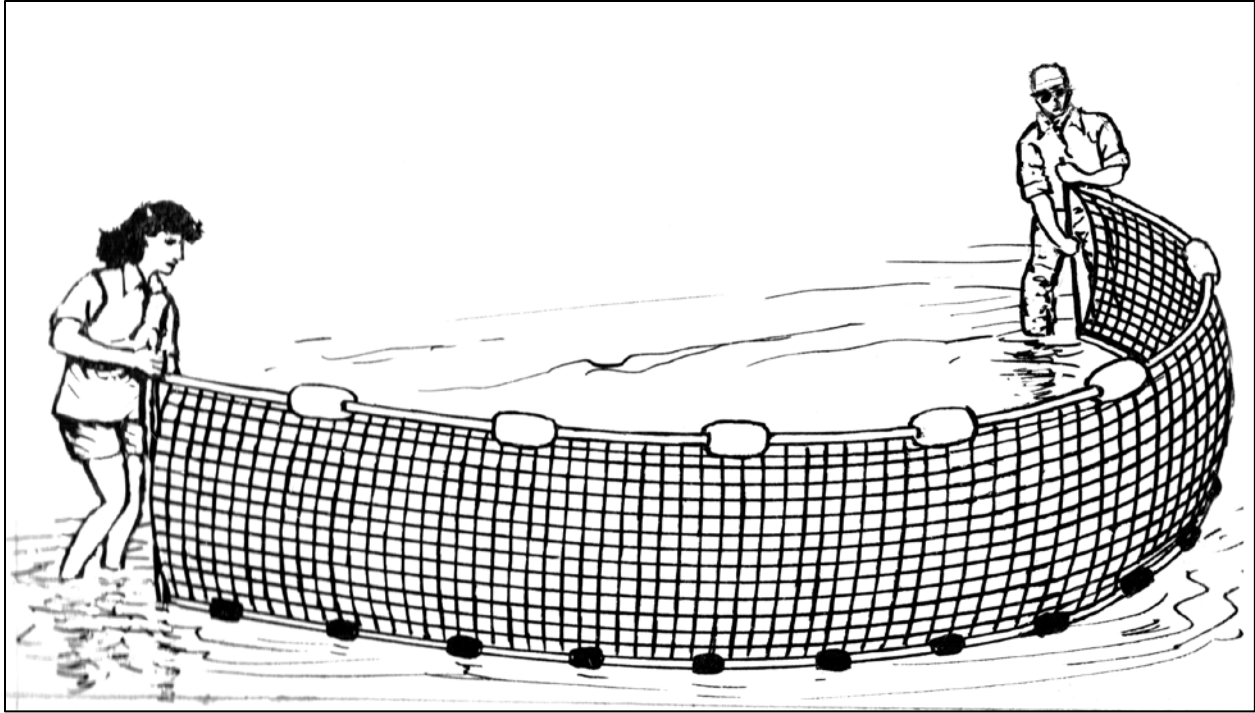


FIGURE 2.2 Basic Seine Net (ScottForesman 2010)

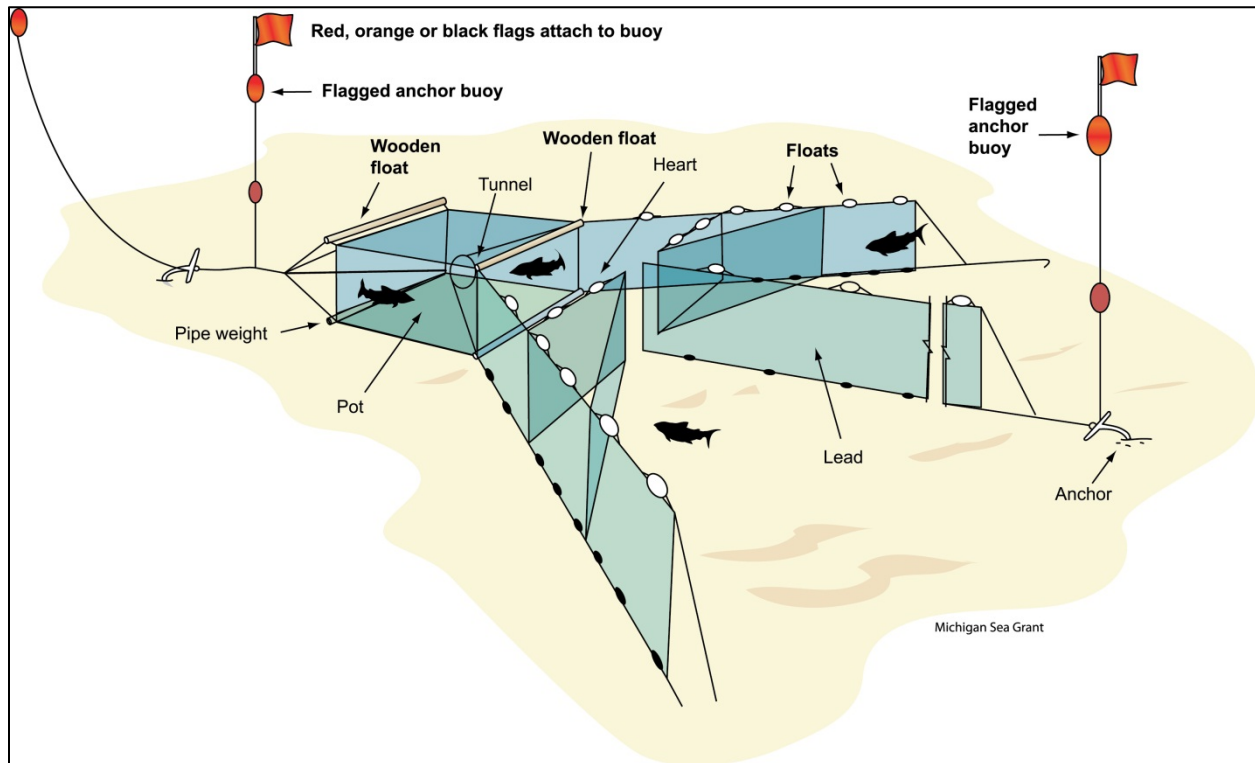


FIGURE 2.3 Trap Net (Michigan Sea Grant 2011)

and notched stones were used as net sinkers for these types of nets (Densmore 1979). These nets were mostly utilized in the Great Lakes, where they were placed perpendicular to the shore, hung from canoes or floats offshore, or used through holes in the ice during the winter (Rostlund 1952). Today, trap nets are a permitted method most commonly used by commercial fishermen, but they can also be used by subsistence fishermen.

Small hand nets, such as dip nets and scoop nets, also were used wherever fishing was practiced traditionally. For instance, long-handled dip nets were used in Sault St. Marie, where the fish were plentiful (Rostlund 1952). Nets were most commonly used in the Great Lakes Basin. The fish species commonly taken with a net by indigenous fishers were sturgeon, lake trout, grayling, whitefish, smelt, freshwater cod, bass, sunfish, trout, and perch (Rostlund 1952). Small hand nets are still used today by subsistence fishermen and are a permitted method of fishing within the ceded territories.

2.1.2 Weirs and Traps

The use of weirs and traps is one of the oldest Native American fishing methods known from historical records. Many types of weirs and traps were built to catch specific species or sizes of fish, often taking advantage of the unique features of a given water body. Small traps were made with twigs and branches and were constructed to catch small fish. These traps would be placed in shallow water, where the lake current would carry the fish into the trap (Densmore 1979). For example, sturgeon racks were built to catch large Lake Superior fish. Sturgeon racks were gates made out of rocks and strong fibers that were placed at the mouths of rivers flowing into Lake Superior. In the spring, the sturgeon would travel upstream to spawn, and the trap would block the fish. Native Americans then would kill the fish by clubbing them or catching them with hooks (Densmore 1979). Sturgeons were the most common species taken with weirs and traps (Rostlund 1952). Weirs and traps were most commonly documented in the Great Lakes and Ohio River Basins.

Weirs and traps are not commonly used today. CORA regulations state that commercial and subsistence fishing gear shall not be placed in a manner that completely blocks or entirely prevents the free passage of fish into and out of streams that flow into 1836 treaty waters (CORA 2009). Weirs and traps are designed to be placed in these types of locations; therefore, this method is not as productive as the more common methods of netting and angling. However, the use of weirs and traps are permitted methods of subsistence fishing (CORA 2009).

2.1.3 Fish Spears

Unlike nets or traps, spearing was employed to harvest fish individually. Fish spears were used throughout the entire Great Lakes and Ohio River and Upper Mississippi River Basins (Rostlund 1952). They had many specialized uses in the Native American culture and continue to be used today. Three different kinds of fishing spears are utilized: spears, harpoons, and leisters. Traditional spears had straight shafts made of wood with pointed bone or antler hooks securely hafted onto the shaft. Spears would be used on larger fish in shallow water. Harpoons are barbed

spears with a string tied to the shaft in order to pull the captured fish out of the water once it is speared. Leisters are three-pronged spears, which were more effective in capturing fish than spears with other designs (Rostlund 1952). The leister's side prongs, which were flexible, grasped the fish on both sides to hold it in place while it was being pulled from the water. The spears used today must be three-pronged and must be sturdy enough to capture the fish (GLIFWC 2011b; CORA 2009).

Torchlight fishing from canoes on inland lakes was a common spear-fishing technique, especially for catching larger fish. Native Americans would have a large torch in their canoe as they paddled out onto the water. The torch spread light out over the water so the fishers could see the fish, but the fish could not see the canoe (Densmore 1979). Throughout our interviews, there was no mention of torchlight fishing being practiced today.

During the winter, spear fishing was done through holes in the ice on both the Great Lakes and inland lakes. The fisher would lie flat next to a hole that had been cut through the ice. A tripod of sticks was constructed to hold a blanket over the fisher's head and shoulders. With one hand, the fisher would guide a wooden fish decoy around in the water, attempting to be as lifelike as possible, and with the other hand, the fisher would hold the spear, waiting to strike (Densmore 1979). Several important elements are required for successful spear fishing. The fisher must have skill, and the fish must be in sight and within reach of the spear. The spearing method would not produce fish if used in deep and/or muddy water. The best chances of spearing fish were in water where fish were plentiful; however, other fishing methods, such as netting or trapping, were more productive. Therefore, spearing was a cultural preference (Rostlund 1952). Sturgeon, lampreys, and suckers were commonly caught by spear fishing (Rostlund 1952).

Today, spear fishing focuses mainly on the spring spawning runs in rivers and streams (Wilson 2011; Abel 2011). In the larger inland lakes, tribal members spear fish for walleye; however, some winter spear fishing is still conducted on the St. Louis River for suckers and northern pike (Howes 2011).

2.1.4 Angling

A variety of hooks and lines were used to harvest fish. The size and the form of the hook often depended on the species of fish that was being targeted. Although catching fish by hook was not as common as other methods, tribes in the inland regions south of the Great Lakes would use this method to catch catfish.

Traditionally, the tribes in the Great Lakes and the Upper Mississippi River Region used fish hooks made of bone (Densmore 1979). When the Europeans introduced metal, composite fish hooks became more common. These hooks were designed by securing one or more points of bone, wood, or metal to a shank (Rostlund 1952). Tribes in the Ohio River Basin also used fish hooks, but the type of hook they used is not clear (Rostlund 1952).

Trolling was another method used by some tribal groups, such as the Huron. As part of this method, a piece of fishing line with a hook at the end was tied to the wrist of the fisher. As a

canoe was paddled down the shoreline, the fisher would pull the line through the water (Densmore 1979). Traditionally, the fish most commonly caught by angling with this method were lake trout, catfish, and perch (Rostlund 1952).

Trotlines are another type of angling that was used traditionally and is still practiced today. A trotline is a heavy fishing line with baited hooks attached at intervals as branch lines. The branch lines are called snoods and are attached by a clip or swivel with a hook at the other end. A trotline can be set so it covers the width of the stream with baited hooks and can be unattended. Trotlines are used to catch many types of fish species. There can be many variations on a trotline, and many terms are used to describe the same technique, such as nightline, longline, and set line. Today angling is a common subsistence fishing method. For the tribes that do not live near the Great Lakes, angling in rivers is the most common method of fishing because netting is not allowed in most rivers and streams. Ten percent of the Fond du Lac tribal members use hook and line to catch lake trout (Howes 2011). Trolling is also permitted under the hook and line regulations for the GLIFWC member tribes (GLIFWC 2011b).

2.1.5 Other Fishing Methods

Other traditional methods of harvesting fish included using poisons, bows and arrows, and fishing lures and catching fish by hand (i.e., by directly grasping the fish). The poisoning of fish happened rarely, but evidence of the use of this method for fish in Lake Superior, the Upper Mississippi River, northern Lake Michigan, northern Lake Huron, and within the Ohio River Basin is recorded. Fish poisoning was accomplished by trapping fish in a pool of water from which they could not escape, then putting a poisonous plant in the water to stun the fish (Rostlund 1952).

Shooting fish with a bow and arrow has been recorded in the Upper Mississippi River and along the western shores of Lake Michigan. This type of fishing was mostly done for sport. It is reported that once guns were introduced to Native Americans, they sometimes used the guns to shoot fish (Rostlund 1952). This method is not practiced today.

Today fish poisoning is an illegal method of taking fish (GLIFWC 2011b). The use of bows and arrows and fishing lures is permitted under the CORA Code (CORA 2009). Capturing fish by using a trotline is a method that is also used today.

2.1.6 Traditional Target Fish Species

The Great Lakes, Upper Mississippi River, and Ohio River Basins are home to numerous fish species. Traditionally, Native Americans established camps and settlements near these waters to take advantage of fish resources; and tribes in these locations were more dependent on fish than other food resources. Native Americans who lived away from these aquatic resources relied more on hunting and agriculture. Table 2.1 lists the principal species of aboriginal food fish found within the Upper Mississippi River Basin, Ohio River Basin, and the Great Lakes

Basin. It is important to note that the lamprey referred to in the table is the native lamprey and not the invasive sea lamprey. The invasive sea lamprey is an ANS.

2.1.7 Preparation Techniques and Preservation

The harvesting of fish occurred throughout the year, when weather was favorable, but it also depended on fish migration patterns. Once the fish were harvested, they were either eaten immediately or preserved for future consumption by drying or smoking.

TABLE 2.1 Aboriginal Food Fish in the Great Lakes, Upper Mississippi River, and Ohio River Basins

Fish Name	Distribution
American eel	Upper Mississippi River and Ohio River
Catfish	Upper Mississippi River, Ohio River, Great Lakes
Char/lake trout	Great Lakes
Freshwater cod/American burbot	Upper Mississippi River and Great Lakes
Freshwater sheepshead	Ohio River and Great Lakes except for Lake Superior
Gar pikes and bowfin	Upper Mississippi River, Ohio River, Great Lakes except for Lake Superior
Grayling	Lake Superior and between Lake Michigan and Lake Huron
Herring	Ohio River
Lampreys	Upper Mississippi River, Ohio River, Great Lakes
Minnnows	Upper Mississippi River, Ohio River, Great Lakes
Mooneyes	Upper Mississippi River, Ohio River, Great Lakes
Muskellunge	Ohio River and Great Lakes
Paddlefish	Upper Mississippi River and Ohio River
Perch	Upper Mississippi River, Ohio River, Great Lakes
Smelt	Great Lakes
Sturgeon	Upper Mississippi River, Ohio River, Great Lakes
Suckers	Upper Mississippi River, Ohio River, southern Great Lakes
Sunfishes	Upper Mississippi River, Ohio River, Great Lakes
Trout perch	Upper Mississippi River and Great Lakes
White bass/yellow bass	Upper Mississippi River, Ohio River, Great Lakes except for Lake Superior
Whitefish	Great Lakes

Source: Rostlund (1952)

Fresh fish was prepared either by roasting or boiling. Preparation for cooking involved cleaning the fish and placing it between the sections of a split stick. The stick was then placed into the ground in front of the fire and rotated to cook the fish evenly (Densmore 1979). Sometimes the fish was not cleaned before cooking; in this case, the fish was cooked, then opened and seasoned with maple sugar before it was eaten (Densmore 1979).

Fresh fish were sometimes boiled to make a broth. The broth would be used to season rice or corn dishes. If a fish was rich in nutrients, all parts would be eaten. The intestines would be cleaned and fried in grease with the roe and seasoned with maple sugar (Densmore 1979).

Drying and smoking of fish was a common method of preserving fish, to make the catch from special fishing expeditions ready for transport and also to make the fish easier to store for winter consumption (Tooker 1991). Fish were hung to dry in the sunlight or in an airy spot. The fish could also be placed on a rack over a slow fire to dry. The fish were dried until they were hard and then packed in layers to be stored (Densmore 1979). Fish were smoked by being placed over smoldering fires. During winter, the fish would be frozen without cleaning. This practice was common in the Great Lakes and Upper Mississippi River regions (Rostlund 1952) and is still practiced today (Newago 2011).

Sometimes the Chippewa, who were located near Lake Superior, would remove the fish from the fire before it was dried. They would then remove the skin and bones and spread the fish on birch bark to be dried more thoroughly. Once the fish was dried, it would be rubbed by hand until the flesh was very soft and fine. It was then mixed with maple sugar and eaten with a spoon; this dish was considered a delicacy (Densmore 1979).

It was an Iroquois tradition to make use of decayed fish. The fish would be hung without removing the viscera and left for months to decay. It would then be chopped and added to soup or cornmeal as a seasoning. The flesh of fish was also pounded or pulverized into meal, which would be stored for future use as a flavoring. The Iroquois would also utilize the bones, by grinding them up into bone meal, and also some of the entrails, and add them to other food for flavor (Tooker 1991).

Today, fish are still smoked, but not for preservation purposes. Fish are often frozen in modern freezers for future use (Plucinski 2011).

2.2 PLANT RESOURCES

Native Americans traditionally harvested plant resources for a variety of uses, including their use as raw materials for making fishing gear. Plants have many uses — from food, medicine, and charms to dyes and decorative arts. For instance, the Chippewa believed plants were given to them by the Creator and that without them, life would not be sustainable. Native American fishers in both the Algonquin and Iroquois groups were thus accustomed to using a variety of plants to eat with their catch and as raw material for fishing equipment.

Tobacco was also extremely important to the Native American groups and utilized in many different way (see Section 6). Tobacco was offered to the Creator before leaving on any hunt, when the first animal was caught, and before game was consumed by the tribe. The Chippewa, for instance, smoked the root of aster or stalwart to attract game, and they smoked the root tendrils of purple stem aster or swamp aster with tobacco to attract game (Densmore 1974). The Iroquois believed that the burning of tobacco was the only way to talk to the Creator (Morgan 1962 [1851]).

Other plants, such as calamus and wild sarsaparilla, were used by the Chippewa during rituals. The roots of these plants were dried and grated finely to make a decoction of the two. The

decoction was then sprinkled on fish nets and allowed to dry before the nets were put in water (Densmore 1979). Many plants that were used as charms were also used as medicines and foods.

Traditionally, the tribes also used plants to construct fishing gear, such as nets and lines. Although contemporary Native Americans in the Great Lakes and Upper Mississippi River Basins purchase netting made of synthetic fibers, traditional fishnets were most commonly made from the roots of spruce trees, willow, or Indian hemp, although other plants may also have been used (Rostlund 1952). Fishing line was made of nettle-stalk fiber or basswood twine (Densmore 1979).

Poisons were also used traditionally to harvest fish. The most common poisons used by Native Americans to harvest fish were Indian turnip, pokeweed, and devil's shoestring (Rostlund 1952).

2.2.1 Wild Rice

Wild rice was a traditional staple of subsistence to the Native American tribes who lived in the wild rice district, from east of the Upper Mississippi River to the southwest shores of Lake Superior, and through the middle portion of Wisconsin extending as far south as Green Bay (Tanner 1987). Wild rice is a cereal grass that grows in shallow lakes and streams and is harvested in the fall. Today, the Chippewa still harvest this rice on their reservations and on the treaty-ceded lands within the study area.

Traditionally, wild rice harvesting occupied a central place in the customs, folklore, and religious beliefs of the Chippewa people. The Chippewa believe they came to reside in their current homeland because of a vision by one of seven prophets in a past time when they lived on the east coast of what is now North America. The vision told that they must move west to keep their traditional way of life, because many new settlers would soon arrive. The Ojibwe people migrated west to Mackinaw Island, where many settled. Some groups of Ojibwe traveled farther west to settle in what is now Minnesota and Wisconsin, remembering the prophet's vision that they must go to the "place where there is food upon the waters" (Leoso 2011). They relied on this food source as much as they relied on the capture of fish in the lakes (Treuer 2001). Ceremonies and offerings were held before, during, and after the rice harvest and during the growing season.

Wild rice is harvested today, much as it was in times before European contact. Traditionally, birch bark canoes were used to navigate through the rice beds. Today, aluminum or fiberglass canoes are used. Poles are used to push the canoe through the rice. Cedar sticks are used as "beaters" to knock the rice off of the stalks into the canoe as it passes through. After the rice has been knocked into the canoe, it is taken back to camp, dried, and cleaned (Stickney 1896; Leoso 2011).

Native populations in the wild rice district traditionally subsisted on maple sugar and fish in the spring, on fish and game in the summer, on wild rice and corn in the fall, and on fish and game in the winter. Families that planned and worked hard would have rice to last through the

winter months (Newago 2011). Wild rice was most commonly eaten with soups and stews or teamed with fish and corn. It could also be eaten plain or with maple syrup, roasted and eaten dry, or seasoned with berries (Jenks 1900).

Today, wild rice is still a significant part of the cultural identity among the Great Lakes Chippewa tribes. The ability to harvest wild rice is protected under the treaties, and continuous efforts are made by each tribe that has this resource to protect and revitalize the rice beds. Great effort is also expended to keep the tradition alive by instilling a sense of community among the people as they perform their tasks during ricing season.

2.2.2 Other Gathering

Collecting plants and plant by-products was an important role carried out by the Native American tribes in the study area. Uses of the plants ranged from subsistence and medicinal use to use as materials for making everyday necessities. Today, gathering still plays a key role in the lives of Native American tribes. Under the treaty rights, plant materials and natural resources may be gathered from state lands for personal, medicinal, cultural, and traditional craft uses. Private lands could also be used, if made available to the gatherers.

Traditional plant materials and natural resources being gathered today include maple sap, firewood, pine boughs, mushrooms, wild berries, pine cones, nuts, and fruits. Black ash, basswood, ironwood, and white birch bark are all used in making traditional crafts. The materials being gathered require a tribal permit and are for personal use only, and there are restrictions on them, such as those regarding the types of trees and gathering places that are allowed for use (U.S. District Court 2007; GLIFWC 2011c).

The tradition of gathering maple sap is still important with regard to the identity of certain Chippewa groups, like the Red Cliff Band of Lake Superior Chippewa Indians of Wisconsin (Newago 2011). The right to collect the sap and to maintain sugar bushes on state land is protected under the treaties that fall within the study area and the 2007 Inland Consent Decree. Maple sap is harvested in the spring in the upper Great Lakes region. During this time, families go to the sugar bushes that have been harvested by their own family for hundreds of years, set up camp, and devote three to four weeks to making maple sugar (Jenks 1900).

2.3 HUNTING AND TRAPPING

Hunting and trapping were part of the traditional subsistence patterns of the tribes in the study area. Hunting played a more important role for tribes in the eastern Great Lakes Basin because they could not rely on the fisheries to the same extent as their western neighbors could and because they did not have the wild rice resource. Nevertheless, the capturing of wildlife was practiced throughout the Great Lakes region; it supplemented traditional diets.

Deer, bison, and moose were hunted within the study area (Tanner 1987). Elk, bears, turkey, caribou, and many other animals were hunted and utilized, depending on the region

within the study area. Some mammals, such as marten, fisher, beaver, bobcat, and otter, were captured by trapping. This practice became very popular during the fur trade in the 16th century.

Big game animals were hunted and captured by tracking the animal's movements through the forest. Once the animal was successfully tracked, an arrow, spear, or throwing weapon was thrown to take the animal. Smaller game animals were captured by trapping pits, dead falls, or rudimentary snares. Once the Indians made contact with European fur traders, they contracted with blacksmiths to make metal foothold traps.

The hunting of migratory birds for sustenance also played an important role in the diets of Native Americans. Many types of migratory birds, such as ducks, geese, cormorants, swans, and pigeons, were targeted by using floating decoys to lure the waterfowl to roosting areas. These birds were then captured by bow, nets or snares (Tanner 1987).

Today, hunting and trapping continues to provide a meat source for the diets of Native American tribes. Under the treaty rights, large and small mammals and migratory birds may be hunted on state lands for personal use. This harvest is regulated by permits, allocations, and reporting requirements by each individual tribe, their treaty inter-tribal organization, and each state. These three entities work together to ensure the conservation and protection of these hunted animals (U.S. District Court 2007; GLIFWC 2011c).

Since hunting and trapping contributed so much food to the traditional diet, great spiritual meaning was and still is given to these practices. Ceremonies and offerings are made to the spiritual beings to ensure the bounty and the ease of capture.

3 PRESENT-DAY SUBSISTENCE PRACTICES OF TREATY TRIBES

Present-day fishing practices spring from traditional tribal world views. The Lake Superior Chippewa or Ojibwe see themselves as the “People of the Water.” Their culture is tied to the waters that have provided sustenance from fish and wild rice and have served as highways for travel, communication, and trade. The tribes consider their homeland to be sacred, with intangible, intrinsic, and spiritual value (Balber 2011; Leoso 2011).

According to their traditional beliefs, the Chippewa were created to fit in their current homeland, as were the indigenous plant and animal species of the area. The Creator has tasked them with a responsibility for stewardship over the lakes and shores of their homeland, and the waters are believed to have a spirit. The Chippewa therefore seek both spiritual and physical sustainability in the use of water resources, and at Native American hatcheries, only native species are to be released into the lakes and streams (Abel 2011; Moore 2011; Wilson 2011). Special water ceremonies are conducted at the beginning and end of each fishing season.

The treaties concluded between the various tribes and the United States in the late 18th and mid-19th centuries allowed some tribes to retain their hunting, fishing, and gathering rights on the lands they ceded to the government. Under these treaty rights, tribes engage in both commercial and subsistence fishing. The tribes recognize the importance of maintaining a sustainable resource and of regulating and monitoring treaty-based harvesting. As previously noted, the percentage of the tribe directly involved in subsistence harvesting is often small. However, the effects of even a small number of harvesters ripple through the community, because subsistence harvesters typically share their take with family and friends and with the elderly and others unable to fish. In a small community, members usually know who is in need of food assistance (M. DeFoe 2011; Newago 2011).

Subsistence harvesting of fish, animals, and plant resources continues in these ceded areas. The courts have generally ruled that tribes may continue to use traditional methods of harvesting. Traditional methods of fishing still in use are gill nets, seine nets, spear fishing, angling, and, reportedly, catching by hand (M. Defoe 2011; Newago 2011). Tribal subsistence fishing methods are regulated by individual tribes and inter-tribal organizations in that there are seasons and limits for certain species of fish. The species of fish that are regulated are watched closely due to their popularity with subsistence fishers and the risk of over-fishing within the ceded territories. Traditional fishing methods utilized within the ceded territories are also highly monitored by each tribe’s fish and wildlife divisions, inter-tribal organizations, and each state’s department of natural resources, because they have the potential to capture many fish at once, which could eventually deplete the species and lead to an ecological imbalance. The intertribal organizations discussed below help in monitoring fishery health and harvesting methods, such as spearing and netting. These are high-profile methods and must be well accounted for, since spearing and netting are not legal methods of fishing for non-tribal members or for tribal members from outside the ceded territories.

The number of fish harvested by other methods is less important with regard to fishery management, since these methods do not target a specific species and since the amount of fish

taken by these methods is comparatively small. Most tribes require their members to report only on the species mandated by the intertribal organizations. Other fishing that is taking place on small streams and lakes within the ceded territories or on the reservations by methods other than spearing and netting is not important with regard to the individual tribe's management practices and thus is not closely watched. This makes capturing data for the entirety of subsistence fishing problematic and is the reason why tribes do not know how many permits and licenses are actually being utilized. Most of the data found in this report are from the regulated treaty areas and could appropriately be referred to as "treaty harvest" data.

In order to manage and conserve the fishing resources for current and future use, many tribes also operate fish hatcheries. Many tribes have a natural resource department that monitors fish populations in reservation waters (Leder 2005; Ashland FWCO 2009). Three intertribal organizations, GLIFWC, CORA, and the 1854 Treaty Authority, monitor and regulate treaty-based harvests on ceded lands beyond the reservations.

3.1 CHIPPEWA OTTAWA RESOURCE AUTHORITY

The Chippewa Ottawa Treaty Fishery Resource Authority was established in 1981, and in 2000, the organization became known as the Chippewa Ottawa Resource Authority (CORA). CORA was established by five member tribes (Table 3.1) to protect the 1836 Treaty rights to fish ceded waters in Michigan (Figure 1.3). The purpose of regulating the member tribes' recreation, commercial, and subsistence fishing rights is to ensure the conservation of fishery resources in the treaty-ceded waters in and around the state of Michigan for the continued use by Indian tribes and others entitled to use the resources (CORA 2009).

The CORA fishing regulations specify three different types of fishing that are conducted within the 1836 treaty ceded areas: commercial, subsistence, and recreational. Subsistence fishing is defined as a treaty fishing activity solely to provide fish for personal or family consumption and not for sale or exchange. Recreational fishing is done for enjoyment, and fish captured during this time of fishing can be sold and exchanged. The same regulations concerning species, bag limits, and locations apply to both subsistence and recreational fishers (CORA 2009).

To ensure the conservation of fishery resources, CORA board members apply for and manage funds for the purposes of enhancing, utilizing, and protecting the Great Lakes and inland water resources. CORA board members also employ staff and exercise all duties and responsibilities of the tribes' members within the CORA charter and the court-ordered 2000 Consent Decree, 2007 Inland Consent Decree, any agreement with the State of Michigan, and any resource management plan adopted by a member tribe. CORA also maintains an intertribal biology staff for fish monitoring and fishery management and enhancement (CORA 2000).

TABLE 3.1 CORA Member Tribes

Tribe	Practice Subsistence Fishing in Study Area?
Bay Mills Indian Community	Yes
Grand Traverse Band of Ottawa and Chippewa Indians	Yes
Little River Band of Ottawa Indians	Yes
Little Traverse Bay Bands of Odawa Indians	Yes
Sault Ste. Marie Tribe of Chippewa Indians of Michigan	Yes

The 2000 Consent Decree is a negotiated settlement involving five federally recognized tribes, the United States, and the State of Michigan that resolved differences regarding the allocation, management, and regulation of fishing in 1836 Treaty waters located in Lake Michigan, Lake Superior, Lake Huron, and connecting waters. The 2007 Inland Consent Decree is a negotiated settlement involving the five CORA tribes, the State of Michigan, and the United States that deals with hunting and fishing rights under the principal treaties. This agreement defines the tribes' rights to fish and hunt on ceded land and waters under Article 13 of the 1836 Treaty and establishes the parameters on where, how, and when the tribes may exercise those rights. The 2007 Inland Consent Decree agreement applies only within Michigan state boundaries and takes into account fisheries, wildlife, and land management, such as the gathering of plants, fire wood, and maple sap (U.S. District Court 2007). The treaty-ceded waters in Michigan include Lake Superior, Lake Huron, Lake Michigan, and connecting waters, ceded in Article First of the Treaty of March 28, 1836. Article First specifies the boundaries of the land that was ceded to the United States and that can still be used by the tribes to practice their traditional subsistence and commercial ways of life.

CORA tribes practice commercial, subsistence, and recreational fishing under their 1836 Treaty rights. Commercial fishers use gill nets and trap nets; they mainly target whitefish, although lake trout, salmon, chub, lake herring, menominee (round whitefish), walleye, and perch are also taken. Under the Consent Decrees, CORA tribes must keep records of their catch and fishing efforts. Tribal commercial licenses tend to be passed down within families (CORA 2009). Tribes that practice subsistence fishing under CORA regulations are permitted to use impoundment gear, consisting of traps and weirs, as well as hooks, spears, bows and arrows, artificial lights, seines, dip nets, and one large-mesh or small-mesh gill net per person on Lakes Superior, Huron, and Michigan (CORA 2009). Subsistence fishers must be licensed by their tribe, have a total amount of no more than 100 pounds of all species in their possession, and report their take to tribal natural resource departments.

Inland fishing in waters, which are in the area ceded in Article First of the Treaty of March 28, 1836, is also permitted to tribal members. The types of gear permitted for inland fishing are impoundment and gill nets, which are regulated by the member tribe. Seine nets are permitted but cannot be used in streams; the use of hand nets, dip nets, spears, bows and arrows, hand fishing, trotlines, and the hook-and-line method is also permitted (U.S. District Court 2007). Figure 3.1 shows the available streams and rivers within the 1836 ceded territory

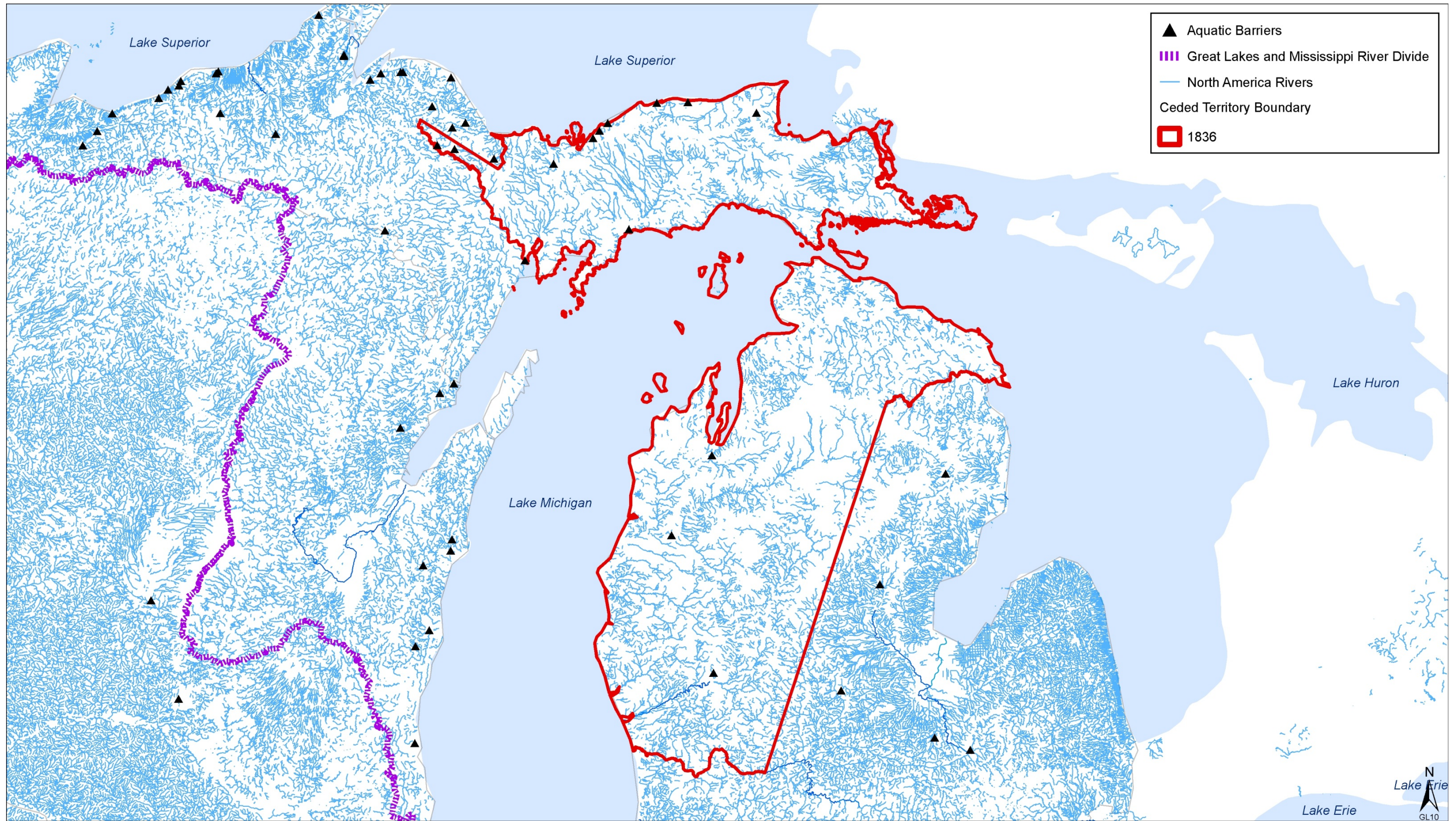


FIGURE 3.1 Streams and Rivers within the Territory Ceded under the 1836 Treaty

Page intentionally left blank.

that are allowable for subsistence fishing. Tribal members may fish in any water body that has public access.

Discussions of each of the five member tribes' activities are provided in Sections 3.1.1 through 3.1.5.

3.1.1 Grand Traverse Band of Ottawa and Chippewa Indians

The Grand Traverse Band of Ottawa and Chippewa Indians are members of CORA and are permitted to practice subsistence fishing in the treaty-ceded waters regulated by CORA.

The Grand Traverse Band has a natural resource department that seeks to protect and enhance the environment and resources that were given to the Chippewa and Ottawa people by the Creator (Grand Traverse Band of Ottawa and Chippewa Indians 2011). The Grand Traverse Band has inland hunting, trapping, and gathering regulations; they seek to provide a system of self-regulation of tribal members' Article 13 Rights and to comply with the 2007 Inland Consent Decree (Grand Traverse Band Natural Resource Department 2008).

3.1.2 Little River Band of Ottawa Indians

The Little River Band of Ottawa Indians (LRBOI) is a member of CORA and is permitted to engage in subsistence fishing in the treaty-ceded waters regulated by CORA. The LRBOI promulgates fishing regulations that seek to provide a system of self-regulation of tribal members' inland Article 13 Rights and to comply with the 2007 Inland Consent Decree (LRBOI 2009). LRBOI also manages an inland fishery.

The LRBOI fishing regulations state that all members seeking to fish and harvest must have a tribal identification card and a photo identification card. General regulations, regulations on methods and gear, species and area restriction regulations, and reporting regulations can be found in the *Fishing Regulation Book* (LRBOI 2009). The fishing regulations also provide for special use permits, which include special needs subsistence and ceremonial needs subsistence. A person must apply for this permit when he or she needs to supply food for a ceremonial gathering, traditional feast, addressing a personal or family hardship, or a celebration.

The LRBOI seeks to maintain biologically sound inland fishery harvest opportunities within its reservation and the 1836 ceded territory. Objectives include tribal outreach activities, interagency cooperation, litigation support, and promotion of the rights of tribal fish harvesting (LRBOI 2009). To meet this goal, the LRBOI Natural Resource Department conducts ongoing biological assessments that focus on culturally significant species, such as historically harvested fish, to provide subsistence fishing opportunities to tribal members. The LRBOI hatchery focuses on research and rehabilitation of lake sturgeon, annual assessments of walleye and northern pike to assess stocking methods and management actions, watershed restoration of inland streams, and monitoring of salmon and trout in inland streams (LRBOI 2011).

3.1.3 Little Traverse Bay Bands of Odawa Indians

The Little Traverse Bay Bands of Odawa Indians is a member of CORA and is permitted to engage in subsistence fishing in the treaty-ceded waters regulated by CORA. The Little Traverse Bay Bands of Odawa Indians has established rules and regulations to regulate the use of natural resources within the reservation lands and any lands described in Article First of the Treaty of March 28, 1836 (Little Traverse Bay Bands of Odawa Indians 2010).

The rules and regulations provide for a special use permit, along with subsistence fishing guidelines, authorizing special needs harvesting and ceremonial needs harvesting. This permit is required when a Band member seeks to supply food for a ceremonial gathering, traditional feast, addressing personal or family hardship, or a celebration. Specific regulations and guidelines for fishing, hunting, and trapping are available in *Natural Resources Rules and Regulations* (Little Traverse Bay Bands of Odawa Indians 2010).

The Little Traverse Bay Band also makes publicly available on its Web site the *2008/2009 Annual Harvest Report*, which covers wildlife and commercial and subsistence fishing. This report outlines information on harvests from reservation land, within the 1836 ceded territory, and within the Great Lakes (Little Traverse Bay Bands of Odawa Indians 2009).

In the *2008/2009 Annual Harvest Report*, subsistence fish harvest for the Great Lakes is reported by four tribal members to occur in Lake Superior and Lake Huron. Species harvested by using gill net and hook and line included salmon, lake trout, whitefish, menominee (round whitefish), and herring (Little Traverse Bay Bands of Odawa Indians 2009). Table 3.2 shows the most common fish species taken by subsistence harvesters.

According to the *2008/2009 Annual Harvest Report*, the subsistence fish harvest within the inland waters of the 1836 ceded territory has escalated since the 2007 Inland Consent Decree came into effect. The reason for this growth in participation is that the tribal members are becoming more familiar with the regulations and their Article 13 Rights. In 2008, 504 inland hunting and fishing licenses were issued by the Little Traverse Bay Bands of Odawa Indians. Of those 504 license holders, 484 were surveyed to determine where they hunted and fished, what they captured, and what methods they used. Of those surveyed, 83% fished in inland lakes and streams, while 16% fished with a spear for walleye. The most common species caught by hook and line were perch, bluegill, bass, smelt, and rock bass. The most common caught by spear, trotline, and hands and dip net were walleye, salmon and rainbow trout. It was determined that the majority of licensed tribal members were exercising their Article 13 Rights on or within the counties next to the reservation, yet it was reported that 34 of 38 counties in the 1836 ceded territory were used for inland fishing (Little Traverse Bay Bands of Odawa Indians 2009).

TABLE 3.2 Fish Species Taken by Subsistence Harvesters^a

Subsistence Fish	Scientific Name	Grand Portage	Fond du Lac	Red Cliff	Bad River	Keweenaw Bay	Bay Mills	Little Traverse Bay	Little River Band	Huron Potawatomi	Stockbridge-Munsee	St. Regis Mohawk	St. Croix	Lac du Flambeau	Lac Vieux Desert	Sault Ste. Marie	Sokaogon
Bass	Various species	X		X	X		X		X			X	X				X
Bluegill (sunfish)	<i>Lepomis macrochirus</i>															X	
Bowfin	<i>Amia calva</i>																
Bullhead	<i>Ameiurus spp.</i>				X		X					X					
Burbot	<i>Lota lota</i>	X		X	X	X	X										
Catfish	Various species		X				X			X							
Ciscoes (lake herring, chub, tullibee)	<i>Coregonus spp.</i>	X		X	X	X	X	X	X								
Common carp	<i>Cyprinus carpio</i>			X			X										
Crappie	Various species				X		X		X								
Grayling	<i>Thymallus thymallus</i>																
Lake sturgeon	<i>Acipenser fulvescens</i>	X		X	X	X		X				X	X			X	
Menominee (round whitefish)	<i>Prosopium cylindraceum</i>	X		X	X		X	X									
Muskellunge	<i>Esox masquinongy</i>				X		X		X			X	X	X		X	X
Northern pike	<i>Esox lucius</i>	X	X	X	X	X	X		X	X		X	X	X		X	X
Salmon (coho, chinook)	Various species	X	X	X	X	X	X	X	X					X		X	
Shiner	Various species			X													
Smelt	<i>Osmerus mordax</i>	X		X	X				X							X	
Splake	<i>Salvelinus namaycush</i> X <i>Salvelinus fontinalis</i>						X										
Sucker	<i>Catostomus spp</i>			X	X	X	X			X						X	
Trout, brown	<i>Salmo trutta</i>			X	X		X		X		X					X	
Trout, brook	<i>Salvelinus fontinalis</i>	X		X	X		X		X		X					X	
Trout, lake	<i>Salvelinus namaycush</i>	X	X	X	X		X	X	X						X		
Trout, rainbow (steelhead)	<i>Oncorhynchus mykiss</i>	X	X	X	X		X	X	X		X					X	
Walleye	<i>Sander vitreus</i>	X	X	X	X	X	X	X	X			X	X	X	X	X	X
Whitefish, lake	<i>Coregonus clupeaformis</i>	X		X	X	X	X	X	X								
Yellow perch	<i>Perca flavescens</i>	X			X		X		X			X				X	

^a Table 3.2 is not a comprehensive table of all tribes that practice subsistence fishing and all the fish species they harvest. This table shows targeted species from the tribal groups that have shared their targeted species information. Because a tribe is not listed does not mean that the tribe does not engage in subsistence fishing.

3.1.4 Sault Ste. Marie Tribe of Chippewa Indians of Michigan

The Sault St. Marie Tribe of Chippewa Indians of Michigan is a member of CORA and is permitted to engage in subsistence fishing in the treaty-ceded waters regulated by CORA. The Sault tribe has a Conservation Committee that acts as a regulatory agency over the fishing and hunting activity of tribal members. The Sault tribe also has treaty fishing rules and regulations to achieve compliance with the 2007 Inland Consent Decree and provide a system of self-regulation of tribal members' inland Article 13 Rights (Sault Ste. Marie Tribe of Chippewa Indians 2010).

The Sault tribe's Natural Resource Department has an intertribal fisheries and assessment program that operates under three main focus areas. The Great Lakes fisheries management operation provides commercial and subsistence catch statistics to comply with reporting obligations, conducts field studies to assess status of fish populations in the 1836 Treaty-ceded waters of the Great Lakes, analyzes catch and assessment data to determine population status, undertakes research, and develops programs to enhance treaty fishing opportunities and represent the Sault tribe on CORA's Technical Fisheries Committee. The Great Lakes environmental operation addresses environmental issues that are related to the Sault tribe's Great Lakes fishery interests. Work includes conducting fish contaminant studies and participating in educational activities. The fisheries enhancement operation runs and maintains two walleye fish hatcheries. It also conducts research and assessments related to fish stocking programs and manages nontraditional fish species (Sault Ste. Marie Tribe of Chippewa Indians 2011).

In 2010, the Sault tribe issued 3,028 inland fishing licenses, and 43% of the license holders reported fishing efforts in 2010. The licenses cover all types of inland fishing; however, every tribal member has the right to subsistence fish under the 1836 Treaty. The annual harvest report is broken down into the most common species captured over the entire 1836 ceded territory. The requirements of the 2007 Inland Consent Decree do not mandate that specific water bodies be reported; however, some of the spearing activity is reported, by lake. The most common species reportedly captured in 2010 were rainbow, brook, and brown trout; coho, Chinook, and pink salmon; walleye; muskellunge; pike; perch; bluegill; sucker; smelt; and sturgeon (Clarke 2010).

3.1.5 Bay Mills Indian Community

The Bay Mills Indian Community (BMIC) is a member of both CORA and GLIFWC. The Bay Mills Indian Community tribal members are permitted to fish, hunt, and gather in the treaty-ceded waters and lands regulated by these agencies.

The BMIC has a Conservation Committee, started in 1979, that was given authority and responsibility for regulations pertaining to hunting, fishing, and trapping. The Conservation Committee works with federal enforcement agents, officers of GLIFWC, officers of CORA, and enforcement officers of a tribe with whom the BMIC has entered into a cooperative agreement (BMIC 2004). The role of the Conservation Committee is to issue fishing licenses, regulate seasons (there is either a season or no season for fishing provided in order to preserve the resource), set limits on the resource for conservation purposes, review permits and licenses each

year to determine whether the number of permits are conducive to conserving the resource, establish regulations, and keep reports of each resource collected (BMIC 2004).

In order to take fish within the ceded territories, a member of the BMIC must have a fishing identification permit issued by the Conservation Committee. There are regulations imposed for the taking of all the different fish species. Certain species of fish have special conservation regulations governing their harvest; they include brook trout, brown trout, crappie, grayling, lake trout, muskellunge, northern pike, rainbow trout, rock bass, smallmouth bass, splake, sturgeon, sunfish, walleye, steelhead, Atlantic salmon, whitefish (BMIC 2004 Table 3.2). General regulations set by the Conservation Committee on the taking of fish can be found in the *Bay Mills Indian Community Tribal Fishing Regulations* and in the *Conservation Code*, which are available to the public.

BMIC members do very little subsistence fishing on inland lakes and streams, except for walleye spearing in the spring. In 2011, however, no walleye spearing permits were issued. The majority of the inland fishing conducted by the BMIC falls under recreational fishing within the 1836 ceded territory. Most of the subsistence fishing is done on the Great Lakes and within the St. Mary’s River (Carrick 2012).

3.2 GREAT LAKES INDIAN FISH AND WILDLIFE COMMISSION

In 1984, six Ojibwe tribes that retain off-reservation treaty rights both on inland waters and on Lake Superior formed the GLIFWC to provide resource management enforcement services to 11 tribes in Minnesota, Wisconsin, and Michigan (Table 3.3). The GLIFWC includes two committees: The Voigt Intertribal Task Force represents tribes with inland treaty rights, and the Lakes Committee represents tribes that fish commercially in Lake Superior (GLIFWC 2011a).

TABLE 3.3 GLIFWC Member Tribes

Tribes	Practice Subsistence Fishing in Study Area?
Bay Mills Indian Community	Yes
Keweenaw Bay Indian Community	Yes
Lac Vieux Desert Band of Lake Superior Chippewa Indians	Yes
Bad River Band of Lake Superior Chippewa Tribe	Yes
Red Cliff Band of Lake Superior Chippewa Indians of Wisconsin	Yes
Lac du Flambeau Band of Lake Superior Chippewa Indians of Wisconsin	Yes
Lac Courte Oreilles Band of Ojibwe	Yes
Sokaogon Chippewa Community	Yes
St. Croix Chippewa Indians of Wisconsin	Yes
Mille Lacs Band of Ojibwe	Yes
Fond du Lac Band of Lake Superior Chippewa Indians	Yes

Regulations set forth by the GLIFWC outline important protocols to follow within the 1837 and 1842 ceded territories that are outside reservation lands. These include guidelines for spearing, netting, and hook and line fishing in the Minnesota 1837 ceded territories and Wisconsin 1837 and 1842 ceded territories. Each individual tribe has specific regulations governing the tribally owned fisheries within the reservation. The tribal regulations governed by individual tribes include, but are not limited to, when (the hours) fishing may begin or end, which waters are open to harvest, which landings or monitoring sites can be used, what the quotas for certain species of fish are, and when (the times) a lake is available for netting.

According to publicly available reports located on the GLIFWC Web site, all of the GLIFWC tribes are exercising their inland treaty rights (GLIFWC 2012). These reports only detail the spearing and netting efforts within inland waters of the Minnesota and Wisconsin ceded territories.

The Minnesota 1837 Treaty harvest reports available for review on the GLIFWC Web site, dating from 1998 to 2008, indicated there were 14 lakes with harvests. Mille Lacs Lake was always the one that was the most used by the fishers and that produced the biggest variety of fish species. In the years 2004–2007, Mille Lacs Lake was reportedly the only one that was fished by spearing and netting; however, Mille Lacs Lake has no unimpeded connection to the Great Lakes or the Upper Mississippi River. The 14 lakes were examined to determine whether there was an unblocked aquatic path between them and either the Mississippi River or Lake Superior. Only 5 of the 14 lakes reported in the 1837 ceded territory of Minnesota have an unimpeded connection to the Great Lakes or Upper Mississippi River. Table 3.4 shows the spearing and netting harvests of the lakes that are connected within the 1837 ceded territory within Minnesota.

TABLE 3.4 Minnesota 1837 Ceded Territory Inland Spearing and Netting Harvest in Unimpeded Connected Water Bodies, 1998–2008

Lake	County	Fish Species
Goose Lake	Chisago	Walleye, bass, bullhead
Pokegama Lake	Pine	Walleye, sucker
Cross Lake	Pine	Walleye, northern pike, muskellunge, crappie, sucker, bullhead
Rock Lake	Pine	Walleye, northern pike
St. Croix River	Pine	Walleye, sturgeon, sucker

The GLIFWC tribes track the subsistence harvest from the spring spear fishing season from more than 500 inland lakes, flowages, and reservoirs distributed within both the Upper Mississippi and Great Lakes Basins. Walleye is the target species, but records for muskellunge, largemouth bass, smallmouth bass, and northern pike are also kept. Some of these water bodies have only inward drainage, but others have outflows that tie into the broader hydraulic network of Wisconsin. Using geographic information system layers from USGS’ National Hydrography Dataset and the aquatic barrier layer provided by the USACE each of 530 water bodies were

examined to determine whether there was an unblocked aquatic path between them and either the Mississippi River or Lake Superior or Lake Michigan. To analyze the bounding condition, we assumed that any aquatic tie, no matter how shallow, could allow aquatic access. We found that only 38 of these inland water bodies have unimpeded aquatic ties to either the Great Lakes or the Mississippi. Table 3.5 shows the species taken at each lake in the 2005–2009 spring spearing seasons. The fish taken from these water bodies represents only a very small percentage of the total take from inland spear fishing. Figure 3.2 and Figure 3.3 shows all available streams and rivers within the 1837 and 1842 ceded territories that are allowable for subsistence fishing. Tribal members may fish in any water body that has public access within the ceded territories.

Sections 3.2.1 through 3.2.10 provide a discussion of the activities undertaken by member tribes of the GLIFWC.

3.2.1 Keweenaw Bay Indian Community

The Keweenaw Bay Indian Community (KBIC) exercises its subsistence and commercial fishing treaty rights within the 1842 ceded territory. The KBIC has a Natural Resource Department that administers a variety of activities, such as Lake Superior fishery assessments, wildlife and wetlands management, and stocking fish from its hatchery (KBIC 2011).

KBIC tribal members subsistence fish on Lake Superior and on the inland lakes and streams within the ceded territories (Mensch 2011b) (Figure 1.3). Members apply for a subsistence fishing license and, through this license, are allowed to fish for personal use only. Subsistence fishing licenses can also be applied for and used by tribal leaders to provide fish for annual and special events, such as KBIC Pow Wow Feast. Subsistence fishers are not required to report their catches, except for the regulated species catches governed by GLIFWC. Species targeted in subsistence fishing are walleye, various salmonid species, lake whitefish, cisco, sucker species, northern pike, burbot, and a very limited allowable harvest of lake sturgeon (Mensch 2011a) (Table 3.2). Tribal members practice subsistence fishing by netting, spearing, and hook and line (Mensch 2011b). Spearing is conducted on Lake Superior within the Keweenaw Band and Huron Bay, as well as on the inland lakes and rivers (Mensch 2011b).

The KBIC maintains a fish hatchery that has been propagating fish since 1989. Approximately 40,000 brook trout are stocked in local streams each year. The KBIC hatchery also works with the U.S. Fish and Wildlife Service to restore brook trout to Lake Superior and its tributaries (Leder 2005). Walleye have been and are becoming an increasingly important component of fish and wildlife management to the KBIC. KBIC's aquaculture operations are actively exploring options to increase capacity to rear and stock walleye (Mensch 2011a).

3.2.2 Lac Vieux Desert Band of Lake Superior Chippewa Indians

The Lac Vieux Desert Band exercises its subsistence rights within the 1842 ceded territory. According to George Beck, Director of Planning and Environmental, the Lac Vieux Desert Band fishes only on inland lakes and streams. The band members do not travel to

harvest fish on the Great Lakes. Most of the subsistence fishing that takes place on inland waters occurs on the Ontonagon River watershed, where 90% of the harvested fish are walleye, with some lake trout harvested from the inland lakes (Beck 2011).

TABLE 3.5 Species Harvested in the 2005–2009 Wisconsin Spring Spearing Season from Connected Water Bodies

Name	County	Species Harvested
Mineral Lake	Ashland	None
Diamond Lake	Bayfield	Walleye, bass, northern pike
Hart Lake	Bayfield	None
Lake Millicent	Bayfield	None
Muskellunge Lake	Bayfield	None
Pike Lake	Bayfield	Walleye, muskellunge
Siskiwit Lake	Bayfield	None
Twin Bear Lake	Bayfield	Muskellunge
Big Trade Lake	Burnett	None
Round Lake	Burnett	None
Lake Minnesuing	Douglas	Walleye
Lake Nebagamom	Douglas	Walleye
Crane Lake	Forest	Walleye
Lake Lucerne	Forest	Walleye, smallmouth bass
Lake Metonga	Forest	Walleye, northern pike
Mole Lake	Forest	Walleye
Pickereel Lake	Forest	None
Pine Lake	Forest	Walleye
Roberts Lake	Forest	Walleye
Windfall Lake	Forest	None
Boulder Lake	Langlade	None
Lower Post Lake	Langlade	None
Pickereel Lake	Langlade	None
Rolling Stone Lake	Langlade	Walleye
Rose Lakes	Langlade	Walleye
Upper Post Lake	Langlade	Walleye
White Lake	Langlade	None
Lake Nokomis	Oneida	Walleye, muskellunge
Upper Post Lake	Oneida	None
Balsam Lake	Polk	Walleye, largemouth bass, northern pike
Big Butternut Lake	Polk	Walleye, largemouth bass
Big Round Lake	Polk	Walleye, largemouth bass, small mouth bass, northern pike
Bone Lake	Polk	Muskellunge, largemouth bass, smallmouth bass
Cedar Lake	Polk	None
Deer Lake	Polk	Muskellunge, largemouth bass
Half Moon Lake	Polk	Walleye, largemouth bass
Magnor Lake	Polk	Walleye
Wapogasset Lake	Polk	Walleye

Source: Krueger (2006, 2007, 2008, 2009, 2010)

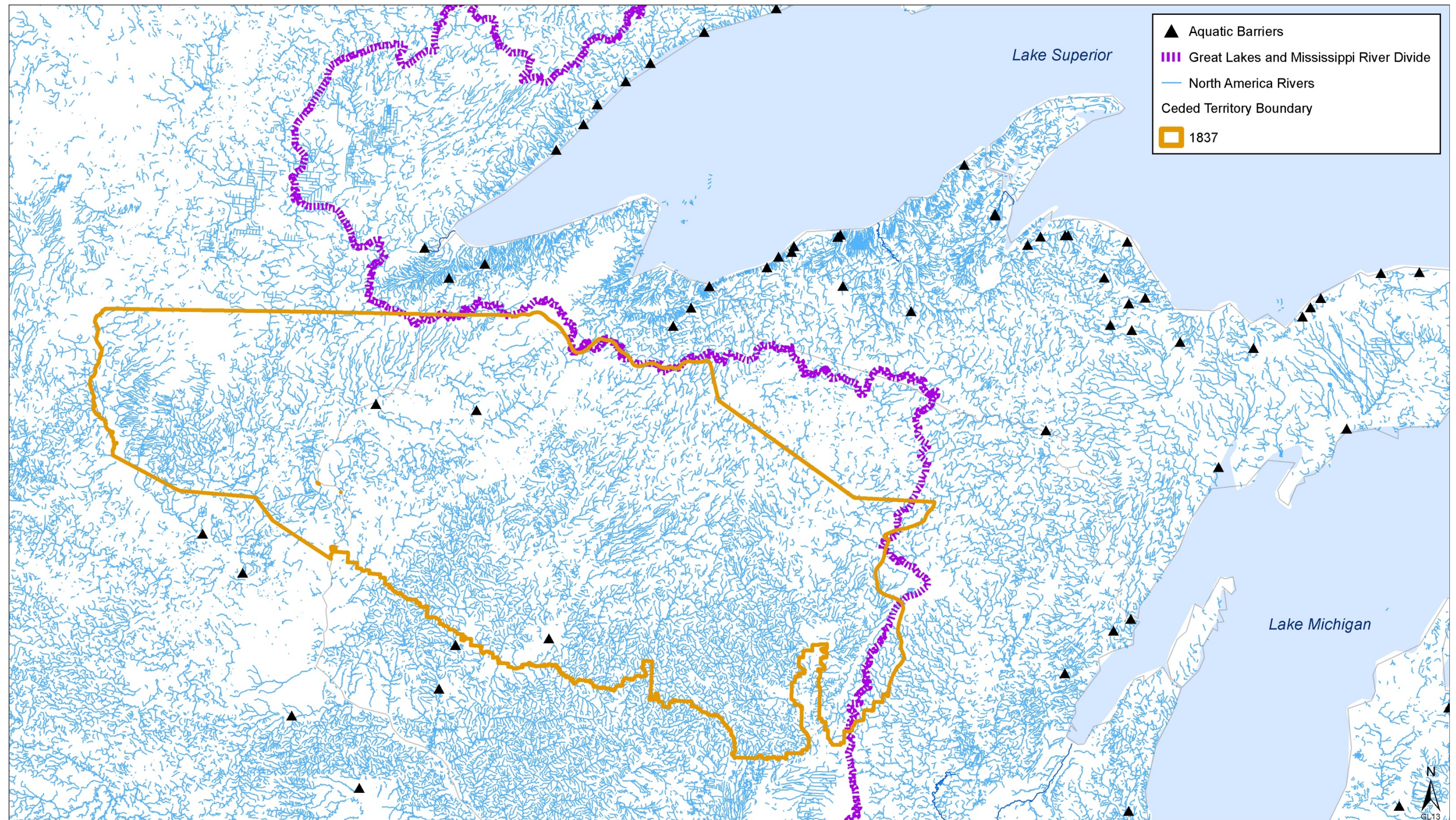


FIGURE 3.2 Streams and Rivers within the Territory Ceded under the 1837 Treaty

Page intentionally left blank.

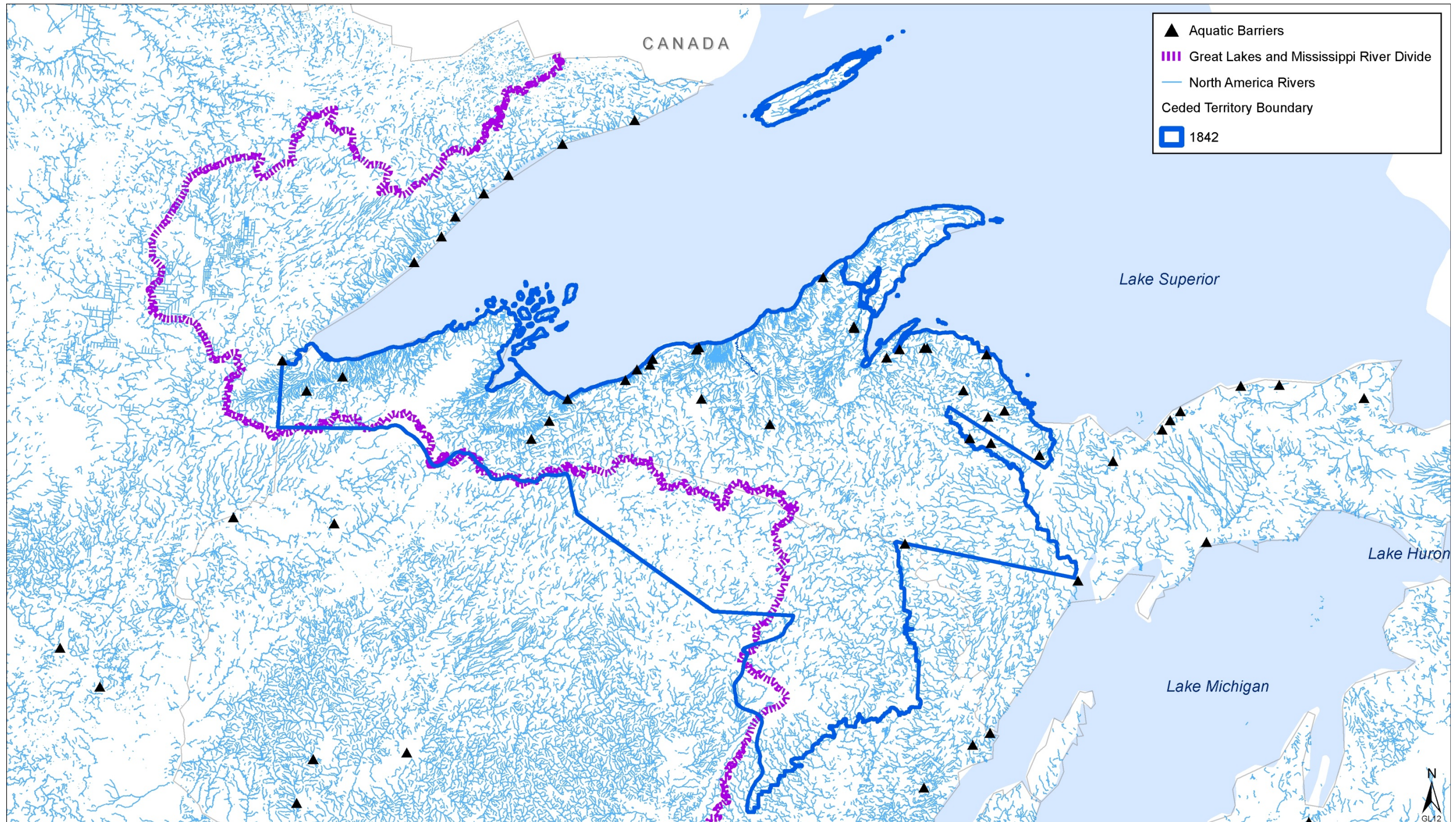


FIGURE 3.3 Streams and Rivers within the Territory Ceded under the 1842 Treaty

Page intentionally left blank.

3.2.3 Bad River Band of Lake Superior Chippewa Tribe

The Bad River Band exercises its subsistence and commercial fishing treaty rights within the 1842 ceded territory. The Bad River Band has a Natural Resources Department that provides assistance in protecting, conserving, managing, and developing the natural resources throughout the Bad River Reservation and its treaty fishing waters (Bad River Natural Resources Department 2010). The majority of the Bad River Band's subsistence fishing is conducted on the Bad River and Kakagon River for walleye, but members also do subsistence fishing in Lake Superior and on Madeline Island (Wilson 2011).

Subsistence fishing is not closely monitored, and no formal statistics are kept on how many subsistence fishermen there are per year and what species are being taken; however, it is estimated that there are 10 practicing subsistence fishermen (Wilson 2011). Lake Superior subsistence fishing is done along the shores of the reservation and Madeline Island by using 100 to 300 feet of gill net (Wilson 2011). Spear fishing focuses on the spring spawning run on inland waters. There is a natural lake sturgeon fishery in the Bad River, one of the only sturgeon fisheries on Lake Superior (Wilson 2011). Walleye, yellow perch, and lake sturgeon are the target species for subsistence fishers (Tillison 2011; Wilson 2011) (Table 3.2).

The Bad River Band has operated a fish hatchery since 1968. The hatchery has concentrated its efforts on raising walleye fry and fingerlings to supplement existing walleye populations within reservation waters. Today the hatchery also raises yellow perch, white suckers, and lake sturgeon (Ashland FWCO 2009).

3.2.4 Red Cliff Band of Lake Superior Chippewa Indians of Wisconsin

The Red Cliff Band exercises its subsistence and commercial fishing treaty rights within the 1842 ceded territory. The Red Cliff Band has a Treaty and Natural Resource Division that incorporates fishery management and a fish hatchery into its program (Red Cliff Band of Lake Superior Chippewa 2004).

The Red Cliff Band has the largest Native American commercial fishing fleet on Lake Superior, with 14 large boats and a fleet of approximately 25 smaller boats. Subsistence fishing or home-use fishing has always been common in Lake Superior and inland lakes and streams. Approximately 15 tribal members regularly fish for subsistence within a year (Newago 2011). Subsistence fishing permits are required, but reporting the catch is not; therefore, the subsistence fishing practice is not highly monitored. Gill and seine nets and angling are the most common methods used for subsistence fishing. Spearing and catching fish by hand is common, but only on the inland lakes during particular times of the year. Lake trout and whitefish are the targeted species in the study area. Table 3.2 shows the most common species of subsistence fish taken by subsistence harvesters.

The Red Cliff Band has operated a fish hatchery since 1994 as a trout- and walleye-rearing facility. In the past few years, the hatchery has been raising Lake Superior lake sturgeon in partnership with the U.S. Fish and Wildlife Service (Ashland FWCO 2009).

3.2.5 Lac du Flambeau Band of Lake Superior Chippewa Indians of Wisconsin

The Lac du Flambeau Band exercises its subsistence treaty rights within the 1842 and 1837 ceded territories. Members of this Band only do subsistence fishing on inland lakes and streams within treaty-ceded territories of Wisconsin, Minnesota, and Michigan. Tribal members travel all over the ceded territory to fish, hunt, and harvest wild rice. On the Lac du Flambeau reservation alone, there are 260 lakes and 71 miles of rivers and streams. Two of the most common rivers fished by Lac du Flambeau tribal members are the Bear River and the Trout River. Inland fishing is done by spearing, angling, and netting, with the most common subsistence species being walleye, sockeye salmon, musky, and northern pike (Wawronowicz 2012).

The Lac du Flambeau Band has operated a fish hatchery since 1960. The hatchery program raises all fish necessary for stocking reservation waters and focuses on walleye and muskellunge. The fisheries and fish culture program also conducts fish population studies involving electro fishing and creel surveys (Lac du Flambeau Band of Lake Superior Chippewa Indians of Wisconsin 2010).

3.2.6 Lac Courte Oreilles Band of Ojibwe

The Lac Courte Oreilles Band of Ojibwe exercises its treaty rights within the 1837 and 1842 ceded territories. Members of this Band only practice subsistence fishing on inland lakes and streams within treaty-ceded territories of Wisconsin, Minnesota, and Michigan. According to Paul Christel, fisheries biologist, no reporting is required for subsistence harvests except for spring spearing season, which GLIFWC monitors. He stated that there are small trout streams around the counties bordering the reservation; however, there is no way to know which streams are being fished (Christel 2012).

The Lac Courte Oreilles Band has a Conservation and Environmental Protection Department that operates a fish hatchery. This department has involved itself in numerous projects, such as stocking walleye and musky within the reservation waters, fish habitat restoration, fish studies, and the eradication of aquatic nuisance species (Christel 2012).

3.2.7 Sokaogon Chippewa Community

The Sokaogon Chippewa Community exercises its treaty rights within the 1837 and 1842 ceded territories. Subsistence fishing is practiced by the tribal members on inland lakes and streams within the ceded territories. Targeted species captured are walleye, northern pike, smallmouth and largemouth bass, and muskellunge.

3.2.8 St. Croix Chippewa Indians of Wisconsin

The St. Croix Chippewa Indians of Wisconsin exercise their treaty rights within the 1837 and 1842 ceded territories. The St. Croix tribal members fish mostly in Wisconsin counties near the reservation, such as Polk, Washburn, Sawyer, Douglas, Burnett, Barron, and St. Croix. Some members, however, do travel to Mille Lacs Lake in Minnesota, among others. The St. Croix River and Yellow River are the rivers fished most commonly by the St. Croix members. Efficient methods of fish harvest include spearing and netting. Spearing is the primary method used in Wisconsin; netting is more prevalent in Minnesota. The spring harvest of walleye is the largest contributor to the diets of tribal members. Other species that are collected include musky, northern pike, largemouth bass, and sturgeon (Taylor 2011).

The St. Croix Natural Resources Department operates a fish hatchery that raises walleye to stock in area lakes. Other duties of the Natural Resources Department include monitoring wild rice, conducting walleye electrofishing surveys, and carp management (St. Croix Chippewa Indians of Wisconsin 2012).

3.2.9 Mille Lacs Band of Ojibwe

The Mille Lacs Band of Ojibwe exercises its treaty rights within the 1837 ceded territory. The tribal members report their spearing efforts on Mille Lacs Lake to GLIFWC; however, they were hesitant to provide any additional information on which lakes and streams members were fishing and on which species were being targeted. According to Kelly Applegate of the Band's Fish and Wildlife Division, there are streams flowing into and out of Mille Lacs Lake, and those are where the majority of subsistence fishing, other than that done on Mille Lacs Lake, is being done (Applegate 2012).

3.2.10 Fond du Lac Band of Lake Superior Chippewa Indians

The Fond du Lac Band tribal members exercise their treaty rights within the 1854 and 1837 ceded territories. The Fond du Lac Band has a Natural Resource Department that administers a variety of activities, such as collecting data to manage fishery resources under the 1854 and 1837 ceded territories, exercising and managing treaty-reserved fishing rights within the 1837 ceded territory, and working closely with the Minnesota Department of Natural Resources to monitor and tally harvests in order to strictly regulate fishing limits (Fond du Lac Band of Lake Superior Chippewa 2011).

Approximately 20 to 30 families practice subsistence fishing yearly (Howes 2011). The methods most commonly used are angling, gill netting, and spearing. The targeted species in Lake Superior are lake trout and steelhead, whereas those in the St. Louis River are channel catfish, walleye, and northern pike (Howes 2011) (Table 3.2). The majority of the subsistence fishing (approximately 80%) is conducted on inland lakes and streams. Of all subsistence fishing, 70% is conducted on the reservation, while the other 10% of fishing takes place all over

the ceded territories, including Mille Lacs Lake, the largest inland lake in the ceded territories (Howes 2011).

3.3 1854 TREATY AUTHORITY

The 1854 Treaty Authority is an intertribal natural resource management organization that manages off-reservation hunting, fishing, and gathering rights in the territory ceded under the Treaty of 1854. Member tribes are the Grand Portage and the Bois Forte Bands of Lake Superior Chippewa Indians (1854 Treaty Authority no date.) (Table 3.6).

TABLE 3.6 1854 Treaty Authority Member Tribes

Tribes	Practice Subsistence Fishing in Study Area?
Grand Portage Band of Lake Superior Chippewa Indians	Yes
Bois Forte Band of Lake Superior Chippewa Indians	No

The Natural Resource Department of the 1854 Treaty Authority is involved in research and management of fish populations within the 1854 ceded territory. The department focuses on walleye management, and its work is done in cooperation with the Fond du Lac Band of Lake Superior Chippewa Indians and the Minnesota Department of Natural Resources (1854 Treaty Authority no date).

The Grand Portage Band of Lake Superior Chippewa Indians is the only tribe under the 1854 Treaty Authority that harvests fish for subsistence use within the study area. The Bois Forte Band is outside the Upper Mississippi River Basin and the Great Lakes Basin. The Grand Portage Band has a Natural Resource Department that monitors fish and wildlife and that operates a fish hatchery. Figure 3.4 shows the rivers and streams within the 1854 ceded territory that are allowable for subsistence fishing. Members of the Grand Portage Band practice subsistence fishing in the Grand Portage Zone of Lake Superior (Figure 3.5). Tribal members may fish in any water body that has public access within the ceded territories. The methods most commonly used are gill netting and angling. The species most commonly targeted are lake trout, brook trout, menominee (round whitefish), whitefish, cisco (which includes chubs and herring), walleye, and pike (Moore 2011) (Table 3.2). No reporting of subsistence fish catches is required.

The Grand Portage Band also operates a fish hatchery, which stocks inland lakes and the Grand Portage Zone of Lake Superior. The indigenous species raised and stocked by this hatchery are brook trout, lake whitefish, and lake herring (Moore 2011).

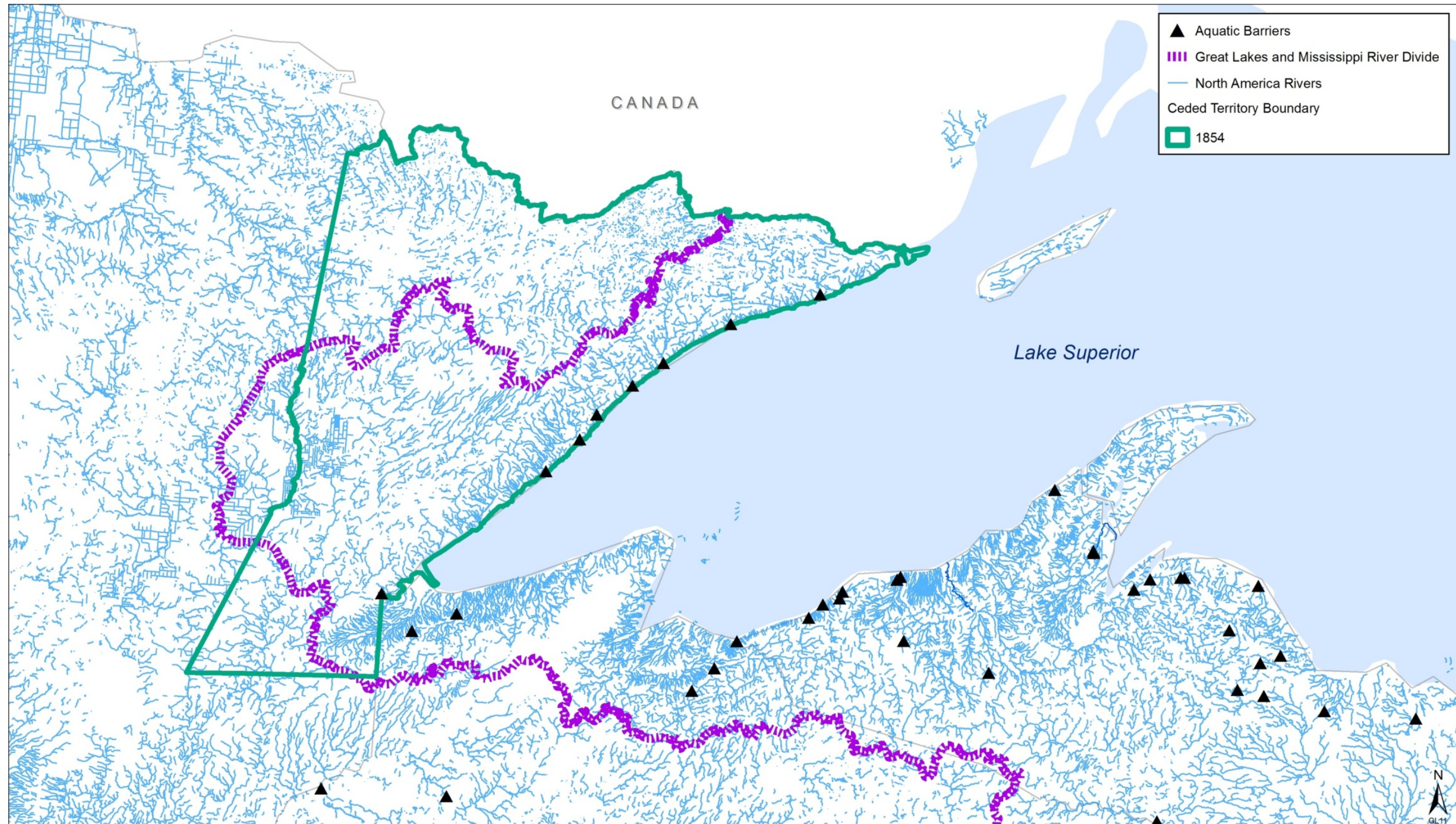


FIGURE 3.4 Streams and Rivers within the Territory Ceded under the 1854 Treaty

Page intentionally left blank.

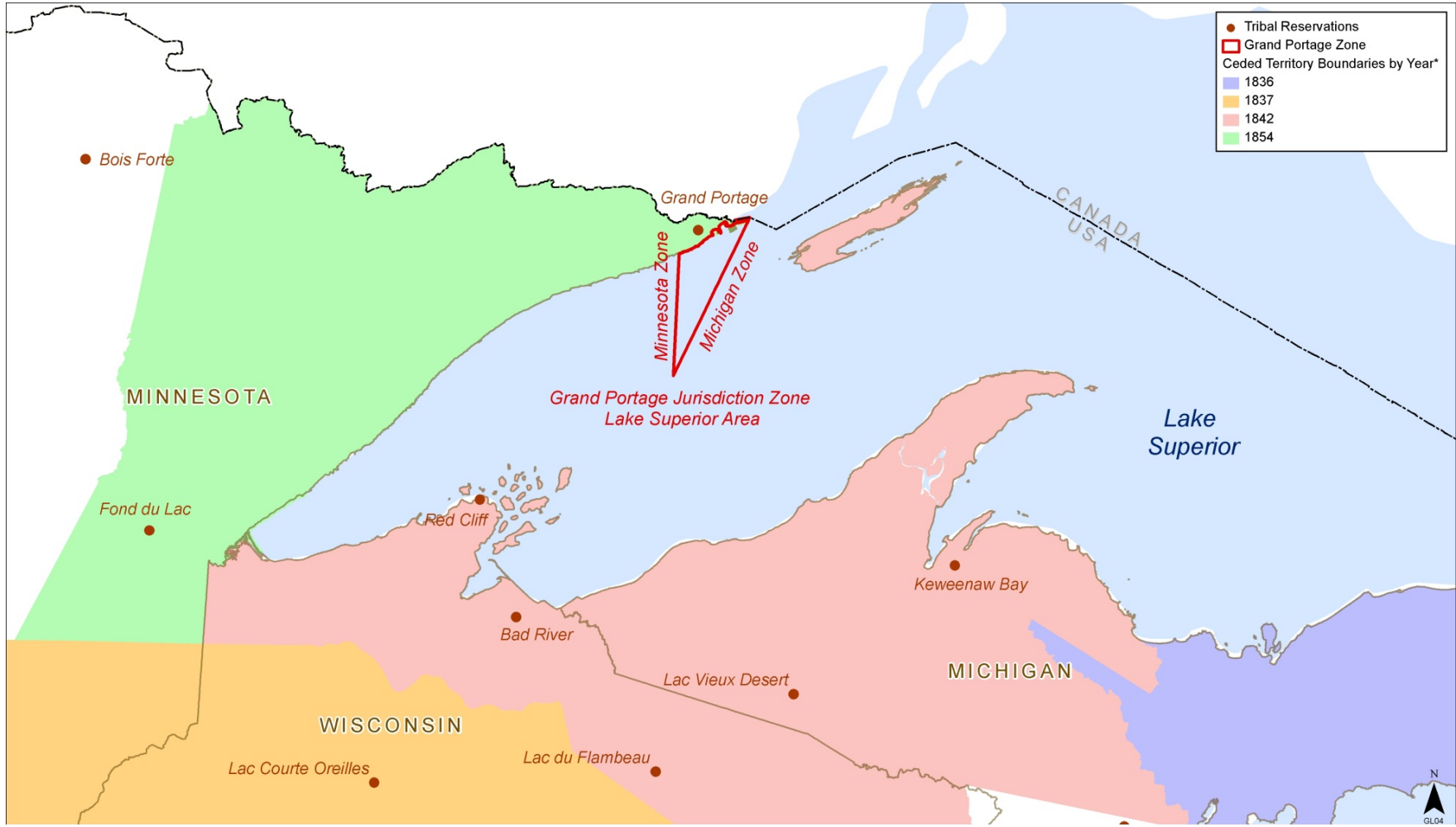


FIGURE 3.5 Grand Portage Zone

4 PRESENT-DAY SUBSISTENCE PRACTICES OF NON-TREATY TRIBES

Although historically, subsistence fishing was an important way of life for most of the Native American tribes in the study area, many tribal groups have faced challenges in keeping this tradition active. The tribal groups that are not party to treaties that reserve hunting and fishing rights do not have enough access to waterways to allow them to continue their traditional subsistence practices. Many of the streams and lakes that are available to them (either streams and lakes on their reservations or inland lakes that they have purchased for fishing) have been contaminated. Many of the tribes are also near metropolitan areas, where it is an ongoing challenge to keep the youth interested in traditional ways of life. Youth are increasingly involved in modern American culture and economic systems, and are less reliant on subsistence harvesting to acquire food for their families.

4.1 NON-TREATY TRIBES THAT PRACTICE SUBSISTENCE FISHING

There are five tribes within the study area that were available for interviews and that practice subsistence fishing on their tribally owned land. Table 4.1 lists the non-treaty tribes that practice subsistence fishing. The subsistence fishing activities of each of these tribes are described in Sections 4.1.1 through 4.1.5.

4.1.1 Notawaseppi Huron Band of the Potawatomi

The Notawaseppi Huron Band of the Potawatomi is located on Pine Creek Reservation, which is in southwestern Calhoun County in Michigan. The tribal members do not rely solely on their fishing efforts for food; however, they capture fish to supplement their diets. The Nottawa Creek watershed, which is connected to Lake Michigan via the St. Joseph River, is where tribal members can fish for suckers and northern pike within the reservation. Wild rice is also grown and harvested on Nottawa Creek. Tribal members also fish on publicly owned state land under the State of Michigan's fishing regulations (Rodwan 2012).

The Kalamazoo River is another place where tribal members subsistence fished; they did so until 2010, when one of the largest Midwest oil spills occurred. An Enbridge pipeline burst

TABLE 4.1 Non-Treaty Tribes That Practice Subsistence Fishing

Notawaseppi Huron Band of the Potawatomi
Stockbridge-Munsee Community
Saginaw Chippewa Indian Tribe of Michigan
Seneca Nation of Indians
St. Regis Mohawk Tribe

spilled 840,000 gallons of crude oil into the Kalamazoo River (Klug 2010). Catfish was the targeted fish species from this river, with turtles and muskrats were targeted too (Rodwan 2012).

4.1.2 Stockbridge-Munsee Community

The Stockbridge-Munsee Community is located in central Wisconsin in the townships of Bartelme and Red Springs in Shawano County. The Red River, which is connected to Green Bay via the Wolf and Fox Rivers, runs through tribally owned land, and tribal members practice subsistence fishing on this river and smaller lakes and streams that drain into the Red River. Trout is the targeted species within the Red River. The tribe also buys privately owned lakes within the area to enable tribal members to fish. Tribal members have limited income, and, if they did not subsistence fish, they would not be able to afford to eat fish (Wollonhaupt 2012).

The Stockbridge-Munsee Community has a Conservation Department that strives to manage fish and wildlife for current and future use. Every tribal member fishing on tribally owned land must have a fishing permit issued by the tribe. Some species of fish are regulated, including brook trout, northern pike, rainbow trout, bass, and walleye. For other species of rough fish, there are no limitations (Stockbridge-Munsee Community Band of Mohican Indians 2009).

4.1.3 Saginaw Chippewa Indian Tribe of Michigan

The Saginaw Chippewa Indian Tribe of Michigan is located in central Michigan. The tribe owns 3,700 acres split into 22 allotments. Tribal members practice subsistence fishing under tribal jurisdiction on the Chippewa River and many other lakes and streams throughout the reservation. Tribal members also fish on state owned land, which includes Saginaw Bay, Lake Huron, and tributaries running to Lake Huron. The tribe does not regulate fishing efforts on the reservation, and members fish for anything they can catch; there are no targeted species (Seal 2012).

Out of approximately 3,400 tribal members, 2,000 live within the state of Michigan. Approximately 200 of the members living in the state do subsistence fishing on tribal land, and 75 of those 200 fishers go outside the reservation and fish on state land. The tribe is covered under the 1836 Treaty but chose not to participate in the Consent Decree negotiations. The tribe is currently in the midst of negotiations with the state of Michigan to establish a clear agreement on hunting and fishing rights off the reservation. The tribe also recently bought a facility along Lake Huron that will be used for fishery research, with the long-term goal being to establish a hatchery. The tribe is also expending effort to bring wild rice back to the reservation (Seal 2012).

4.1.4 Seneca Nation of Indians

The Seneca Nation of Indians is located in western New York on three different reservations: the Allegany Reservation, Oil Springs Reservation, and Cattaraugus Reservation. According to Will Miller, Chief Conservation Officer, there is very little subsistence fishing

practiced among the Seneca Nation members. The tribal members do not rely solely on fishing for food; however, some members fish to supplement their diets. Fishing is done on the Allegheny River, Allegheny Reservoir, and Cattaraugus Creek, where the intake is limited because of mercury poisoning. Subsistence fishing is not conducted on Lake Erie, since very little of the lake is accessible to the tribal members from their reservation (Miller 2012).

4.1.5 St. Regis Mohawk Tribe

The St. Regis Mohawk Tribe reservation is located in northeastern New York. The tribal members are very active in subsistence fishing. Tribal members subsistence fish on the St. Regis River, St. Lawrence River, Grass River, Raquette River, and Little Salmon River for bullhead, yellow perch, smallmouth and largemouth bass, musky, pike, walleye, and lake sturgeon. Methods for fishing are mostly hook and line, but netting is also employed for walleye, perch, bullhead, and sturgeon. Trotlines are also used for sturgeon, and spearing for walleye is done in the spring. No reporting or licensing is required for members when they fish on reservation land. The St. Regis Mohawk Tribe also let non-native people on the reservation to fish, but these fishers need a permit. This tribe does no commercial fishing (Snyder 2012).

The St. Regis Mohawk Tribe has an Environment Department with a Water Resource Program Division. This division is seeking to reintroduce Atlantic salmon to tributaries and sections of the St. Regis River. It participates in a lake sturgeon restoration project with the New York State Department of Environmental Conservation (NYSDEC) and the USGS. They conduct fisheries population assessments of threatened and endangered species. They also post fish advisories and monitor contamination within the fish populations found in the reservation waters (St. Regis Mohawk Tribe 2012).

4.2 NON-TREATY TRIBES THAT DO NOT PRACTICE SUBSISTENCE FISHING

Of the 37 tribes within the study area, 7 of the tribes that sent Argonne National Laboratory comments do not practice any form of subsistence fishing (Table 4.2). The most common reasons given for not fishing were water quality, the members' assimilation in metropolitan areas, and a disjointed reservation land base. Sections 4.2.1–4.2.3 discuss these reasons.

4.2.1 Contamination

A major challenge facing tribes that only have access to resources on their reservation is their lack of control over factors outside the reservation borders. The tribes that have a major river running through their reservation have access to the river only where it is within the reservation borders; they cannot control what happens environmentally to that river where it is outside their jurisdiction. The Lower Sioux and Upper Sioux Communities of Minnesota are along the Minnesota River; however, only a very small part of the Minnesota River runs through their reservation. They do not fish in this river because of its contamination. In our interview

TABLE 4.2 Non-Treaty Tribes That Do Not Practice Subsistence Fishing

Prairie Island Indian Community
Shakopee Mdewakanton Sioux Community
Lower Sioux Indian Community
Upper Sioux Community of Minnesota
Ho-Chunk Nation
Onondaga Nation
Oneida Tribe of Indians of Wisconsin

with Megan Alrich, Water Quality Specialist for the Upper Sioux Community of Minnesota, she stated that if the tribal community did expend the effort to clean up its portion of the Minnesota River, that effort would be wasted, since no other groups outside the reservation would expend the same amount of effort (Alrich 2012).

The Oneida Tribe of Indians of Wisconsin does no subsistence fishing now because of contaminated waters; however, it is trying to restore this practice by restoring the contaminated waters on the reservation, operating fish hatcheries, and removing barriers so the fish could reach those reservation waters. The members of this tribe have historically fished in Fox Creek and Duck Creek. Currently, they operate a largemouth bass and bluegill fish hatchery. Their initiative is to create healthy fisheries so the tribal members could restore their traditional way of life if they chose to. However, one large concern is the nation's proximity to the metropolitan area of Green Bay (Snitgen 2012).

The Onondaga Nation has also been deprived of subsistence fishing because of contamination. Its reservation is within the Onondaga Lake drainage basin, which is one of the most polluted lakes in the United States. The major river that runs through the reservation is also polluted; it is contaminated with underground salt mining runoff that has raised its water temperature and killed its fish (Shenandoah 2012). There are also numerous Superfund sites (i.e., sites requiring cleanup) surrounding the reservation.

4.2.2 Metropolitan Areas

The Prairie Island Indian Community and the Shakopee Mdewakanton Sioux Community reservations are located close to the Minneapolis and St. Paul metropolitan areas in Minnesota. Community members indicate that although they have sufficient sources of water in which to fish (e.g., Vermillion River, Mississippi River, Minnesota River), their proximity to urban areas and integration into the local economy has made subsistence harvesting less of a necessity (Whit 2012).

According to Mike Whitt, Natural Resources Manager of the Shakopee Mdewakanton Sioux Community, it is hard to keep the youth interested in traditional ways of life when they have to split their time between jobs and commitments in the city and their families at home.

Most of the tribal members, who do not live on the reservation, live in the metropolitan areas (Whitt 2012).

4.2.3 Scattered Land Base

The Ho-Chunk Nation has a situation that is unique when compared with that of other tribes in the study area. Its tribally owned lands are scattered throughout 20 counties in Wisconsin, Minnesota, and Illinois. If the members fish, they do so under each state's regulations. The Ho-Chunk Nation has a Natural Resources Department that focuses on conservation, preservation, and protection of natural resources on all tribal lands. Its efforts focus on wildlife: endangered resources, outreach and education, animal surveys, inventories of all of its lands to ensure their cultural and natural resources are protected and managed, and forestry management (Ho-Chunk Nation 2008).

4.3 NON-TREATY TRIBES UNAVAILABLE FOR INTERVIEWS

Several tribes within the study area were either unavailable for interviews or were hesitant to share information about their subsistence practices (see Appendix A for Tribal Contact Efforts). Table 4.3 lists the tribes that are not under treaty rights and that Argonne National Laboratory was not able to contact. No information is known about the subsistence practices of these tribes.

**TABLE 4.3 Non-Treaty Tribes
Unavailable for Interviews**

Sac and Fox Tribe of the Mississippi in Iowa
Menominee Indian Tribe of Wisconsin
Hannahville Indian Community
Pokagon Band of Potawatomi Indians
Forest County Potawatomi

5 CATCH AND VALUATION ASSOCIATED WITH TREATY RIGHTS SUBSISTENCE FISHING

5.1 TRIBAL SUBSISTENCE FISH HARVESTS

Data on subsistence fish harvests in each of the five Great Lakes and their tributaries were not available from a single source, and only one source, CORA, provided comprehensive data over a recent time period. CORA data were limited to subsistence fishing in Michigan state waters that were ceded under the Treaty of March 28, 1836, including portions of Lake Huron, Lake Michigan, Lake Superior, and St. Mary's River, which connects Lake Superior with Lake Huron. The CORA Michigan data included 25 species of fish and two fishing methods: gill net and spear. The data received from CORA were from 2006 to 2010. These numbers are based on reported data, have not been extrapolated to estimate total harvests, and as a result, may under-represent subsistence harvests.

The subsistence catch in Michigan waters in Lake Michigan was larger than that in the other two lakes. On average, 11,357 pounds of fish were caught over the period from 2006 to 2010, with 11,240 pounds (98.9%) being caught by gill net, and 117 pounds (1.1%) being caught by spear fishing (Table 5.1). In Lake Superior, 4,752 pounds (99.5%) were caught by gill net, and 23 pounds (0.5%) by spear fishing. The subsistence catches in St. Mary's River (1,479 pounds) and in Lake Huron (1,383 pounds) were relatively small.

The subsistence fish caught in the largest quantity in Michigan waters in Lake Michigan was walleye, with 4,432 pounds caught by gill net and 93 pounds caught by spear fishing over the period from 2006 through 2010 (Table 5.1). Other fish caught in larger numbers were whitefish (1,531 pounds) and suckers (1,120 pounds); all were caught with gill nets. A fairly large share of salmon caught in Lake Michigan was caught with spears (25 pounds of a total of 180 pounds, or 13.8%). None of the other species caught for subsistence use in Lake Michigan amounted to more than 1,000 pounds on average over the period from 2006 through 2010, and all were caught with gill nets.

In Lake Superior, salmon (1,313 pounds) and whitefish (1,142 pounds) were the only species for which more than 1,000 pounds were landed. Salmon was the only fish caught regularly with spears (25 pounds of a total of 1,313 pounds caught, or 1.9%). In St. Mary's River and Lake Huron, whitefish was the most numerous fish caught for subsistence, but no fish catch in either area amounted to more than 500 pounds on average over the period from 2006 through 2010. Although almost all fish taken in both areas were caught with gill nets, a larger-than-average amount of salmon (29 pounds from a total catch of 223 pounds, or 13.0%) and northern pike (28 pounds from a total catch of 93 pounds, or 30.1%) was caught in St. Mary's River by using spear fishing methods.

TABLE 5.1 Reported Harvest for CORA-Licensed Subsistence Fishing in Michigan by Method: Annual Average Weight in Pounds, Over the Period 2006–2010

Fish Species	Lake Huron		Lake Michigan		Lake Superior		St Mary's River	
	Gill Net	Spear	Gill Net	Spear	Gill Net	Spear	Gill Net	Spear
Atlantic salmon	0	0	0	0	0	0	0	1
Bass	21	0	85	0	2	0	10	0
Brown trout	13	0	14	0	12	0	2	1
Bullhead	1	0	13	0	0	0	13	0
Burbot	10	0	210	0	22	0	23	0
Carp	10	0	471	0	0	0	6	0
Catfish	34	0	0	0	0	0	0	0
Freshwater drum	0	0	29	0	0	0	4	0
Gizzard shad	0	0	20	0	0	0	0	0
Lake herring	52	0	0	0	655	1	134	3
Lake trout	245	0	739	0	246	0	4	0
Menominee (round whitefish)	52	0	70	0	145	0	53	0
Musky	0	0	0	0	6	0	5	0
Northern pike	9	0	515	0	56	0	93	28
Pink salmon	0	0	0	0	5	0	4	0
Rainbow trout	0	0	314	0	124	0	11	2
Rockbass	0	0	17	0	0	0	1	0
Salmon	4	5	180	25	1,313	25	223	29
Smelt	0	0	1	0	347	0	36	0
Splake	0	0	6	0	10	0	0	0
Steelhead	6	0	870	0	108	0	14	0
Suckers	33	0	1,120	0	392	0	169	0
Walleye	321	0	4,432	93	151	17	254	11
Whitefish	513	0	1,531	0	1,142	3	332	8
Yellow perch	60	0	602	0	16	0	89	0
Total	1,383	5	11,240	117	4,752	23	1,479	84

Source: CORA (2010)

In addition to subsistence fishing in the Great Lakes, there are relatively small subsistence fish harvests in lakes and streams in areas of the Upper Mississippi Basin surrounding the Great Lakes. The data in Table 5.2 represent the reported counts for species harvested for subsistence by spear fishing in publicly accessible lakes ceded in the Treaties of 1837 and 1842 in Wisconsin. No data were available for other states in the Upper Mississippi Basin. These numbers are based on reported data, have not been extrapolated to estimate total harvests, and as a result, may under-represent subsistence harvests.

TABLE 5.2 Subsistence Spear Fishing in Wisconsin Water Bodies, 2005-2009

Fish Species	All Wisconsin Water Bodies	Wisconsin Water Bodies Connected to the Great Lakes or the Mississippi
	Number	Number
Bass	179	21
Muskellunge	265	17
Northern Pike	31	1
Walleye	24,940	954

Sources: Krueger (2006, 2007, 2008, 2009, 2010)

5.2 TRIBAL SUBSISTENCE FISHING VALUATION

A production cost model is used to value tribal subsistence fish catch. The model assumes that households make the choice between subsistence production and wage-based activities in order to maximize household satisfaction, and that the value of subsistence production equals the amount participants spend on materials, equipment, and labor for activities related to subsistence fishing activities. Valuation of the labor required to catch fish is an important part of subsistence valuation, for while employment opportunities in many rural communities in the Michigan, Wisconsin, and Minnesota are limited compared to areas with substantial natural and agricultural resources, or to urban areas, subsistence production requires a wide range of training and skills, and requires time to prepare, engage, and process the subsistence fish.

It is recognized that the household decision to participate in subsistence activities has a number of components beyond the provision of food. There are also social elements to subsistence, including education and cultural elements, the expression of ethics and values, tribal identity, spirituality and ideology, and traditional knowledge and language, in addition to health benefits (TetraTech 2011). Valuation of subsistence production does not, however, ascribe any portion of subsistence value to any specific component of subsistence, meaning that it is not possible to determine how much of the total valuation of subsistence activity comes from the provision of food, and how much comes from the expression of social and cultural values. Production cost is, therefore, only a partial proxy for total subsistence value, and does not measure the social and cultural aspects of subsistence.

To measure the value of subsistence production, cost data were collected from tribal members through telephone and personal interviews conducted in the Fall of 2011. While it is recognized that subsistence fishing occurs in many tribal communities, the relatively low response rate to the surveys, and inadequacies and inconsistencies in the data received from the various parties, meant that the extent to which tribes participate in these activities has not been accurately measured. Because of these data limitations, the purpose of this valuation is to provide

information on the production cost of generic subsistence fishing activities for a representative single household based on the limited data that was gathered through the interview process, rather than provide estimates of the value of all subsistence activity in Michigan, Wisconsin, and Minnesota. In addition, as cost data received were not specific to particular species of fish, the analysis does not value subsistence activities with respect to individual species of fish; only the cost of participating in subsistence fishing activity as a whole.

Tribes fish for subsistence purposes primarily using gill nets or spears. Gill nets are either purchased ready-made (a 300-foot net of 4.5-inch mesh costs between \$280 and \$350) or sewn from materials purchased in fishing tackle stores (Newago 2011). Handmade nets are made of monofilament, and a 300-foot net costs about \$180. Although commercial fishers hand-sew their own nets, subsistence fishers usually buy theirs. Most subsistence fishermen have one or two 300-foot nets (Moore 2011; Deschampe 2011). Spearfishing requires waders and spears. A homemade spearhead is usually used; purchased spearheads cost between \$15 and \$20 (Plucinski 2011). In addition to fishing, many tribal reservations harvest the wild rice plots they have on inland lakes. Rice is harvested by using a canoe, handmade cedar beaters, and a push-pole, which costs about \$50 (Howes 2011). The canoe is usually towed to the rice stands by a boat with an outboard motor. Although some tribal members may use small non-motorized fishing craft for subsistence fishing, most subsistence fishing occurs in small motorized craft. Although no data were provided on the cost of boating equipment, it was assumed that boat purchase cost was \$2,000, and that the cost of fishing equipment and would be depreciated over a 20-year period.

The cost of fuel used for trips to fishing locations and for the fishing activities themselves is relatively small. Fishing takes place either close to shore in one of the Great Lakes or onshore in tributaries that run into the Great Lakes. Subsistence nets are typically placed within 300 feet of the shore and gathered from 14- or 16-foot skiffs with outboard motors (Plucinski 2011). Fuel consumption is about six gallons over a two-day fishing period, meaning that a two-day subsistence fishing trip would cost \$21 in fuel, assuming gasoline costs of \$3.50 per gallon (Gasbuddy.com 2011). Although interviews indicated that the number of hours in any given subsistence fishing trip varied, evidence from Alaska suggests that households participated in subsistence for an average of about nine weeks per year (TetraTech 2011), and these data are utilized for the analysis of subsistence valuation in Michigan, Wisconsin, and Minnesota. Assuming each subsistence trip would last two days, there would be approximately 42 trips each year made by an individual household. It is assumed that participation in subsistence occurs during time that might otherwise be used for wage-earning employment, meaning an average of 160 hours were available for subsistence activities per month, and that one person per household would otherwise be working during the time used for participation in subsistence.

Data from interviews indicate that tribal subsistence fishing travel costs for residents who live on tribal lands are small, as they typically do not include lodging costs or camping fees. While it is recognized that some tribal members may have to travel longer distances to subsistence fishing locations, and may have higher travel costs, including lodging, for the purposes of the analysis, it was assumed that subsistence fishing activities would mean a 25 -mile round trip. It was assumed the trip would be in a vehicle with gas consumption of 25mpg, and although it was assumed that vehicles used for subsistence activities were not

purchased specifically for this purpose, a portion of vehicle maintenance and operating (taxes and insurance) costs were ascribed to subsistence activities.

To estimate labor costs, it was assumed that individuals within a given household could, based upon the general skills required, be expected to earn at least as much as wage earners as a whole, should they choose to shift entirely to wage-based economic activities. Annual average hourly wages for May 2011 in the three states, Michigan (\$21.01), Minnesota (\$22.19), and Wisconsin (\$19.92) were therefore used to estimate the value of labor that can be ascribed to subsistence activities.

Table 5.3 summarizes the results of the valuation of subsistence activities using the production cost model, including equipment, travel and labor costs, with results provided for Michigan, Minnesota, and Wisconsin.

TABLE 5.3 Annual Individual Household Subsistence Activity Valuation (2011 dollars)

State	Valuation
Michigan	15,665
Minnesota	16,471
Wisconsin	14,921

6 CULTURAL VALUES

Cultural values are the commonly held ideas and lifeways that are practiced within a society. The way a group of people interprets the landscape, utilizes its resources, and lives within a place is based on the cultural values embedded within the everyday life of the people. Cultural values make up the paradigm through which people view the world around them and, in turn, live within that world.

The Great Lakes, Upper Mississippi River, and Ohio River Basins (Figure 1.2) have been the home of Algonquian- and Iroquoian-speaking tribes, as well as of Siouan- and Muskogean-speaking tribes, at least periodically. By the latter part of the 19th century, the only tribes that remained were the Chippewa, Ottawa, and Potawatomi from the Algonquin stock; the Seneca, Tuscarora, Cayuga, Mohawk, and Oneida and Onondaga from the Iroquois stock; and a few Siouan tribes located in the western Upper Mississippi River Basin. The number of tribes residing in the Upper Mississippi River Basin and the Ohio River Basin is small compared to the number of tribes residing in the Great Lakes Basin. A discussion of the Algonquin and Iroquoian ways of life follows here. It details their beliefs and discusses why subsistence fishing is a cultural identifier to these different groups. The Siouan groups are not discussed, since in interviews, these tribes indicated they do not subsistence fish within the study area.

6.1 ALGONQUIN

The beliefs of the Algonquin peoples, including the Chippewa (Ojibwe), are based on a connection between the physical world, the plant world, the animal world, and the human world (Johnston 1976; Newago 2011). The Algonquin people believe that everything is life giving and that life-giving power deserves respect. All life is unified, and every living thing is tied to another, so that without one part, the other parts could not sustain themselves (L. DeFoe 2011). According to traditional Chippewa cultural values and beliefs all parts of the natural world as interconnected. Parts of the natural environment that western people may see as inanimate are viewed as having a spirit or being imbued with a life force. Disturbing one part ripples through the whole circle of life (Newago 2011; Pavlat 2011).

In the traditional Chippewa belief system every living creature is endowed with unique and singular powers (Johnston 1976). The fish are looked upon as relatives (Pavlat 2011; Newago 2011). The pike represents swiftness and elegance, and the sucker represents calmness and grace. The sturgeon represents depth and grace, while the whitefish represents abundance, fertility, and beauty (Johnston 1976). Sturgeon is a sacred fish, and parts of the sturgeon are used in traditional medicines and ceremonies; however, all fish are treated with respect (Plucinski 2011). These animals symbolize an ideal to be sought, attained, and perpetuated, and the Chippewa seek to emulate the character of these animals by observation and prayer (Johnston 1976).

The Algonquin honor every being's place in life so that the power of that being will not be lost (Pflug 1998). According to one elder, Melvin Eagle of the Mille Lacs Band of Ojibwe,

the fish were shown to the Indian people by the Creator so the Indian people could eat those fish in order to live (Treuer 2001). Because of this belief, Algonquin hunters are taught to give thanks for what they receive. Rituals were continually enacted to ensure the abundance of both animals and plants (Pflug 1998). Tobacco offerings were made to the Creator before fishing commenced and before the fish were eaten. Tobacco offerings would be placed in the water or smoked. Archie Mosay of the St. Croix Chippewa Indians remembers the pipe ceremony, where the hunters would give tobacco offerings when they wanted to fish and pick rice and when they wanted to eat what they had harvested. It is believed that the Creator gives permission for the Indian to have a traditional diet of rice and fish (Treuer 2001). Offering tobacco shows respect to the Creator for allowing the meal.

Present-day Chippewa members continue the respect and reverence of their ancestors toward the fishing resource. They express how valuable the fishing resource is to their communities and cultural identity (Pavlat 2011; Leoso 2011; Balber 2011; L. DeFoe 2011). They are a fishing people and have been for hundreds of years, and they believe that the natural fishing resource is an identifiable cultural resource. It is a way of life to them, and to express the resource in monetary terms minimizes its true value. They believe that having the right to fish or the potential use of the fisheries is the true important value; having that resource has a value beyond that of the commercial value of their harvest (Moore 2011; Deschampe 2011; Mensch 2011b).

The Lake Superior Chippewa tribes pride themselves on maintaining the ecosystem that will allow them the continued use of the fishery resource (Moore 2011). They believe that it is a cultural obligation to protect the resource for current and future use. If the resource deteriorates, the value also lessens (Deschampe 2011). According to their holistic beliefs, loss of one fish species, whether it is harvested or not, will affect the food web and, in turn, affect the entire environment (Deschampe 2011). The Chippewa hold a belief that is an oral tradition passed down from generation to generation. This belief states that no action is executed if it has the potential to harm the next seven generations (L. DeFoe 2011).

Traditionally, the fisheries were a natural resource that the tribes learned to utilize; later, fishing for sustenance and nutrition became a necessary part of their lives. Only two generations ago, if subsistence fishing was not conducted, there would not be any meat to go with the meal (L. DeFoe 2011). Fisheries used to be more plentiful before pollution started contaminating the water. Today subsistence fishers notice the decline in the amount of fish per catch compared with that 20 years ago (L. DeFoe 2011).

Hospitality between tribal members is a core cultural value also. The subsistence harvest was, and still is, shared with family, close friends, and those in need within the community (L. DeFoe 2011; Newago 2011). Traditionally, feasts were a common practice before the modernization of the tribes and the decline of the resource. Feasts were held when hunting was profitable, and food was in abundance. This type of celebration signified the importance of offering thanks to the Creator for providing and maintaining the equal distribution of food within the society (Pflug 1998).

Ceremonies or rituals are still a common practice today. Some groups of Chippewa conduct water ceremonies in the traditional Midé religion before the fishing season commences and at the close of the fishing season (Leoso 2011). Songs are also sung to and for the water spirit (Leoso 2011). Individual fishermen give thanks and pray while offering tobacco to the water spirit (L. DeFoe 2011). Fishing characters in stories are part of the traditional religion, and the stories are passed down orally from generation to generation (M. DeFoe 2011).

6.2 IROQUOIS

The beliefs of the Iroquoian people are based on the “Great Cycle of All Things” (Williams 2007). It is believed that all things have life and exercise will. All phenomena, all emotion, all changes, and all activity are interpreted as the results of the exercise of supernatural power directed by the Creator (Hewitt 1974). Most of the objects in nature are believed to have their own spirit that provides invisible aid to the Creator (Morgan 1962 [1851]).

Tobacco, for instance, played an important role in the Iroquoian society. The tribes believed that tobacco was given to them as the means of communications with the spiritual world. Tobacco would be burned and an invocation offered to the Creator. In this manner, the Iroquois could send up their thanks and petitions to the Creator with the tobacco smoke (Snow 1994). The many feasts that were held represented the Iroquois giving thanks to the aids of the Creator for their ministering of the Iroquois peoples’ wants (Snow 1994).

Rituals were often enacted to please the Creator’s invisible helpers and to bring about good fortune. Tobacco would also be placed in the water for the soul of the water spirit, who was an invisible aid to the Creator (Rostlund 1952). A fish preacher would be available to preach a sermon to the fish; he had a special gift in that he could speak directly to the fish and tell the fish about the purpose they would be serving by allowing themselves to be caught. The Iroquois believed that this preacher had the power to attract the fish into the nets (Rostlund 1952).

The Iroquois would also sing songs and give humorous speeches to the fish to attract them into the nets. It was believed that fish bones and fish were never to be thrown into the fire because the other fish would hear of this action and not let themselves be caught (Rostlund 1952).

6.3 SENSITIVE AREAS AND RELIGIOUS SITES

According to members of the Chippewa bands, their entire homeland is sacred. They believe they were created to fit into their homeland, and they were placed there by the Creator to protect its resources; thus, the intrinsic value of water defines them as a people (Plucinski 2011; Newago 2011; Pavlat 2011; Leoso 2011). Subsistence fishing is a way of life to the Great Lakes tribes and always has been since their migration story brought them here hundreds of years ago. They believe that having this resource, having the right to use this resource, and being good stewards of this resource are why they were brought to this place. When the tribal members’ ancestors signed the treaties, they had no concerns over land ownership. They lived their lives by

relying on the natural resources that their homeland had to offer, and in signing the treaties, they felt they were protecting those natural resources for themselves and future generations (Deschampe 2011; Newago 2011).

Tribal members interviewed were reticent to discuss the exact locations of sacred places and are not likely to do so unless they feel that these places are directly threatened by a proposed action.

7 CONCLUSIONS

This report has explored the value of the subsistence harvest to Native American fishers in the Great Lakes, Upper Mississippi River, and Ohio River Basins (Figure 1.1), areas that would be affected by the migration of aquatic nuisance species between basins. The majority of the 37 federally recognized Native American tribes located in these basins are found in the Great Lakes Basin (Figure 1.2). Most, but not all, subsistence fishing occurs in the western half of the Great Lakes Basin, primarily because the tribes that have retained subsistence fishing rights under treaty are all located in Michigan, Wisconsin, and Minnesota (Figure 1.3).

The value of the subsistence harvest includes its importance as a food source, the monetary value of the fish harvested, and social and cultural value of subsistence fishing within Native American communities. Using a production cost model, which assumes that the value of the subsistence fish harvests is equal to the cost of equipment, travel, and labor expended, the annual value of subsistence fishing activities to an individual subsistence household would be between \$15,000 and \$16,500. It was also found that even among federally recognized tribes with reserved subsistence fishing rights, only a small percentage of the population are active subsistence harvesters. However, since they tend to share their harvest within their communities according to culturally approved patterns, the importance of the subsistence harvest ripples through the community.

The value of subsistence fishing to Native American tribes must also be viewed in its cultural context. While each tribe has its distinct traditions and culture, many of the federally recognized tribes in the study area are related culturally and linguistically. They are descended from ancestral populations that relied at least partly on harvesting natural resources. Maintaining this traditional ancestral right has value far beyond the monetary value of the fish. Tribal traditions generally include a holistic view of the natural world in which natural features and phenomena are often imbued with a life force and in which the various species and features of the natural world are bound together in a web. Damaging one part damages the whole. Traditions often include a belief that they have been placed where they are by divine intent and that they have been given a charge to protect the environment in which they find themselves, including protecting and managing traditional fisheries. The tribes that maintain fish hatcheries along the shores of the Great Lakes raise only native species, such as walleye and sturgeon.

Today the traditional beliefs of their ancestors still resonate throughout the study area. Tribal communities take their stewardship role over the natural resources very seriously, placing a high value on protecting and preserving natural resources, including native fisheries, for future generations. The value of the fisheries goes beyond a monetary value; it is a cultural value that defines the existence of the Great Lakes tribes.

8 REFERENCES

- 1854 Treaty Authority, no date, *Fisheries*, <http://1854treatyauthority.org/about/history.htm>, accessed August 31, 2011.
- Abel, C., 2011, personal communication, interview with Abel (Treaty Natural Resources Administrator, Red Cliff Band of Lake Superior Chippewa Indians of Wisconsin, Red Cliff, Wisc.) by B. Verhaaren and A. Kappen (Argonne National Laboratory, Argonne, Ill.), Oct. 25.
- Agreement with the Seneca, 1797, United States-Seneca Nation of Indians, Sept. 15, 7 Stat. 601, in C. Kappler (editor), 1904, *Indian Affairs: Laws and Treaties*, Vol. II, Government Printing Office, Washington, D.C.
- Alrich, M., 2012, phone conversation, interview with Alrich (Water Quality Specialist, Upper Sioux Community of Minnesota, Granite Falls, Minn.) by A. Kappen (Argonne National Laboratory, Argonne, Ill.), Jan. 26.
- Applegate, K., 2012, phone conversation, interview with Applegate (Fish and Wildlife Division, Mille Lacs Band of Ojibwe, Onamia, Minn.) by A. Kappen (Argonne National Laboratory, Argonne, Ill.), Jan. 31.
- Arnold, J.S., 2011, in L.A. McRoy and H.J. Bichler (editors), *Minwaajimo: Telling a Good Story*, Great Lakes Indian Fish and Wildlife Commission, Odanah, Wisc.
- Ashland FWCO (Fish and Wildlife Conservation Office), 2009, *Tribal Fish Hatchery Programs of the Northern Great Lakes Region*, <http://www.fws.gov/midwest/ashland/TribalIndex.html#lac>, accessed Aug. 30, 2011.
- Bad River Natural Resources Department, 2010, *Mission Statement*, <http://www.badriver-nsn.gov/natural-resources>, accessed Aug. 30, 2011.
- Balber, L., 2011, personal communication, interview with Balber (Tribal Historic Preservation Officer, Red Cliff Band of Lake Superior Chippewa Indians of Wisconsin, Red Cliff, Wisc.) by B. Verhaaren and A. Kappen (Argonne National Laboratory, Argonne, Ill.), Oct. 26.
- Beck, G., 2011, phone communication, interview with Beck (Director of Planning and Environmental, Lac Vieux Desert Band of Lake Superior Chippewa Indians, Watersmeet, Mich.) by A. Kappen (Argonne National Laboratory, Argonne, Ill.) Oct. 3.
- BIA (Bureau of Indian Affairs), 2011, *Indian Reservations in the Continental United States*, <http://www.nps.gov/nagpra/DOCUMENTS/ResMAP.HTM>, accessed Aug. 10, 2011.
- BMIC (Bay Mills Indian Community), 2004, *Tribal Fishing Regulations*, Bay Mills Conservation Department, http://www.baymills.org/resources/bmic_fishing_regulations.pdf, accessed Aug. 29, 2011.

- Bureau of Labor Statistics, 2012, *PPI Databases*, <ftp://ftp.bls.gov/pub/time.series/wp/>.
- Carrick, J., 2012, phone communication, interview with Carrick (Conservation Department, Bay Mills Indian Community, Brimley, Mich.) by A. Kappen (Argonne National Laboratory, Argonne, Ill.), Feb. 1, 2012.
- Christel, P., phone communication, interview with Christel (Fisheries Biologist, Lac Courte Oreilles Band of Ojibwe, Hayward, Wisc.) by A. Kappen (Argonne National Laboratory, Argonne, Ill.), Feb. 13, 2012.
- Clarke, E., 2010, *2010 Inland Fish and Wildlife Harvest Estimates*, report by Clarke (Biologist, Sault Ste. Marie Tribe of Chippewa Indians), on file at Sault Ste. Marie Tribe of Chippewa Indians Natural Resource Department, Sault Ste. Marie, Mich.
- CORA (Chippewa Ottawa Resource Authority), 2000, *CORA Charter*, <http://www.1836cora.org/documents/CoraCharter.pdf>, accessed Aug. 29, 2011.
- CORA, 2009, *Chippewa Ottawa Resource Authority Commercial, Subsistence, and Recreational Fishing Regulations for the 1836 Treaty Ceded Waters of Lakes Superior, Huron, and Michigan.*, <http://www.1836cora.org/Fishing-Regulations.php>, accessed Aug. 26, 2011.
- CORA, 2010, *Reported Harvest of All Species and Amount of Net Lifted by CORA Licensed Subsistence Gill Net and Spear Fishers, Summarized by Statistical District.*
- DeFoe, L., 2011, personal communication, interview with DeFoe (Tribal Historic Preservation Officer, Fond du Lac Band of Lake Superior Chippewa Indians) by B. Verhaaren and A. Kappen (Argonne National Laboratory, Argonne, Ill.), Nov. 30.
- DeFoe, M., 2011, personal communication, interview with DeFoe (Vice-Chairman, Red Cliff Band of Lake Superior Chippewa Indians of Wisconsin, Red Cliff, Wisc.) by B. Verhaaren and A. Kappen (Argonne National Laboratory, Argonne, Ill.), Oct. 26.
- Densmore, F., 1974, *How Indians Use Wild Plants for Food, Medicine & Crafts*, Dover Publications, New York, N.Y.
- Densmore, F., 1979, *Chippewa Customs*, Minnesota Historical Society Press, St. Paul, Minn.
- Deschampe, N., 2011, personal communication, interview with Deschampe (Chairman, Grand Portage Band of Lake Superior Chippewa Indians) by B. Verhaaren and A. Kappen (Argonne National Laboratory, Argonne, Ill.), Nov. 29.
- Executive Order No. 13175, 2000, "Consultation and Coordination with Indian Tribal Governments," *Federal Register*, Title 65, FR 67249, Nov.

Fond du Lac Band of Lake Superior Chippewa, 2011, *Fond du Lac Resource Management*, <http://www.fdlrez.com/newnr/main.htm>, accessed Aug. 30, 2011.

Gasbuddy.com, 2011, *USA National Gas Price Heat Map*, http://www.gasbuddy.com/gb_gas_temperaturemap.aspx, accessed Nov. 15, 2011.

GLIFWC (Great Lakes Indian Fish and Wildlife Commission), 2011a, *Ojibwe Treaty Rights*, <http://www.glifwc.org/TreatyRights/treatyright.html>, accessed Aug. 30, 2011.

GLIFWC, 2011b, *Off Reservation Conservation Code*, <http://www.glifwc.org/Enforcement/VoigtModelCode.2011.pdf>, accessed Dec. 12, 2011.

GLIFWC, 2011c, *National Forest Treaty Gathering and Camping Regulation Summary 1836, 1837 and 1842 Ceded Territories of Michigan, Minnesota and Wisconsin*, http://www.glifwc.org/Enforcement/NF_GatheringCamping1209.pdf, accessed Dec. 12, 2011.

GLIFWC, 2012, *Wisconsin Spearing Reports and MN 37 Harvest Reports*, <http://www.glifwc.org/Fisheries/Inland/inland.html>, accessed Feb. 1, 2012.

Grand Traverse Band Natural Resource Department, 2008, *Inland Hunting/Trapping/Gathering Regulations*, http://gtbindians.org/images/pdf_files/Hunting_Regs.pdf, accessed Aug. 29, 2011.

Grand Traverse Band of Ottawa and Chippewa Indians, 2011, *Natural Resources Department*, <http://www.gtbindians.org/departments/nr.html>, accessed Nov. 22, 2011.

Hewitt, J.N.B., 1974, *Iroquoian Cosmology* (reprinted), AMS Press Inc., New York, N., Y., originally published in 1903, *Annual Report of the Bureau of American Ethnology* 21 (1899–1900), Smithsonian Institute, Washington, D.C.

Ho-Chunk Nation, 2008, *Natural Resources*, <http://ho-chunknation.com/?PageId=51>, accessed Feb. 20, 2012.

Howes, T., 2011, personal communication, interview with Howes (Natural Resources Director, Fond du Lac Band of Lake Superior Chippewa Indians, Cloquet, Minn.) by B. Verhaaren and A. Kappen (Argonne National Laboratory, Argonne, Ill.), Nov. 30.

Jenks, A.E., 1900, *The Wild Rice Gatherers of the Upper Great Lakes*, Nineteenth Annual Report of the Bureau of American Ethnology to the Secretary of the Smithsonian Institution, 1897–98, Part 2, Government Printing Office, Washington, D.C.

Johnston, B., 1976, *Ojibway Heritage*, University of Nebraska Press, Lincoln, Neb.

KBIC (Keweenaw Bay Indian Community), 2011, *Natural Resources Department*, <http://www.kbic-nsn.gov/webpages/naturalresources.html>, accessed Aug. 30, 2011.

Kennedy v. Becker, 1916, 241 U.S. 556, <http://supreme.justia.com/us/241/556/case.html>, accessed Aug. 9, 2011.

Klug, F., 2010, "Oil Spills into Calhoun County Creek That Leads to Kalamazoo River," *The Kalamazoo Gazette*, July 27, http://www.mlive.com/news/kalamazoo/index.ssf/2010/07/oil_spills_into_creek_that_lea.html, accessed Feb. 24, 2012.

Krueger, J., 2006, *Open Water Spearing in Northern Wisconsin by Chippewa Indians during 2005*, Administrative Report 2006-02, Great Lakes Indian Fish and Wild Life Commission, Biological Services Division, Odanah, Wisc., May.

Krueger, J., 2007, *Open Water Spearing in Northern Wisconsin by Chippewa Indians during 2006*, Administrative Report 2007-02, Great Lakes Indian Fish and Wild Life Commission, Biological Services Division, Odanah, Wisc., March.

Krueger, J., 2008, *Open Water Spearing in Northern Wisconsin by Chippewa Indians during 2007*, Administrative Report 2008-02, Great Lakes Indian Fish and Wild Life Commission, Biological Services Division, Odanah, Wisc., April.

Krueger, J., 2009, *Open Water Spearing in Northern Wisconsin by Chippewa Indians during 2008*, Administrative Report 2009-02, Great Lakes Indian Fish and Wild Life Commission, Biological Services Division, Odanah, Wisc., April.

Krueger, J., 2010, *Open Water Spearing in Northern Wisconsin by Chippewa Indians during 2009*, Administrative Report 2010-03, Great Lakes Indian Fish and Wild Life Commission, Biological Services Division, Odanah, Wisc., June.

Lac Courte Oreilles Band of Lake Superior Chippewa Indians v. P. Voigt United States, 1983, 700 F.2d 341, <http://openjurist.org/700/f2d/341/lac-courte-oreilles-band-of-lake-superior-chippewa-indians-v-p-voigt-united-states>, accessed Aug. 14, 2011.

Lac Courte Oreilles Band of Lake Superior Indians v. State of Wisconsin, 1987, 653 F. Spp. 1420, W.D. Wis. (in part), in L.A. McRoy and H.J. Bichler (editors), *Minwaaajimo: Telling a Good Story*, 2011, Great Lakes Indian Fish and Wildlife Commission, Odanah, Wisc.

Lac du Flambeau Band of Lake Superior Chippewa Indians of Wisconsin, 2010, *Fisheries and Fish Culture*, http://ldftribe.com/departments_details.php?departmentID=20, accessed Feb. 23, 2012.

Leder, B., 2005, *One More Cast: Official Newsletter of the Copper Country Chapter of Trout Unlimited*, Hancock, Mich., summer, http://www.coppercountrytu.org/newsletters/Newsletter_SU05.pdf, accessed Aug. 30, 2011.

Leoso, E., 2011, personal communication, interview with Leoso (Tribal Historic Preservation Officer, Bad River Band of Lake Superior Chippewa Tribe, Odanah, Wisc.) by B. Verhaaren and A. Kappen (Argonne National Laboratory, Argonne, Ill.), Oct. 26.

Little Traverse Bay Bands of Odawa Indians, 2009, *2008/2009 Annual Harvest Report*, Natural Resource Department, <http://www.ltbbodawa-nsn.gov/Departments/NaturalResources/reports/Final%20Annual%20Harvest%20Report-09.pdf>, accessed Aug. 29, 2011.

Little Traverse Bay Bands of Odawa Indians, 2010, *Little Traverse Bay Bands of Odawa Indians' Reservation Natural Resources Rules and Regulations REG-WOS 2008-012 XXXXXX-XXI*, <http://www.ltbbodawa-nsn.gov/Departments/NaturalResources/NaturalResources.html>, accessed Aug. 29, 2011.

LRBOI (Little River Band of Ottawa Indians), 2009, *Fishing Regulation Book*, <https://www.lrboi-nsn.gov/nrd/docs/Inland%20Fishing%20Regulations.pdf>, accessed Aug. 29, 2011.

LRBOI, 2011, *Inland Fisheries*, <https://www.lrboi-nsn.gov/nrd/inland.html>, accessed Nov. 22, 2011.

Mensch, G., 2011a, email communication, interview with Mensch (Fisheries Biologist, Keweenaw Bay Indian Community) by A. Kappen (Argonne National Laboratory, Argonne, Ill.), Oct. 20.

Mensch, G., 2011b, phone communication, interview with Mensch (Fisheries Biologist, Keweenaw Bay Indians Community) by A. Kappen (Argonne National Laboratory, Argonne, Ill.), Dec. 15.

Michigan Sea Grant, 2011, *Know Your Nets*, <http://www.miseagrant.umich.edu/nets/index.html>, accessed Dec. 5.

Miller, W., 2012, phone conversation, interview with Miller (Chief Conservation Officer, Seneca Nation of Indians, Salamanca, N.Y.) by A. Kappen (Argonne National Laboratory, Argonne, Ill.), Feb. 7.

McRoy, L.A., and Bichler, H.J. (editors), 2011, *Minwaajimo: Telling a Good Story*, Great Lakes Indian Fish and Wildlife Commission, Odanah, Wisc.

Moore, S., 2011, personal communication, interview with Moore (Fish and Wildlife Biologist, Grand Portage Band of Lake Superior Chippewa Indians) by B. Verhaaren and A. Kappen (Argonne National Laboratory, Argonne, Ill.), Nov. 29.

Morgan, L.H., 1962 [1851], *League of the Iroquois*, Sage and Brother Publishers, Rochester, N.Y.

National Atlas of the United States of America, 1991, *Early Indian Tribes, Culture Areas and Linguistic Stocks*, U.S. Geological Survey, Reston, Va.

NAGPRA (Native American Graves Protection and Repatriation Act), 2011, *National NAGPRA Online Databases, Native American Consultation Database*, <http://grants.cr.nps.gov/nacd/index.cfm>, accessed Aug. 10, 2011.

Newago, G., 2011, personal communication, interview with Newago (Subsistence Fisherman, Red Cliff Band of Lake Superior Chippewa Indians of Wisconsin, Red Cliff, Wisc.), by B. Verhaaren and A. Kappen (Argonne National Laboratory, Argonne, Ill.), Oct. 25.

Pavlat, C., 2011, phone interview, interview with Pavlat (Tribal Historic Preservation Officer, Sault Ste. Marie Tribe of Chippewa Indians of Michigan) by A. Kappen (Argonne National Laboratory, Argonne, Ill.), Nov. 15.

Pflug, M.A., 1998, *Ritual and Myth in Odawa Revitalization*, University of Oklahoma Press, Norman, Okla.

Plucinski, M. 2011, personal communication, interview with Plucinski (Great Lakes Technician for Great Lakes Indian Fish and Wildlife Commission and Subsistence Fisherman, Bad River Band of Lake Superior Chippewa Tribe, Odanah, Wisc.), by B. Verhaaren (Argonne National Laboratory, Argonne, Ill.), Nov. 28.

Red Cliff Band of Lake Superior Chippewa, 2004, *Treaty and Natural Resource Division*, http://redcliff-nsn.gov/divisions/NaturalResources/treaty_natural.htm, accessed Aug. 30, 2011.

Rodwan, J., 2012, phone conversation, interview with Rodwan (Environmental Director, Notawaseppi Huron Band of the Potawatomi, Fulton, Mich.) by A. Kappen (Argonne National Laboratory, Argonne, Ill.), Jan. 31.

Rostlund, E., 1952, *Freshwater Fish and Fishing in Native North America*, University of California Press, Berkeley, Calif.

Sault Ste. Marie Tribe of Chippewa Indians, 2010, *Tribal Code*, Chapters 20, 21, and 22, http://www.saulttribe.com/index.php?option=com_content&task=view&id=406&Itemid=592, accessed August 30, 2011.

Sault Ste. Marie Tribe of Chippewa Indians, 2011, *Intertribal Fisheries and Assessment Program*, <http://www.saulttribe.com/membership-services/natural-resources/19-membership-services/natural-resources/36-intertribal-fisheries-and-assessment-program>, accessed Dec. 7, 2011.

ScottForesman, 2010, "Line Art of Seine Fishing," *Seine Fishing*, contributed to Wikipedia May 16. Available at http://en.wikipedia.org/wiki/Seine_fishing. Accessed April 25, 2012.

Seal, D., 2012, phone conversation, interview with Seal (Planning Director, Saginaw Chippewa Indians of Michigan, Mt. Pleasant, Mich.) by A. Kappen (Argonne National Laboratory, Argonne, Ill.), Feb. 1.

Shenandoah, J., 2012, phone conversation, interview with Shenandoah (Conservation Department, Onondaga Nation, Nedrow, N.Y.) by A. Kappen (Argonne National Laboratory, Argonne, Ill.), Feb 1.

Snitgen, J., 2012, phone conversation, interview with Snitgen (Conservation Department, Oneida Tribe of Indians of Wisconsin, Oneida, Wisc.) by A. Kappen (Argonne National Laboratory, Argonne, Ill.), Jan 17.

Snow, D.R., 1994, *The Iroquois*, Blackwell Publishers, Cambridge, Mass.

Snyder, J., 2012, phone conversation, interview with Snyder (Environmental Division, St. Regis Mohawk Tribe, Akwesasne, N.Y.) by A. Kappen (Argonne National Laboratory, Argonne, Ill), Feb. 21.

St. Croix Chippewa Indians of Wisconsin, 2012, *Environmental Department*, <http://www.stcciw.com/stcroixepa/index.html>, accessed Feb. 2, 2012.

St. Regis Mohawk Tribe, 2012, *Environment Division — Water Resources Management*, http://www.srmtenv.org/index.php?spec=wm_mainpage, accessed Feb. 21, 2012.

Stickney, G.P., 1896, *Indian Use of Wild Rice*, reprint, Judd and Detweiler, Washington, D.C., <http://www.wisconsinhistory.org/turningpoints/search.asp?id=1199>, accessed Dec. 6, 2011.

Stockbridge-Munsee Community Band of Mohican Indians, 2009, *Stockbridge-Munsee Tribal Ordinance Chapter 21 Fish and Game Regulations*, <http://www.mohican-nsn.gov/Departments/Legal/Ordinances/Ch%2021%20Fish%20and%20Wildlife.pdf>, accessed Feb. 21, 2012.

Tanner, H.H. (editor), 1987, *Atlas of Great Lakes Indian History*, University of Oklahoma Press, Norman, Okla.

Taylor, D., 2011, phone conversation, interview with Taylor (Field Supervisor, Natural Resources Department, St. Croix Chippewa Indians of Wisconsin, Webster, Wisc.) by A. Kappen (Argonne National Laboratory, Argonne, Ill.), Oct. 9.

Tetra Tech, Inc. 2011. Economic Value of Subsistence Activity: Little Diomed, Alaska. Main Report. Prepared for U.S. Army Corps of Engineers. December.

Tierney, K.L., 2011, *Minwaaajimo: Telling a Good Story*, L.A. McRoy and H.J. Bichler (editors), Great Lakes Indian Fish and Wildlife Commission, Odanah, Wisc.

Tillison, N., 2011, personal communication, interview with Tillison (Water Resource Specialist, Bad River Band of Lake Superior Chippewa Tribe, Odanah, Wisc.), by B. Verhaaren and A. Kappen (Argonne National Laboratory, Argonne, Ill.), Oct. 27.

Tooker, E., 1991, *An Ethnography of the Huron Indians, 1615–1619*, Syracuse University Press, Syracuse, N.Y.

Treaty with the Chippewa, 1837, United States–Chippewa Nation of Indians, July 29, 7 Stat. 536, in C. Kappler (editor), 1904, *Indian Affairs: Laws and Treaties*, Vol. II, Government Printing Office, Washington, D.C.

Treaty with the Chippewa, 1842, United States–Chippewa Indians of the Mississippi and Lake Superior, Oct. 4, 7 Stat. 591, in C. Kappler (editor), 1904, *Indian Affairs: Laws and Treaties*, Vol. II, Government Printing Office, Washington, D.C.

Treaty with the Chippewa, 1854, United States–Chippewa Indians of the Mississippi and Lake Superior, Sept. 30, 10 Stat. 1109, in C. Kappler (editor), 1904, *Indian Affairs: Laws and Treaties*, Vol. II, Government Printing Office, Washington, D.C.

Treaty with the Ottawa, 1836, United States–Ottawa and Chippewa Nations of Indians, March 28, 7 Stat. 491, in C. Kappler (editor), 1904, *Indian Affairs: Laws and Treaties*, Vol. II, Government Printing Office, Washington, D.C.

Treuer, A. (editor), 2001, *Living Our Language: Ojibwe Tales and Oral Histories*, Minnesota Historical Society Press, St. Paul, Minn.

United States of America v. State of Michigan, 1979, 471 F. Supp. 192 (W.D. Mich. 1979), http://clarke.cmich.edu/resource_tab/native_americans_in_michigan/treaty_rights/treaty_rights_and_the_great_lakes_fishery/additional_information/united_states_vs_michigan.html, accessed Aug. 10, 2011.

U.S. District Court, 2007, *Consent Decree, United States vs. State of Michigan*, Case No. 2: 73 CV 26, U.S. District Court for the Western District of Michigan (2007 Inland Consent Decree), <http://www.1836cora.org/documents/2007InlandConsentDecree.pdf>, accessed Aug. 29, 2011.

USGS (U.S. Geological Survey), 1978, *Indian Land Areas Judicially Established*, Washington, D.C.

USGS, 2011, *Commercial Fishing Reports: Total Pounds and Dollar Value of Commercial Catch in U.S. Waters of the Great Lakes by Year, State, Lake and Species*, http://www.glsc.usgs.gov/main.php?content=products_data_fishingreports&title=Data0&menu=products.
Waukau, A., 1987, *The Lake Superior Anishinabe*, Fond du Lac Print Shop, Fond du Lac, Wisc.

Wawronowicz, L., 2012, phone conversation, interview with Wawronowicz (Natural Resources Director, Lac du Flambeau Band of Lake Superior Chippewa Indians of Wisconsin, Lac du Flambeau, Wisc.) by A. Kappen (Argonne National Laboratory, Argonne, Ill.), Feb. 1.

White, R., 1991, *The Middle Ground: Indians, Empires and Republics in the Great Lakes Region, 1650–1815*, Cambridge University Press, Cambridge, United Kingdom.

Whitt, M., 2012, phone conversation, interview with Whitt (Natural Resources Manager, Shakopee Mdewakanton Sioux Community, Prior Lake, Minn.) by A. Kappen (Argonne National Laboratory, Argonne, Ill.), Jan. 31.

Williams, T., 2007, *Big Medicine from Six Nations*, Syracuse University Press, Syracuse, N.Y.

Wilson, T., 2011, personal communication, interview with Wilson (Fishery Specialist, Bad River Band of Lake Superior Chippewa Tribe, Odanah, Wisc.), by B. Verhaaren (Argonne National Laboratory, Argonne, Ill.), Nov. 28.

Wisconsin Sea Grant, 2012, *Fish of the Great Lakes*,
<http://seagrant.wisc.edu/greatlakesfish/>, Accessed Dec. 5, 2011

Wollonhaup, R., 2012, phone conversation, interview with Wollonhaup (Fish and Wildlife Biologist, Stockbridge-Munsee Community, Shawano County, Wisc.), by A. Kappen (Argonne National Laboratory, Argonne, Ill.), Jan. 31.

Worcester v. Georgia, 1832, 31 U.S. (6 Pet.) 515, <http://supreme.justia.com/us/31/515/case.html>, accessed Aug. 9, 2011.

APPENDIX:

TRIBAL CONTACT EFFORTS

Tribe	Contact	Visit	Summary
Grand Portage Band of Lake Superior Chippewa Indians	Seth Moore – Fish and Wildlife Biologist Norman Deschampe – Chairman	Yes	Tribal contacts were visited on 11/29/2011. Subsistence and commercial data and cultural information were received.
Bois Forte Band of Lake Superior Chippewa Indians	Corey Strong – Department of Natural Resources Commissioner	No	Tribal contact was emailed on 9/22/2011. Tribe does not do commercial or subsistence fishing within project study area.
Fond du Lac Band of Lake Superior Chippewa Indians	Thomas Howes – Natural Resources Program Manager Leroy DeFoe – Tribal Preservation Officer	Yes	Tribal contacts were visited on 11/31/2011. Subsistence data and cultural information were received. Tribe does not commercial fish.
Mille Lacs Band of Ojibwe	Kelly Applegate – Wildlife Biologist	No	Tribal contact was spoken to on phone. He was hesitant to give any information on location of fishing waters and species targeted.
St. Croix Chippewa Indians of Wisconsin	Don Taylor – Natural Resources	No	Tribal contact was emailed on 10/10/2011 and spoken to on 2/7/2012. Tribe does subsistence fishing in St. Croix River System, Mille Lacs Lake, and small lakes and streams within northwest WI.
Lac Courte Oreilles Band of Ojibwe	Paul Christal – Fisheries Biologist	No	Tribal contact was spoken to on phone on 9/29/2011 and on 2/13/2011. Tribe exercises its treaty rights throughout the ceded territories. There is no reporting.
Red Cliff Band of Lake Superior Chippewa Indians of Wisconsin	Chad Abel – Division Program Manager Bryan Bainbridge – Natural Resources Department Marvin DeFoe – Vice-Chairman Charles Newago – Subsistence Fisher	Yes	Tribal contacts were visited on 10/25/2011. Subsistence and commercial data and cultural information were received.

Tribe	Contact	Visit	Summary
Bad River Band of Lake Superior Chippewa Tribe	Tim Wilson – Tribal Fisheries Specialist Ed Leoso – Fisheries Technician Mike Plucinski – Subsistence Fisher	Yes	Tribal contacts were visited on 11/28/2011. Subsistence and commercial data and cultural information were received.
Lac du Flambeau Band of Lake Superior Chippewa Indians of Wisconsin	Larry Wawronowicz – Natural Resources Director	No	Tribal contact was spoken to on phone on 11/8/2011 and on 2/1/2012. Tribal members subsistence fish on inland lakes and streams within treaty-ceded territories of WI, MN, and MI and within the boundaries of their reservation.
Sokaogon Chippewa Community	Beth Meedke	No	Tribal contact was spoken to on phone on 9/26/2011. Tribal members do subsistence fishing within the ceded territories of WI and MI.
Lac Vieux Desert Band of Lake Superior Chippewa Indians	George Beck – Director of Planning and Environmental	No	Tribal contact was spoken to on phone on 10/3/2011. Tribe does subsistence fishing in the Ontonagon watershed and in inland lakes within the ceded territories. Tribe does no commercial fishing.
Keweenaw Bay Indian Community	Gene Mensch – Fisheries Biologist	No	Tribal contact was emailed on 10/20/2011. Some subsistence and commercial data were received.
Sault Ste. Marie Tribe of Chippewa Indians of Michigan	Cecil Pavlat – Tribal Preservation Officer Eric Clark – Biologist	No	Contact was made with Mr. Pavlat on 11/15/2011 by phone. Cultural information was received. Contact with Eric Clarke was made on 1/31/2012. Tribe does subsistence fishing on inland lakes and streams within the ceded territory of MI. Received annual harvest report for inland fishing and Great Lakes subsistence report from CORA.
Bay Mills Indian Community	Justin Carrick, Conservation Department	No	Contact was made on 2/1/2012. Inland subsistence fishing is done only for walleye. All Other subsistence fishing is conducted on Great Lakes and St. Mary's River. Received Great Lakes subsistence data from CORA.

Tribe	Contact	Visit	Summary
Little Traverse Bay Bands of Odawa Indians	D. Browne – Conservation Duty Officer	No	Tribal contact was not able to be made. Contact efforts were made by phone and e-mail. CORA provided statistical information on subsistence fishing. Annual Harvest Report for 2009 is provided on tribe’s Web site.
Little River Band of Ottawa Indians	Jimmy Mitchell – Natural Resources Department Program Manager	No	Tribal contact was made on 1/31/2012. Tribe subsistence fishes all over the 1836 ceded territory. No reporting is required for species not regulated by the state. CORA provided statistical information on subsistence fishing.
Seneca Nation of Indians	William Miller-Conservation Department for Allegany Reservation	No	Tribal contact was made on 2/7/2012. Tribe does not do subsisting fish, but members participate in fishing to supplement their diets within tribally owned waters.
Haudenosaunee Environmental Task Force (HETF)	David Arquette – HETF Director	No	Spoke to Mr. Arquette on the phone 1/25/2012. E-mailed him information, and he was going to bring up this topic at the next meeting on 2/10/2012. I have not heard from him since the 1/25/2012 meeting after numerous attempts by e-mail and phone.
St. Regis Mohawk Tribe	Jim Snyder – Fish and Wildlife Technician	No	Tribal contact was made on 2/21/2012. Tribe does heavy subsistence fishing on reservation waters. Not regulated.
Oneida Nation of New York	Michael Massena, Environmental Manager	No	Tribal contact was not able to be made. Multiple attempts were made by phone and e-mail.
Onondaga Nation	Jeanne Shenandoah – Conservation Department	No	Contact was made on 2/1/2012. No subsistence fishing is taking place because of contaminated waters.
Tuscarora Nation	Neil Patterson – Environmental Director	No	Tribal contact was not able to be made. Multiple attempts were made by phone and e-mail.
Tonawanda Band of Seneca Indians	Mardell Sundown – Environmental Director	No	Tribal contact was made on 2/8/2012. Ms. Sundown told me that they were going to discuss this at the next HETF meeting on 2/10 and that Mr. Arquette would be giving me the results.

Tribe	Contact	Visit	Summary
Cayuga Nation	Dan Hill – Environmental Director	No	Tribal contact was not able to be made. Multiple attempts were made by phone and e-mail.
Prairie Island Indian Community	Brad Frazier – Environmental Specialist	No	Tribal contact was made on 1/30/2012. No subsistence fishing is taking place because urban areas are so close.
Shakopee Mdewakanton Sioux Community	Mike Whitt – Natural Resources Manager	No	Tribal contact was made on 1/31/2012. No subsistence fishing is taking place because urban areas are so close.
Lower Sioux Indian Community	Deb Dirlam – Office of Environment Director	No	Tribal contact was made on 1/16/2012. No subsistence fishing is taking place because of contamination.
Upper Sioux Community of Minnesota	Megan Alrich – Water Quality Specialist	No	Tribal contact was made on 1/26/2012. No subsistence fishing is taking place because of contamination.
Sac and Fox Tribe of the Mississippi in Iowa	Kelly Schott – Natural Resources Technician	No	Tribal contact was made on 2/6/2012. She was not at privilege to discuss subsistence fishing until council approved. Have not heard back from Ms. Schott.
Menominee Indian Tribe of Wisconsin	Richard Annamitta – Fishery Biologist, Donald Reiter – Fish and Wildlife Biologist	No	Tribal contact was not able to be made. Multiple attempts were made by phone and e-mail.
Oneida Tribe of Indians of Wisconsin	Jim Snitgen – Conservation Department	No	Tribal contact was made on 1/17/2012. No subsistence fishing is taking place because of contamination.
Ho-Chunk Nation	Randy Poelma – Aquatic Biologist	No	Tribal contact was made on 2/7/2012. No subsistence fishing is taking place because land base is scattered among many counties and states.
Hannahville Indian Community	Carol Bergquist – Director Environmental Programs	No	Tribal contact was not able to be made. Multiple attempts were made by phone.
Pokagon Band of Potawatomi Indians	Mark Parrish – Environmental Director	No	Tribal contact was not able to be made. Multiple attempts were made by phone and e-mail.

Tribe	Contact	Visit	Summary
Nottawaseppi Huron Band of the Potawatomi	John Rodwan – Environmental Director	No	Tribal contact was made on 1/31/2012. Subsistence fishing takes place on reservation waters. Not regulated. Tribes do not need fish to survive; fishing is done more to supplement their diets.
Forest County Potawatomi	Natural Resources Department	No	Tribal contact was not able to be made. Multiple attempts were made by phone.
Stockbridge-Munsee Community	Randall Wollenhaup – Fish and Wildlife Biologist	No	Tribal contact was made on 1/31/2012. Tribe subsistence fishes on tribally owned land. Not regulated. If members did not fish, they would not be able to buy fish to supplement their diets.
Saginaw Chippewa Indian Tribe of Michigan	Don Seal – Planning Director	No	Tribal contact was made on 2/1/2012. Tribe subsistence fishes on reservation land and land owned by the state. Not regulated.