TREATY-BASED ANISHNAABEG HERITAGE DIET


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(through Cayuse Environmental)

For Honor the Earth

March 2017
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PRINCIPLES and BASIS

The Treaty of 1855¹ said that “there shall be, and hereby is, reserved and set apart, a sufficient quantity of land for the permanent homes of the said Indians.” Under the canons of construction, which says that interpretation must be from the perspective of the disadvantaged party (i.e., the Tribes), this was a way to preserve as much of their homeland and its natural resources as possible, to give them sovereign rights as domestic dependent nations, and to establish support for food sovereignty. The purpose of this section is to describe in general what that diet was, at a time when natural resources were uncontaminated and generally available, given the encroachment of settlers at that time. It is recognized that individual Tribes as they are located today may have somewhat different diets based on the differences in their local ecologies, particularly in the western part of the state. Therefore, this section is entitled ‘Anishnaabeg’ to reflect a reasonable generic diet that is nutritionally complete and supported by ethnographic information from that era as well as by more recent research.

The format of this diet is suitable for risk assessment when combined with the other non-food exposure factors (i.e., exposure through direct contact with air, water, and soil).

APPROACH

As described in Harper (Harper et al., 2007, 2012), the methodology used to reach the conclusions about the diet incorporates information from a variety of disciplines, including archaeology, ecology, and cultural and traditional environmental knowledge. It follows the principals of nutritional anthropology (Goodman et al., 2000). The methodology also follows general scientific criteria adopted from the Daubert case² and Rule of Evidence 702. It is not a statistical exercise, but a professional judgment based on multiple lines of evidence. In general, this report strives to be based on sufficient facts and data, is the product of reliable principles and methods such that another environmental health professional should be able to repeat the same steps and come to essentially the same conclusion. It strives to be reasonable and factual and to meet the “general acceptance” test set forth in Frye v. United States, 293 F. 1013 (App. D.C. 1923), the predecessor case to Daubert.

Even though contemporary tribal lands have been lost and resources degraded, the objective of many tribes is to regain their heritage land, restore resources, and encourage more members to practice healthier (i.e., more traditional) lifestyles and eat healthier (i.e., more native and local

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whole) food. Therefore, the objective of heritage exposure scenarios is to describe original\(^3\) lifestyles and resource uses. This report does not take a catalog or inventory approach to identifying natural resources and each species’ exact role in the diet. The number of species actually used may exceed two hundred, so detailed data do not exist and cannot be obtained, both because an unknown amount of information and resources have been lost, and because surveying contemporary people is intrusive, data-intensive, and inevitably incomplete. Rather, a holistic overview approach is taken, by identifying major food groups and staples, and evaluating how their calories fit into the overall diet such that an adequate and balanced diet can be described. This approach ensures that all calories are accounted for, so while it is less statistically precise it can be considered more complete and accurate.

As Native lands were lost, the heritage lifestyle was compressed into a smaller and smaller area. However, the right to pursue a traditional lifestyle and diet is an aboriginal right that is not constrained by contemporary lack of access, or lack of abundance or carrying capacity of a smaller area. It is not necessary to assume that every tribal member obtains a subsistence living from the study area. Rather, it is assumed that everyone has the right to that lifestyle even if only a few, or even none, actually do so during the present snapshot in time. Thus, it is the scenario or diet that is applied to the study area regardless of the population size or contemporary practices, activities, or land uses.

**HISTORY**

People have lived on the land that is now Minnesota for at least 10,000 years. The earliest inhabitants—belonging to what archaeologists classify as the Paleo-Indian (or Big Game) culture—hunted large animals, primarily bison, from which they obtained food, clothing, and materials for shelter. A second identifiable cultural tradition, from around 5000 BC, was the Eastern Archaic (or Old Copper) culture. These people hunted small as well as large game animals and fashioned copper implements through a cold hammering process. The more recent Woodland Tradition (1000 BC to AD 1700) was marked by the introduction of pottery and of mound burials. Finally, overlapping the Woodland culture in time was the Mississippian Tradition, beginning around ad 1000, in which large villages with permanent dwellings were erected near fertile river bottoms; their residents, in addition to hunting and fishing, raised corn, beans, and squash.\(^4\)

\(^3\) These traditional heritage diets and scenarios are not tied to a specific year, but rather to a resource condition that is relatively undegraded. When appropriate, these may be referred to as treaty-protected lifestyles and diets, while in other cases they may be referred to simply as rights-protected (referring to aboriginal rights). These resource conditions may be expressed in tribal restoration goals and other tribal policies and codes, which are tribal administrative law.

\(^4\) [http://www.encyclopedia.com/places/united-states-and-canada/us-political-geography/minnesota](http://www.encyclopedia.com/places/united-states-and-canada/us-political-geography/minnesota). Note that beans were not identified by various observers, even though the three sisters are generally grown together.
The French fur traders were the first white inhabitants of the Upper Mississippi country. During the first three decades of the nineteenth century that part of the Upper Mississippi Valley included in the present states of Wisconsin and Minnesota remained practically in its natural with only a few small white settlements at widely scattered intervals. Between 1836 and 1840 the number of people in the Territory of Wisconsin more than doubled; between 1840 and 1846 over one hundred thousand more were added to the population of Wisconsin. Fruit trees and livestock of various kinds had been transported into the Territory. These occupied the country in the southern and eastern parts of the Territory. Comparatively few homes had been built north of Madison and west of the settled area along the lake. A census said to have been taken in 1845 gave to northwestern Wisconsin and to that part of the present State of Minnesota lying between the St. Croix and Mississippi rivers a population of fourteen hundred and nineteen. Until comparatively recent times the lumbermen dominated that territory, and such towns as developed first were essentially centers of lumbering interests.

A primary factor in bringing settlers into Wisconsin and Minnesota was the extensive advertising which the sale of government lands. In the meantime lumbermen, farmers, and tradespeople had pushed up north of St. Anthony's Falls and had made settlements along the banks of the Mississippi and its important branches. When Minnesota was organized as a Territory in 1849 it contained an estimated population of four thousand and fifty-seven. A year later, according to the United States census of 1850, there were six thousand and seventy-seven people who produced 71,709 bushels of grain and potatoes, on 5,035 acres in agriculture and livestock and buildings. This increased to an estimated population of one hundred and forty thousand in 1854, and one hundred and fifty thousand in 1857, with 546,951 acres with settlements or agriculture, of which 133,267 were tilled.

Many histories of the Ojibway peoples have been written (Warren 1885; Densmore 1929; Vizenor 1984, many others). William Warren provides first-hand observations and ethnography of conditions in the recent post-treaty era (Warren 1885). In his own words,

“..."The region of the country from which the Mississippi derives its source is covered with innumerable fresh and clear water lakes, connected with one another, and flowing into the “Father of Rivers” through rapid and meandering streams. All these lakes and streams abound with fish of the finest species and flavors. In Leech, Winnepie, Cass, and other of the larger lakes, the whitefish are found equal in size to the celebrated whitefish of Lake Superior. And also are the salmon trout which are only to be found in Puk-a-gum and Trout lakes. Muskelunge have been found to grow to the great size of from four to six feet in length. Brook trout, sturgeon, and catfish are not found in the waters of the Mississippi above the Falls of St.

http://penelope.uchicago.edu/Thayer/E/Gazetteer/Places/America/United_States/Iowa/_Texts/journals/iaJHP/17/3/American_Settlers_into_Wisconsin_and_Minnesota*.html
Anthony. The shores of these beautiful lakes are lined with groves of the tall pine, and the useful maple from which the Indian manufactures sugar. The birch tree also abounds, from which the Ojibway has long been accustomed to procure the coverings to his wigwam, and material for the formation of his ingeniously wrought canoe. In many of these lakes which lie clustered together with an area of several hundred miles, the wild rice grows in large quantities and most luxuriantly, affording the Indian an important staple of subsistence. In former times this region of the country abounded in buffalo, moose, deer, and bear, and beaver on every stream and tributary.”

Kohl JG (1860) recorded his observations from living among the Chippewa, and described many foods. Among his observations:

- At least a dozen plants are named after the bear, since the bear likes the same things that people do, such as bear potatoes, bear roots, bear nuts, bear berries (service berry).
- Swan potatoes, a root that grows in shallow water.
- Wadapining, a thin knotted root that tastes like watercress.
- They also collect and eat fresh several herbs, plants and leaves.
- Trout herb, used with boiled fish soup.
- Venison soup made from dried venison “which is found in every lodge.” Take a couple handfuls and throw it in a saucepan with dried plums or whortleberries, making a soup.
- Sugar is made by boiling sap into a crystalline form, which is the principal stock. Cake sugar is poured into molds before it crystallizes, and gum or wax sugar is made by pouring thick-boiled sugar into the snow to cool rapidly, which causes it to remain pliable.
- Wild plums made good preserves when mixed with sugar and formed into fruit leather, then they cut off pieces and boil it with meat.
- Wild cherry grow at the edges of forests and fields, called sand cherry, and collected in fall along with whortleberry. One way of preserving is to mash them, mix with animal fat, form cakes, and cache in makaks.
- Little red apples from the forest.
- Whortleberries are very important; English call them cranberries but they are larger and finer than European cranberries.
- Hazelnuts, used instead of butter when eaten with bread.
- Clear water filtered from white wood ash can be poured on maize cakes as a sort of salt.
- Trout – speckled trout in the rivers and large lake trout in Lake Superior.
- Siskawet – resembles the salmon-trout.
- Variety of herring on the shoals.
- Sturgeon is the king of fish, caught year round, can be eaten for any meal.
- “Fish-catching is not the principal means of existence among the Ojibways, as among many of the other tribes, for they depend mainly on hunting. The deer-hunter and beaver-trapper are held in high esteem.

Frances Deunsmore prepared a lengthy report to the American Bureau of Ethnography in 1929, based on first hand observations and research circa 1900-1920. We present the following excerpts regarding foods (somewhat condensed):

The country of the Chippewa abounded in vegetable products, which women prepared in a variety of ways and stored for winter use by drying. The principal vegetable foods were wild rice, corn, and maple sugar. Rice was the staple article of food and was boiled in water or in broth, as well as parched. Corn was roasted in the husks or parched in a hot kettle, or dried and boiled. Pumpkins and squash were cultivated in
gardens and with eaten fresh or dried for winter use. Maple sugar was prepared in the form of granulated sugar, “hard sugar,” and “gum sugar.” The grained sugar was used as a seasoning, and all forms of the sugar were extensively eaten as a delicacy. Wild ginger, bearberry, and mountain mint were used as seasonings, and corn silk and dried pumpkin blossoms were used to thicken broth as well as to give it an agreeable flavor. The Chippewa did not habitually drink the water they encountered when traveling, but boiled it an added leaves or twigs. Among the materials used in this manner were the leaves of the wintergreen, raspberry, spruce, and snowberry, and the twigs of the wild cherry. Wild potatoes were used, and the Chippewa obtained white potatoes at an early date. Acorns were gathered and cooked in several ways. The flowers of the milkweed, the root of the bulrushes, the sap of the basswood and aspen, a sweetish substance beneath the outer bark of the woodbine, and the moss from white pine were among the somewhat unusual vegetable foods of the Chippewa. Berries and fruits were extensively used. Dried berries were boiled when used and either seasoned with maple sugar or combined with other foods. A Canadian Chippewa said that his people combined dried berries with moose fat or deer tallow. Salt was unknown in the old days. The Chippewa had both pumpkin and squash before the coming of the white man.

It was the custom to store food obtained during the summer in caches or pits dug near the village. The food kept perfectly, the pits were never disturbed, and this method of storage was safe and practical. The women of two or three families usually combined in the work of storing food, and often put rice, sugar, and vegetables in several pits. A food cache was usually about 6 feet deep and was lined with birch bark. The rice and sugar were in makuks, and after they were in place the spaces between them were filled with hay. When the pit was nearly filled a covering of birch bark or has was added. Beams of wood were laid across and the whole was covered with a mound of earth. Dried meat was stored in bags and dried fish were packed together and tied in bundles.

A typical complete meal comprised meat or fish, broth, rice with maple sugar, and dried berries prepared in the same way. Other meals (one or two during the day) were lighter. A form of bread called “Legolet bread” was made from flour and salt, mixed with water, and kneaded very hard into round flat loaves. Soda was used when it became available, and lacking this the women put a little lye in the bread.

Fish was caught in a seine, and was eaten fresh or stored by either frying or freezing. It could be sweetened with maple sugar. The heads of fresh fish, especially suckers, were boiled and greatly liked. Fish were cooked on wood splints or boiled and the broth used. Fish roe were fried along with cleaned intestines and sweetened with maple sugar. Fish powder mixed with new sugar and packed in makuks where it would last a long time. Fish were dried over a slow fire on a rack or by hanging them over the fire. Fish were dried until hard and then packed in layers without salt. When needed for food they were boiled. Small fish such as perch were dried without cleaning. Sunfish were split lengthwise and laid on the horizontal poles of the rack, while large fish such as pickerel or bullpout were split along the sides with the head still attached and dried. For winter fish were frozen without cleaning.

Ducks, pigeons and other wild birds were boiled with rice, also with potatoes and meat. They could be cooked in hot ashes without cleaning, or by cleaning and impaling them before the fire.

The principal game animals were deer, moose, fox, and wolf. Deer could be boiled, roasted, roasted and dried and packed in makuks, chopped and mixed with bear oil and packed in makuks, or mixed with bear oil and packed in makuks.

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7 Note: This might also have prevented Giardia infection, since beaver are a primary reservoir of Giardia, and beaver were found on virtually every suitable stream.

8 Various spellings: makuks, maccucs, mokoks, other. Bark boxes.
tallow and stored in makuks until it was sliced for eating. Deer tallow was rendered and stored. Moose was similar. Bear was cut into strips and dried, and then cut into little pieces and boiled. All parts of the bear were eaten or used. Rabbits were caught in snares, and eaten roasted while the bones were pounded and boiled. Otter, muskrat, and beaver were eaten, but marten was not.

**The Industrial Year.** After food was stored for the winter, bulrush mats were made using thornapple thorns and cord. When the ice froze on the lakes, they went to winter camp. They carried light food such as rice and dried berries, along with pumpkin flowers to thicken meat gravy. Early spring was time to tap the sugar bush, before the ice was gone on the lakes and ice fishing still being pursued. The food caches that had been stored near the maple trees contained cranberries, blueberries, dried potatoes, and apples. As soon as the little creeks opened the boys caught lots of small fish which were dried. Birch bark was used for bowls, but the large shells from the lakes were preferred.

The berries were eaten with the new sugar. The inside of the cedar bark could only be gotten in the spring and was used for making mats and bags. Toward the end of the sugar season there was lots of syrup and dried fish, which was food while the gardens were made. People typically went from sugar camp to fish camp before going to their summer camps with gardens. Each family had a bark house and a garden with potatoes, corn, and pumpkins as the principal crops. Passenger pigeons were numerous and caught with nets held in the air on poles. They were boiled with potatoes and meat. Wild potatoes were gathered in the spring, and blueberries in the summer, gooseberries, chokecherries, raspberries, and June berries. By then reeds for mats were ready. Next came the rice season, and families traveled there to camp. Then they returned to the summer camp and harvested the potatoes, corn, pumpkins, and squash. By this time the men were gone to fall trapping while the women began their fall fishing until the snow came. Then the men returned from trapping and they all went to winter camp.

Fishing was done mostly by women except for ice fishing. Every camp had poles to dry nets on. Larger fish could be speared at night with a torch. Larger fish such as sturgeon in Lake Superior could be caught in traps when they returned up the rivers to spawn.

Most medicinal plants were gathered in the fall, although roots were gathered in the spring and fall, and bark in the summer. Tobacco was always offered before roots were dug.

Rice camp in the autumn was a communal activity. Each family had its own tract, marked by tying clumps of grass into sheaves or stakes.

Densmore (1928) also reported on how Indians used wild plants for food, medicine, and crafts, with extensive lists of plants, the diseases or conditions they were used for, and how they were prepared. Her complete list included approximately 200 plant species, of which about 80 are medicinal, 40 are food, 8 are beverages (leaves, twigs and several flowers), 6 are flavorings (mint, bearberry, wild ginger, corn silk, pumpkin blossoms, sugar, woodbine syrup), 14 are dyes (along with some minerals and other early traded pigments), 16 are charms and amulets, and 35 plants were used for bark, twine, awls, toys, absorbents, frames, waterproofing, utensils, overlay patterns, and other uses. Grains include rice and corn; wild rice (*Zizania palustris*) is boiled in water with or without maple sugar, boiled with meat, pemmican (rice, berries, fat), cooked with blueberries, or parched then rehydrated. Corn is cultivated, and roasted in husk, parched and ground, made into hominy using lye from wood ash, with seasonings and fat. Vegetables
including pumpkin and squash are cultivated, and eaten fresh or cut into strips for drying, and their blossoms are used for flavor and thickening. Other vegetables include Jerusalem artichoke, *Sagittaria latifolia* (arrowhead or water potato), and a dozen others. Fruits and berries include thornapple, chokecherry, grape, bunchberry, wild cherry, red currant, wild currant, chokecherry, blackberry, raspberry, shadbush, cranberry, and blueberry.

An extensive Ojibwe ethnobotany was published in 1932 that mentions several kinds of beans, some of which seem to predate settlers (Smith, 1932).

Holzkamm (1985) discussed Ojibway horticulture to explain that horticulture was practices long before western settlers arrived. Although gardens and garden crops are known to have been widespread among the native peoples during the 19th century, little attention has been paid to the full significance of horticultural gardens within the Ojibwa economy. As more of the ethnohistoric record has become available, it has become evident that horticultural activity among the Ojibwa of the boundary waters and the Upper Mississippi was more widespread and pervasive than had been previously thought. When Schoolcraft asked the Ojibwa at Cass Lake about their gardens in 1832, he was told that “the corn crop was always relied on, and that is preserved from year to year, and has not been known to fail.”

The nutrition of the original diet was also discussed by Holzkamm (1985), who noted that preserving cached corn and wild rice for winter consumption would have provided the Ojibwa with a nutritionally balanced diet when combined with the other dietary components. Further, the hunter-gatherer diet was higher in carbohydrates in the winter when fatty meats were not as abundant as would have been predicted from the relative abundance of carbohydrates and fats in those environments, indicating that the people selectively stored foods that provided a balance of nutrients. An observer in 1833 stated that most lodges had a surplus of ten sacks of corn for sale.

Spangler (2009) described the seasonal round of activities, traditions and technologies to cope with the climate and physical geographies of the environments. Across territories now occupied by the northern tier of these United States, native people moved with the seasons, occupying semi-permanent sites and temporary encampments, as necessary, to participate in a seasonal round of hunting, fishing, and gathering food and medicinal herbs. This round included, in the Great Lakes area, fishing for whitefish at points of seasonal aggregation, spearing walleye and suckers in spring spawning runs, hunting deer, bear, pigeons and waterfowl, making maple sugar in spring sugar camps, gathering tubers, nuts, and berries during the summer, harvesting wild rice in late summer, and trapping fur bearers and hunting during fall and winter. “Just as the circle of life in native spiritual traditions conveyed an all-encompassing relationship between the landscape and animate beings, so too did the succession of seasons and activities come full circle each year in a rhythm providing adequate time for advance preparation, and marked by the “counting sticks” of the heads of Ojibwe households (Frances Densmore’s narrative by Nodinens, Ojibwe woman at Mille Lacs).
Jenks AE (1902) discussed the abundance of wild rick (Zizania aquatic, also known as Z. latifolia or Z palustris and other names). Because the plant is an annual, growing from new seed each year, seeds are carefully not over-harvest and may be rotated. Wisconsin and eastern Minnesota had “prodigious” quantities of wild rice. The headwaters of the Mississippi River in Minnesota are in the heart of the Minnesota rice fields. Fish are very plentiful in all of the lakes about the sources of the Mississippi. One simple description of the seasonal diet is that “in the spring they subsist on sugar and fish; in the summer on fish and game; in the fall on wild rice and corn and fowl, and in the winter on fish and game” ignoring the preservation of foods for year round use. The common term by which the Indian granary is now known by the French term cache, or hiding place. An observer in 1820 said that a family ordinarily makes about 5 sacks of rice (5 bushels).

Jenks (1902) also reviewed previously published authors and noted that most said it was as good or better than white rice. The nutritional content of wild rice was studied in 1862, showing that wild rice is more nutritious than maize, green corn, corn meal, white hominy, berries, fish, and dried beef (as a surrogate for buffalo), as well as more nutritious than oats, barley, wheat, and rye. An observer in 1899 said that, during rice harvest, every meal included rice.

McAvoy and Shirilla (2005, 2006) confirmed that traditional activities are still practiced by 60% of Leech Lake residents, albeit in national forests that used to be part of the homelands, and more people would have benefitted from the materials obtained. Activities include gathering wild rick, fishing/netting, berry picking, hunting, gathering fuelwood, pine cones, swamp tea and bough cutting. 57% of respondents hunted, 50% picked berries, 50% camped, 38% fished, 22% gathered foods, and most engaged in multiple activities.

The HERITAGE DIET

Based on the information presented above, a reasonable distribution of major food categories is presented in table x.x. The information about the energy content in 100 gram portions is taken from USDA (https://ndb.nal.usda.gov/ndb/search/list). For most categories, an average among various individual foods within the category was used, or where indicated a single food was selected as a surrogate for other similar foods in the same category. For example, the category of greens and medicines includes several dozen species, some ingested in very small amounts, so a wild green (nettles, blanched) was selected as a surrogate. The caloric total of 2000 kcal/day is a generally accepted value for average diets. This diet includes those species that were identified as being cultivated both before contact (e.g., corn, beans, squash) as well as those that were introduced relatively early after contact and observed in use by 1855 (e.g., potatoes).
Table x.x  Estimations of food categories, calories, and amounts.

<table>
<thead>
<tr>
<th>Category</th>
<th>% of calories</th>
<th>Cal within 2000kcal daily intake</th>
<th>Kcal/100g</th>
<th>Amount eaten to supply kcal (g/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wild Rice, cooked</td>
<td>14</td>
<td>280</td>
<td>100</td>
<td>280</td>
</tr>
<tr>
<td>Fish (walleye roasted)</td>
<td>14</td>
<td>280</td>
<td>120</td>
<td>233</td>
</tr>
<tr>
<td>Game (venison roasted)</td>
<td>14</td>
<td>280</td>
<td>150</td>
<td>187</td>
</tr>
<tr>
<td>Fowl</td>
<td>10</td>
<td>200</td>
<td>150</td>
<td>133</td>
</tr>
<tr>
<td>Corn</td>
<td>10</td>
<td>200</td>
<td>100</td>
<td>200</td>
</tr>
<tr>
<td>Winter squash, pumpkin, beans, other vegetables</td>
<td>10</td>
<td>200</td>
<td>60</td>
<td>333</td>
</tr>
<tr>
<td>Potatoes, roots, tubers</td>
<td>10</td>
<td>200</td>
<td>100</td>
<td>200</td>
</tr>
<tr>
<td>Fruit (plum)</td>
<td>5</td>
<td>100</td>
<td>90</td>
<td>111</td>
</tr>
<tr>
<td>Berries, cranberry, blueberry</td>
<td>4</td>
<td>80</td>
<td>50</td>
<td>160</td>
</tr>
<tr>
<td>Maple Sugar</td>
<td>5</td>
<td>100</td>
<td>350</td>
<td>29</td>
</tr>
<tr>
<td>Beverages, Medicines, greens (blanched nettles)</td>
<td>4</td>
<td>80</td>
<td>40</td>
<td>200</td>
</tr>
</tbody>
</table>

Because the general risk assessment methodology uses annual averages to derive daily intakes as inputs into the risk equations, seasonal variations are masked. It is recognized that the food availability was quite seasonal, even though many foods were preserved for year round use. For
individual applications, or for local variations in species availability, amounts can be altered within the same caloric total.

REFERENCES


Spangler GR (2009). Closing the Circle: Restoring the Seasonal Round to the Ceded Territories. Posted at www.glifwc.org/minwaajimo/Papers/Spanger%20paper%20%20FINAL.pdf
