

# Mazina'igan

## A Chronicle of the Lake Superior Ojibwe

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SPRING 2020

## Updated Mercury Maps highlight safe walleye consumption

By Sara Moses, GLIFWC Environmental Biologist

The spring oгаа (walleye) season is right around the corner. Whether you will be setting out upon the waters to harvest fish or simply enjoying the catch at the dinner table, GLIFWC's Mercury Maps can help you make informed decisions about safe fish consumption.

By harvesting oгаа, tribal members reaffirm their off-reservation treaty rights while providing their families and communities with a high quality food source. But, as with any fish, oгаа contain mercury, a contaminant that is released into the environment largely from the burning of coal and from metallic mining and processing activities. Exposure to mercury above safe levels can cause negative health impacts, especially in fetuses and young children.

In an effort to inform and protect tribal members, GLIFWC began its Mercury Program in 1989. It has since measured mercury levels in 9,500 fish from Lake Superior and inland lakes



*Smaller walleyes are the best mealtime choice for children and women of child-bearing years. (COR photo)*

across the Ceded Territories. Data from walleye sampling is used to produce GLIFWC's Mercury Maps, which provide color-coded, lake-specific oгаа consumption advice. The maps indicate

the safe number of oгаа meals that can be consumed per month from lakes where fish are typically harvested by GLIFWC's member tribes.

Under funding from the Great Lakes Restoration Initiative (GLRI), GLIFWC updates the Mercury Maps with the most up-to-date data available every two years. The maps, which were updated in February 2020, provide oгаа consumption advice for 356 individual lakes, including nine new lakes with advice since 2018.

Fish mercury levels change slowly over time, even as emissions of mercury in the region decrease. This, in combination with the rotating sampling scheme for lakes, means that we do not generally see dramatic changes in the advice provided by the maps from year to year.

Since 2018, we changed our advice to be less restrictive for five lakes and more restrictive for three lakes. A notable improvement is Little John Lake in Vilas County Wisconsin, for which the recommendation for the sensitive population (pregnant women, women (see Mercury Maps, page 3)

## Crazy jumping worms may be coming to a woods near you

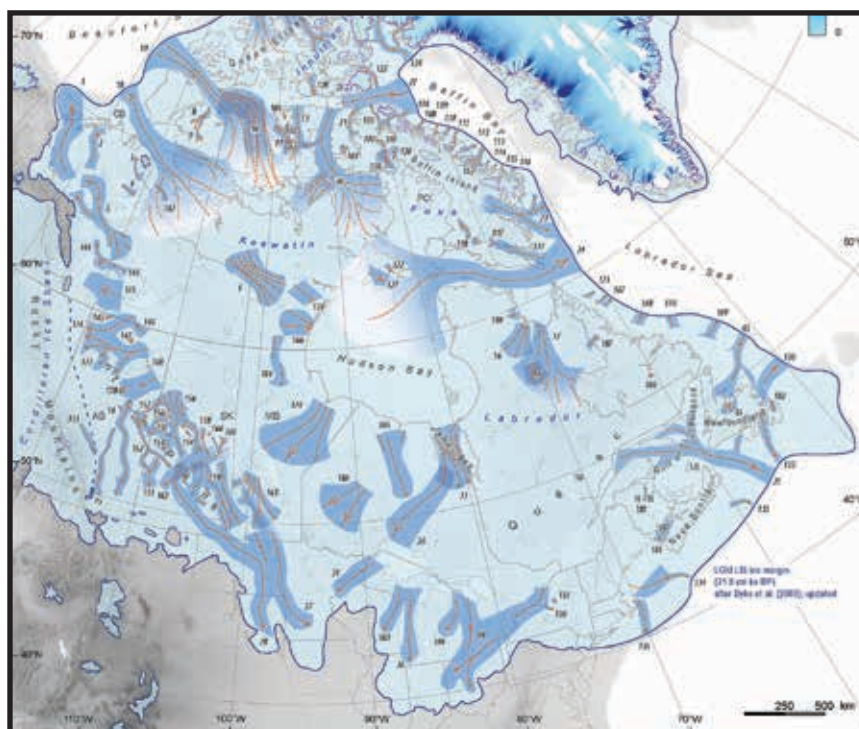
By Steve Garske  
GLIFWC Invasive Species Coord.

For many, it comes as a surprise. Those earthworms so common in our lawns, gardens, and forests weren't always here. Since their arrival on the east coast several centuries ago, they have been busy remaking Turtle Island's northern hardwood and hardwood-conifer forests, and not for the better.

Long ago, the massive Laurentide ice sheet spread out from the Hudson Bay region to cover most of what is now Canada and the northern United States, as far south as Iowa, Illinois and New Jersey. As glaciers scoured the landscape, any native earthworms that may have been here were wiped out.

Then around 12,000 years ago, the glaciers retreated north from the Great Lakes region, leaving a rocky landscape dotted with glacial lakes. As the climate warmed, plants recolonized the landscape, eventually forming the lush forests and wetlands that we see today.

Because they disperse at a rate of only a few feet per year, native North American earthworms only recolonized the very southern edge of this new habitat. The northern half of North America remained earthworm-free until the arrival of European settlers. (see **Jumping worms**, page 9)

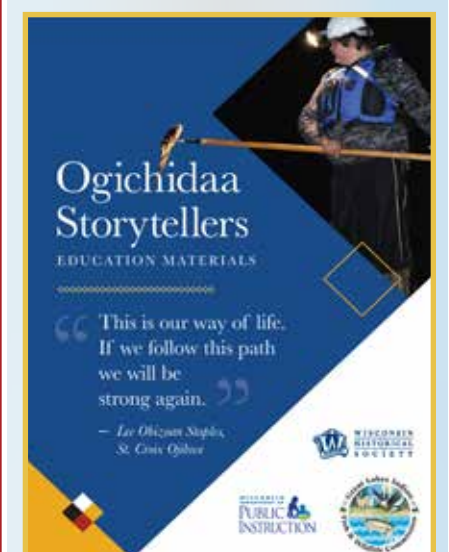


*This map shows the maximum extent of the last advance of the Laurentide Ice Sheet, about 21,800 year ago. At that time so much water was locked up in glaciers that the North American continent extended more than 100 miles east of where it is today. The dark blue areas depict areas of rapid ice flow, up to nearly nine miles per year. Earlier glacial advances extended as far south as central Illinois. (Margold et al. 2018. www.sciencedirect.com/science/article/pii/S0277379117308089)*

Ininaatig  
dibishkoodikwane  
“Sugar maples have  
opposite branching limbs.”



Without leaves, it can be difficult to identify sugar maples when tapping season rolls around. Look for opposite branching, which also occurs on red & silver maples, plus box elders—all will yield sap.



School resources:  
For more information on Ogichidaa Storytellers Education Materials, see page 12



# More than 57K whitetails tested for disease in upper Great Lakes states in 2019

## New CWD detection on Ceded Territory borderlands

By Travis Bartnick, GLIFWC Wildlife Biologist

There is a growing concern about Chronic Wasting Disease (CWD) spreading into the Ceded Territories of Minnesota, Wisconsin, and Michigan because of the uncertainty of how it may impact tribal members who regularly harvest and consume important wildlife species like white-tailed deer. Currently, there is no evidence that the disease can infect humans, but all major health organizations advise against consuming animals that appear sick or are infected with CWD.

CWD is a fatal nervous system disease that infects members of the Cervidae (deer family), such as mooz (moose), omashkooz (elk), and waawaashkeshi (deer). The disease was first described in Colorado in the late 1960s and has since infected wild and captive cervid herds across many states and provinces throughout North America. CWD is not caused by a virus or bacteria. Instead, the disease is the result of a naturally occurring protein that becomes misfolded, causing otherwise healthy proteins to misfold and accumulate in the animal's nervous system. The misfolded proteins in this group of diseases are referred to as "prions." There is no treatment or cure for the disease. Once an animal becomes infected, they can carry the disease and shed the infectious CWD prions into the environment for as long as two years before exhibiting the clinical stages of the disease.



CWD is a fatal nervous system disease that infects members of the Cervidae (deer family), such as mooz (moose), omashkooz (elk), and waawaashkeshi (deer). The disease was first described in Colorado in the late 1960s and has since infected wild and captive cervid herds across many states and provinces throughout North America. (COR photo)

### CWD: a status update in the Ceded Territories of Minnesota, Wisconsin, and Michigan

**Minnesota:** The Minnesota Department of Natural Resources sampled nearly 18,000 deer in 2019. Almost all of the wild CWD-positive deer have been found in the far southeastern portion of the state. However, in the spring of 2019, the first CWD-positive wild deer was detected in Crow Wing County of north-central

Minnesota, just north of the 1837 Ceded Territory boundary. The deer was found in close proximity to a captive deer facility that had an animal test positive for CWD in 2016. The Minnesota DNR has since tested 12,767 wild deer (including nearly 4,000 in 2019) in the surveillance zone surrounding that Crow Wing County captive deer facility and no additional CWD-positive wild deer have been detected.

Another recent development in Minnesota has been the detection of CWD at captive cervid facilities in Douglas and Pine Counties. Douglas County is outside of the Ceded Territory, but Pine County is within the 1837 Ceded Territory, near the Minnesota-Wisconsin border. The Minnesota Board of Animal Health has depopulated the remaining herd at the Pine County facility and is in the process of testing all of the cervids for CWD. The MN DNR has started developing a management response to this recent detection.

**Wisconsin:** Wisconsin sampled 19,091 deer for CWD in 2019. Of these, 19,042 were analyzed, and 1,323 tested positive for CWD. Since 1999, 246,104 deer have been sampled for CWD in Wisconsin and 6,573 deer have tested positive for the disease. This means that the deer sampled in 2019 accounts for 7.7% of the total number of deer sampled, yet accounted for 20% of all CWD-positive deer detections in the history of the disease in Wisconsin. The vast majority of these CWD-positive wild deer were harvested in the four county endemic zone in southern Wisconsin.

In 2019, eight additional CWD-positive deer were detected in counties near or within the Ceded Territories, including Dunn (1), Eau Claire (3), Marathon (1), Oneida (2), and Portage (1) counties. With the exception of the two new wild CWD-positive detections in Oneida County, the other six were found along the southern boundary of the Ceded Territory of Wisconsin. The Wisconsin DNR had focused CWD surveillance on the northern forest counties in 2019, but CWD sampling fell short of target goals in many of those counties. In 2019, 3,040 deer were sampled in the 17-counties within the Northern Forest Zone.

Several captive cervid facilities in Wisconsin had cervids test positive for CWD in 2019. This includes cervid facilities within or near the Ceded Territory in Marathon, Oneida, Oconto, Shawano, Portage, Forest, and Burnett counties. A captive cervid facility in Marathon County that had its first confirmed CWD-positive animal in 2013 has now had 104 deer test positive for CWD (as of October 2019) and the Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP) is allowing that facility to continue to operate.

**Michigan:** Michigan sampled and tested 20,065 wild deer in 2019. An additional 65 deer tested positive for CWD in 2019. All of the CWD-positive deer were sampled from counties in the lower peninsula of Michigan. Some of the positive deer were sampled from counties within the southern portion of the 1836 Ceded Territory. Surveillance in Michigan's upper peninsula was focused on the area surrounding the location in Dickinson County, where a CWD-positive wild deer was detected in the fall of 2018. No additional wild deer tested positive in Michigan's upper peninsula during 2019.

In January 2020, the Michigan Department of Agriculture and Rural Development (MDARD) confirmed CWD in three captive white-tailed deer at a Newaygo County cervid facility. This was the first detection of CWD in the county, and no wild CWD-positive deer have been detected in the surrounding area. This latest detection at the Newaygo County facility was the fifth captive cervid facility to detect CWD in the state of Michigan. The first Michigan captive cervid facility to detect CWD in its captive cervids occurred in 2008. MDARD is conducting an investigation of the Newaygo County facility to determine if any other captive deer may have been exposed to the disease.

## Deer harvest slide continued in 2019

During the 2019 off-reservation treaty deer hunt, tribal members registered 732 deer, compared to the 1,155 deer harvested in 2018 in the 1836, 1837, and 1842 Ceded Territories. Antlerless deer accounted for 48% of the harvest while bucks accounted for the balance of the season harvest total. Tribal hunters registered deer from 32 counties within the Ceded Territories (Figure 1). This included 21 counties in Wisconsin, 10 counties in Michigan, and one county in Minnesota.

Similar to past years, four counties in northwestern Wisconsin accounted for over half (51%) of the total off-reservation deer harvest. Those counties included Bayfield Co. (14%), Burnett Co. (18%), Douglas Co. (11%), and Sawyer Co. accounting for 8% of the total harvest. Tribal hunters registered the most deer between October 26, 2019 and November 26, 2019, accounting for about 61% of the total deer harvest over those 32 days. The most off-reservation deer registered by tribal members on a single day occurred on November 23, coinciding with the Wisconsin state gun season opener. —T. Bartnick

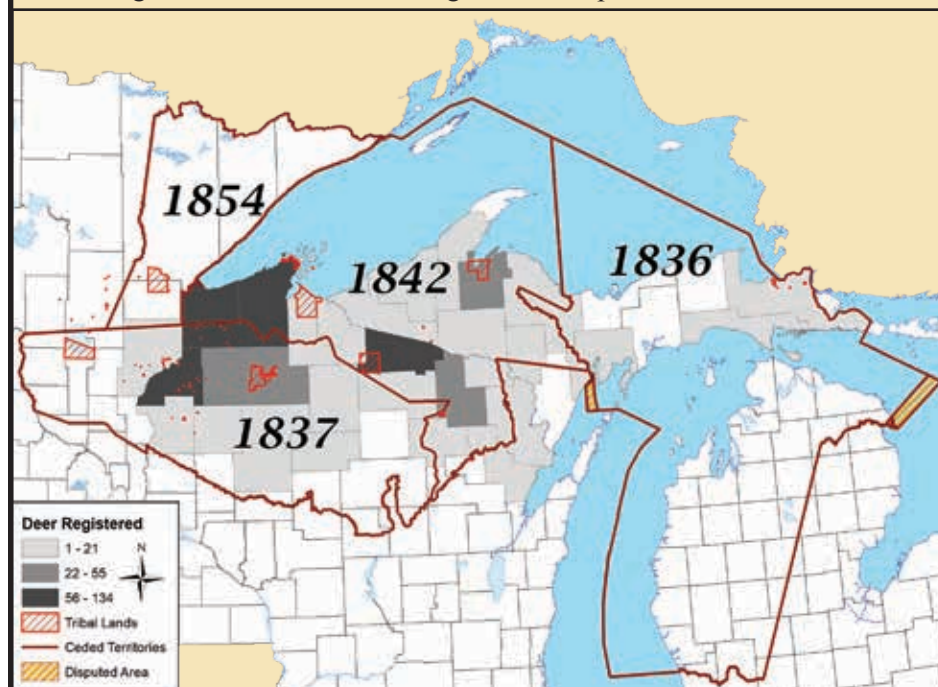


Figure 1. Distribution of waawaashkeshi (deer) registered by GLIFWC-member tribes in the 1836, 1837, and 1842 Ceded Territories during the 2019 off-reservation tribal hunting season, summarized by total deer harvested in each county.



# Ceded Territory news briefs

## New angling reg to protect juvenile walleyes in Manitowish System

The walleye size limit for state-licensed anglers is set to change in May on the Manitowish Chain of Lakes in Wisconsin's Vilas County. The adjustment is intended to protect young walleye until maturity, while also protecting some of the female spawners. Wisconsin Department of Natural Resources in conjunction with Walleyes for Tomorrow went through the regulation change process this past fall.

The new regulation allows for the harvest of three walleyes per day with a 15 inch minimum size limit and a 20-24 protected slot size. This will replace a no minimum, one walleye over 14 inches regulation that had been in place on the system of lakes since 1997. In more recent years, young walleye year-classes have not been as strong as they had been when the old regulation was put in place. Protection of younger walleye and female spawners should help the Manitowish walleye population continue to sustain itself through natural reproduction.

—M. Luehring

## Mine developer eyes deposit on Wolf River

A recent permit application by Badger Minerals to drill for ore in Wisconsin's southeast Oneida County has raised concerns about a potential metallic sulfide mine next to the iconic Wolf River. In January, the exploration team that characterized the Back Forty deposit on the Menominee River applied to the Wisconsin Department of Natural Resource for an exploration license and permits to drill 10 holes between Pelican Lake and the Wolf River.

This area known as Stockley Creek, or the Wolf River prospect, was first test-drilled by Noranda Mines Inc. in the 1970s around the time the company was also drilling to characterize the nearby Pelican Lake and the Lynne deposits. The Stockley/Wolf prospect has been considered a small, uneconomic formation hosting sulfide ores of copper and zinc, but the Badger Minerals application has focused attention on a location which appears to be around and under Stockley Creek and the Wolf River.

As of early March, the WDNR was still reviewing the company's Notice of Intent (NOI) to drill and it may require Badger Minerals to obtain water-use and other permits. Because so little is known about the minerals in the prospect area it is impossible to know if the site were developed, whether it would be an open-pit or underground mine. Badger Minerals is hoping to drill yet in March but that will depend on getting final approval from the WDNR and site conditions as the ground begins to thaw.

—J. Coleman

## Update from the Back Forty Mine

A proposed mining project in Upper Michigan continues to threaten ancestral lands and resources of the Menominee Nation of Wisconsin.

Aquila Resources, a Canadian owned exploration company had submitted permits to the Michigan Department of Natural Resources for the proposed operation that would be located 50 yards from the Menominee River, approximately 60 miles from the Menominee Indian Reservation. All four of the required permits are already approved by Michigan Department of Environmental Quality.

Michigan is one of few states that maintains delegated authority under the Clean Water Act, which means any federal protections that the tribe could wield may not apply. The company would only need to be permitted by the State of Michigan.

In 2018, the Menominee Tribe filed suit against the US Environmental Protection Agency and Army Corps of Engineers, citing that federal review was pertinent for mining permitting in this area. Earlier this year, a federal appeals court ruled that it cannot review a decision by the two federal agencies which might have opened up the door for official consultation with the tribe.

Menominee Tribal Legislature Representative Gary Besaw reaffirmed "Although we are disappointed with the court's decision, we are still committed to protecting the river and our sacred sites. We will be weighing all of our options."

—B. Jennings

# Mercury Maps

(continued from page 1)

of childbearing age, and children under 15 years of age) has increased from two to four meals/month. The safe number of oгаа meals from Pelican Lake (Oneida County), GLIFWC's second most harvested lake for walleye in recent years, has decreased from eight to four per month for the general population (men 15 and older and women beyond childbearing age).

You can reduce your mercury exposure by using the Mercury Maps to choose lakes with lower mercury levels for harvesting oгаа and by following the maps recommended consumption advice for the lake where your fish were harvested. In addition, you can target smaller fish, which tend to be lower in mercury, or consume lower mercury species such as whitefish, bluegill, or perch.

The updated Mercury Maps are now available on the GLIFWC website at <http://glifwc.org/Mercury/index.html> and will be made available at tribal registration stations and at various tribal events this spring.

Need More Ojibwemowin?  
Visit [www.glifwc-inwe.com](http://www.glifwc-inwe.com)!



# Low in mercury, sucker & redhorse are welcome for dinner

Following a request from the Board of Commissioners, GLIFWC staff set out to collect and test some common fish that don't always find their way to the supper table. Working with a tribal subsistence fisherman, GLIFWC Environmental Biologist Sara Moses got her hands on 16 shorthead redhorse and 20 white suckers from the Bad River to find out if the native fishes posed any health risk to consumers due to mercury.



Shorthead redhorse illustration by Russell Habermann. (Reprinted with permission from Minnesota Sea Grant)

"Elders are known to enjoy eating sucker head soup from catches in the Bad River watershed," said Moses. "Tribal leadership wanted to know where mercury levels are at in these species used in soup and other dishes."

Using the same protocols to generate consumption advisories for walleyes, Moses channeled the fish through longtime GLIFWC contractor, Lake Superior Research Institute at UW-

Superior. For Moses, the final results for the river-running Gichigami fish were not surprising.

"Although there can be contaminants of concern in Lake Superior fish like PFAS, these fish are generally lower in mercury than fish from inland lakes," Moses said. "Both species had similar, low levels of mercury." White suckers and shorthead redhorse spend most of their time in the nearshore shallows of Lake Superior, making annual spawning runs up rivers and streams in zigzag.

In the final analysis, kids may be disappointed to learn that they can eat sucker head soup safely only four times per month. The same advice holds true for women of childbearing years. The general population—women beyond childbearing age and men 15 years or older—can consume up to eight meals of sucker or redhorse per month. To put this guideline in perspective, Moses said that this is less restrictive than the advice GLIFWC issues for inland walleye in 98% of the lakes in which advice is available.

"This study fills a data gap for the region," Moses said, noting the last time any agency tested these fish species was 2005; the majority of the available records for Wisconsin's Lake Superior watershed were created in 1984 or earlier. —COR



# Ishpaagonagaag (Deep Snow) Camp at Mille Lacs

By Bizhikiins Jennings, Staff Writer

Multiple feet of snow covered the expansive and sprawling Lake Mille Lacs, but it sure didn't stop a group of youth harvesters from attending Ishpaagonagaag youth ice fishing camp. The camp was hosted by the Mille Lacs Tribal Department of Natural Resources (DNR) on the last weekend of January.

Fifteen-twenty tribal youth attended the camp throughout the weekend, learning various skills pertaining to winter harvesting on the ice. Youth were shuttled onto the lake and gathered in a group to learn about tip-ups, jigging and other forms of set lines on the ice.

Before any harvesting took place, all youth equipped themselves with asse-maa (tobacco) and humbly asked for safety, and for a successful harvest. Mille Lacs Band of Ojibwe has worked relentlessly in preserving and teaching local traditions and customs. Traditional tobacco offerings are always a focal point for Anishinaabeg in order to honor the relationship with everything in creation. Youth took to the first session with tip-ups, jigging, and set lines. Each helped drill holes, and identify proper equipment. Once all the tip-ups were baited and set, the crew gathered around to learn about the traditional winter game known as snow snake. Youth kept busy, gliding the snow snakes across the ice and competing, while they waited for the fish to bite.

Camp organizer and Program Coordinator Naomi Sam highlighted why they spent time planning such events: "These camps are so very important to the integrity of our cultural lifeway and are also a blast to attend." Sam worked across various departments with Mille Lacs DNR staff to host and organize the two-day event.

Lac du Flambeau tribal elder and master carver, Jerry LaBarge was invited by the planning group to teach decoy carving and also spearing through the ice: "We as Ojibwe people recognize that there's food under this ice here. How are we going to get it?" He held up a piece of basswood and a small carving knife. "I've been making decoys since I was a young boy, my grandfather taught me, and now I'm teaching you all today."

Youth got a jump start on their decoys right after lunch, as tip-ups were checked and multiple ogaawag (walleye) were brought back to base. In between carving, youth took turns filleting fish and prepping them for cooking over the fire.

Finally, an evening meal with fresh ogaawag and aadizookewin (storytelling). Michael Migizi Sullivan of the Lac Courte Oreilles community shared some of the sacred legends famous in Ojibwe Country. Youth and families watched with amusement as Migizi shared the animated and funny stories. Aadizookewin events are being revitalized in many communities as language speakers resurface. These stories often refer to a character known as Wenaboozhoo and the interesting predicaments and interactions he has with everything in creation. Oftentimes, the stories culminate in a series of life-lessons, which are absolutely crucial for Ojibwe youth and families to hear.

The final day of camp allowed students to finish their decoys, and some even brought them on the ice to test out in the water. The group setup multiple chiseled holes for spearing through the ice and patiently jigged for northern pike and musky.

Throughout the weekend, the most amusing parts of the camp weren't always when fish were caught. It often came from the good vibes and energy created from spending time together. All participants, both young and old, could feel this energy that's created when Ojibwe gather and remember their old ways of living a good life.



Mille Lacs Band Language and Culture Apprentice Ombishke-bines teaches youth and staff how to fillet ogaawag (walleye) at the 2020 Ishpaagonagaag camp. (B. Jennings photo)

## Buffalo Reef fishery research finds a way

Last November GLIFWC Great Lakes Fishery Section, along with the Michigan Department of Natural Resources and US Geological Survey, completed their first year of fish tagging and data collection for the Buffalo Reef Stamp Sands project. The three-year interagency partnership aims to assess the effects of stamp sand encroachment on an important lake trout and lake whitefish spawning reef located in Michigan waters of Lake Superior. In this first research season, biologists are establishing a baseline for spawning behavior and movement with the help of surgically-implanted acoustic transmitters.

With ice-cover preventing the launch of the GLIFWC research vessel Mizhkwad, biologists turned to a professional fisherman for help reaching Buffalo Reef. The success of this year's work would not have been possible without the assistance of Red Cliff commercial fisher, Mike Peterson, who, without hesitation, provided the use of his fishing tug during the most critical period of this project. Chi-Miigwech, Mike!



Floating atop Buffalo Reef in Mike Peterson's tug, a team of researchers from GLIFWC, Michigan DNR, and US Geological Survey surgically implant an acoustic transmitter into an adult whitefish. (B. Michaels photo)

### MAZINA'IGAN STAFF: (Pronounced Muh zin ah' igun)

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Although MAZINA'IGAN enjoys hearing from its readership, there is no "Letters to the Editor" section in the paper, and opinions to be published in the paper are not solicited. Queries as to potential articles relating to off-reservation treaty rights and/or resource management or Ojibwe cultural information can be directed to the editor at the address given above. For more information see GLIFWC's website: [www.glifwc.org](http://www.glifwc.org) and our Facebook page.

## On the cover

Consult mercury advisory maps before going fishing this ziiigwan. In February GLIFWC Environmental Section released updated maps featuring walleye consumption recommendations for inland lakes in the 1837 and 1842 Ceded Territories of Minnesota, Wisconsin and Michigan. Hard copy maps are available at the GLIFWC central office and on-reservation registration stations. Find digital copies here <http://glifwc.org/Mercury/index.html>



# Ceded Territory SCIENCE

## Data-based adaptive management; case study Minocqua Chain

Minocqua Chain consists of five lakes, three of which have supported ogaa (walleye) populations until recently. A decline in harvest opportunities for tribes and state anglers resulted in an ogaa rehabilitation plan for Kawaguesaga, Minocqua, and Tomahawk Lakes in 2015.

In that same year, population estimates were conducted on Kawaguesaga and Minocqua Lakes, and the results indicated that adult ogaa stocks had declined precipitously since the 90s and early 2000s (Figure 1). To make matters worse, surveys of the relative abundance of age-0 and age-1 ogaa also showed a decline in the production and/or survival of young walleye.

The Minocqua Chain Plan had a multi-pronged approach to rehabilitate the ogaa fishery. Specifically, the plan included stocking of extended growth ogaa (6-9”), no harvest by tribes or state anglers, and benchmarks for adult densities and abundance of juvenile ogaa. The benchmarks for success included three adult ogaa per acre in Kawaguesaga and Minocqua Lakes and 2.0 adult ogaa per acre in Tomahawk Lake. The re-establishment of natural reproduction was also a goal



During the frozen winter months, GLIFWC fisheries technicians swap out survey boats and nets used during the open water research season for microscopes and spreadsheets. Technicians examine fish otoliths (ear bones) and dorsal spines collected from the Minocqua Chain and other waters during the previous sampling year to calculate age, growth rates, and overall population structures. The work provides vital data for GLIFWC biologists to evaluate the health and distribution of important species like adikameg and ogaa. (COR)

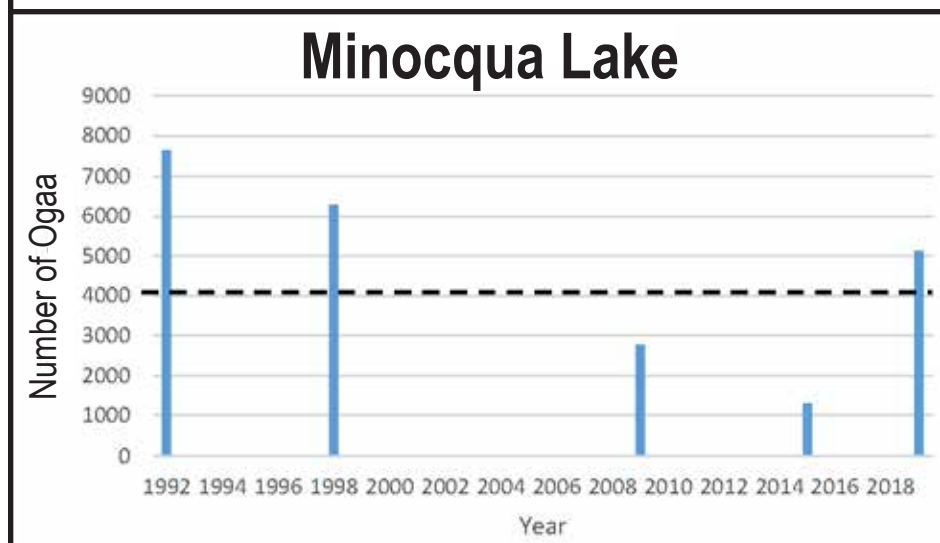
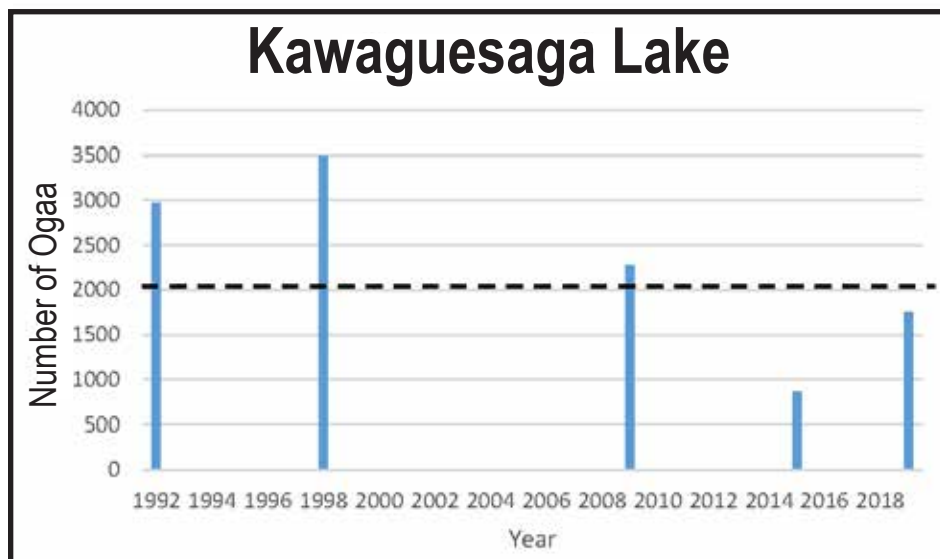


Figure 1. Adult ogaa (walleye) population estimates for Minocqua and Kawaguesaga Lakes from 1992 to 2019. The dashed line represents 3.0 adults per acre. The 2019 population estimate in Kawaguesaga Lake was below the rehabilitation goal while the estimate in Minocqua Lake was above the goal.

for Kawaguesaga and Minocqua Lakes (natural reproduction in Tomahawk Lake has been minimal from 1987–2020).

In spring of 2019, GLIFWC led an effort by the partner group to estimate the adult populations in Minocqua and Kawaguesaga Lake. Based on these surveys, Minocqua Lake has met the benchmark of three fish per acre, while adult density in Kawaguesaga Lake nearly doubled from 2015, but still fell short of this goal (Figure 1). Adult ogaa estimates in Tomahawk Lake have not been conducted since the plan was implemented in 2015.

During each fall from 2015-2019, Minocqua and Kawaguesaga Lakes were surveyed to determine whether natural reproduction was successful. In both lakes, since 2015, a total of 143 miles of shoreline have been surveyed and only ten age-0 ogaa have been captured (one was caught in about 30 miles of shoreline in 2019). For context, the median number of age-0 collected in the fall in naturally reproducing lakes in the Ceded Territories is 15 per mile. Because reproduction has not yet been strong in the chain, only one of five benchmarks in the Minocqua Chain Plan were met by 2019.

The conservation partners (GLIFWC, WDNR, Walleyes for Tomorrow, Lac du Flambeau, and Wisconsin Valley Improvement Company) held a public meeting to discuss the successes and failures of the rehabilitation plan and whether or not the fishery should be re-opened in 2020.

Collectively, the recommendation was to keep the fishery closed for another year to allow adult ogaa to reach density goals in Kawaguesaga and Tomahawk Lake and encourage re-establishment of natural reproduction in Kawaguesaga and Minocqua Lakes. Since then, the Lac du Flambeau Tribal Council, Voigt Intertribal Task Force, and Natural Resources Board have all approved this measure for the Minocqua Chain.

Collectively, the extension of the fishery closure in the Minocqua Chain is a good example of stakeholders, tribes, fishery managers, and policy makers using available data and science to adapt management plans, which will hopefully result in the rehabilitation of this fishery.

— Aaron Shultz, Mark Luehring, Adam Ray, and Joe Dan Rose  
GLIFWC Inland Fisheries Staff

“Ogaa” is the Ojibwe name that is very affectionately given to the walleye by the Anishinaabe, says Michael Waasegiizhig Price, the new Traditional Ecological Knowledge Specialist at GLIFWC. “Ogaa” means the “spiny one.” If anyone has ever been poked by their dorsal fin or bit by their enormous teeth, then, this name will be fondly remembered.

Other Ojibwe names that are related to Ogaa by name are: “Gaag” for porcupine, “Gaawaandag” for black spruce (Gaa–spiny; aandag–bough) and “Gaawaakomizh” for Prickly Ash (Gaawaa–spiny; mizh–shrub tree). Many of the Ojibwe names of animals, birds and plants reflect the relationships that the Anishinaabe people traditionally have with those animate beings.

# Indian Country in Washington DC: GLIFWC, tribal nations advocate for traditional lifeway

Text & Photos by Charlie Otto Rasmussen, Editor

## Intertribals come together on Capitol Hill

Beginning in the middle 1970s, American Indian nations in the Pacific Northwest and Great Lakes regions created management agencies to provide services ranging from natural resources assessments, conservation law enforcement, and cultural programs for tribes that retain off-reservation harvest rights through agreements negotiated with the United States in the mid-nineteenth century. The development of treaty commissions came only after exhaustive legal proceedings when state and federal courts ultimately agreed that 41 tribes had permanently reserved the right to sustain themselves on ceded lands and waters through hunting, fishing and gathering.

Treaty tribes and their commissions are active resource managers with state, federal, and local governments. Partnerships with educational institutions and conservation groups helps further scientific understanding of ecosystems and solidifies working relationships to better enhance and sustain natural resources valued by all user groups.

During recent testimony before members of the US House of Representatives February 12, GLIFWC Executive Administrator Michael J. Isham met with leaders from other intertribal agencies that help manage off-reservation natural resources in the United States. From left, Isham; Bryan Newland, Chippewa Ottawa Resource Authority; Jeremy Red Star Wolf, Columbia River Inter-Tribal Fish Commission, and Treasurer Ed Johnstone, Northwest Indian Fisheries Commission. An official from the fifth commission, 1854 Treaty Authority, was not in attendance.

Each intertribal agency representative shared a unique set of successes, aspirations, and concerns. But what bound them all was an unease at the pace of harmful environmental changes, and resource degradation. As is often articulated by tribal leaders: what good is the treaty right if you cannot utilize the resources?



**"Treaties lie at the heart of the relationship between Indian Nations and the United States." –NMAI**

## Ojibwemowin & food code programs enhanced, shared at national gathering



Crystal City, VA—At the heels of a rousing address by Chickahominy Chief Stephen R. Adkins, the Administration for Children & Families (ACF) gathering got rolling February 10 with native participants from across the contiguous United States, plus Alaska, Hawaii, and Pacific Territories. Adkins—headman of the eastern Virginia tribe recognized by federal authorities two years earlier—called on native people everywhere to move beyond the era of cultural endurance, the days of dogged, sometimes quiet, persistence.

"Don't hunker down, don't get into that survival mode. From this day forward we're a thriving society, not a dying society. We're not vacillating at the will of the dominant culture," he said, recognizing the leadership of Jeannie Hovland, Administration for Native Americans (ANA) commissioner, for advancing indigenous interests. "We are a strong people."

With 450 in attendance, the colorful assembly produced the largest gathering to-date said Hovland, who also serves as Deputy Assistant Secretary of Native Affairs. Hovland joined in opening ceremonies addressing the capacity audience, many adorned in clothing that blended modern and traditional embellishments from native homelands. In a grand flourish, native veterans led a grand entry that included Kiowa hand drum singers, joint armed forces honor guard, dancers, and Menominee Nation elder and Marine, Apesanahkwat carrying the Eagle Staff.

For GLIFWC participants and the more than 200 first nations represented, the tone was set for a successful conference on "Growing Healthy Communities."



At the February Administration for Children & Families conference near Washington DC, GLIFWC project staff met with ANA Program Specialist Kaylana Gates to review project developments for a pair of GLIFWC initiatives in tribal food code development, and Ojibwemowin instruction for native youth under five years old. #healthynativecommunities.

### Developing ideas, sharing successes

Over a string of busy days filled with training seminars, GLIFWC staff specializing in Ojibwemowin and traditional foods met with federal administrators at the conference housed just across the Potomac River outside Washington DC. The event, hosted by US Department of Health & Human Service's ACF branch, brought together professionals from across Indian Country including grantees from Bay Mills, Red Cliff, Fond du Lac and Lac Courte Oreilles Bands. Federal grants distributed by the ACF Administration for Native Americans office are a key source of program support for GLIFWC, its member tribes, and hundreds of indigenous entities across America.

During the February 12 poster session, GLIFWC Dietician Owen Schwartz shared progress on developing tribal food codes, highlighting the importance of traditional Ojibwe foods to both physical health and cultural well-being. Additional indigenous organizations showcased programs promoting food, culture, and language from the Great Plains to the Alaska coastline.

"There's a lot of discussion about having access to traditional indigenous foods and language revitalization—how it promotes and strengthens family and community wellness," said GLIFWC's Zoongee Mayotte, part of an ANA Social & Economic Development Strategies team that includes Schwartz and Philomena Kebec. "Our current SEDS food code grant, previous Mino Wiisindaa grant, and multiple ANA language grants have fit into this framework."

For GLIFWC's latest part in language revitalization, another group of specialists is utilizing federal resources to bring Ojibwemowin to the youngest cohort of learners—kids in the first five years of life. In coordination with Ojibwe speakers and tribal Head Start managers at GLIFWC member tribes Language/Outreach Specialist Misty Peterson, Intermedia Web Designer Melissa Rasmussen, and Illustrator Wesley Ballinger are designing language resources to reach youngsters through basic storytelling that features both online and hard copy resources. Rasmussen said that the workshops and breakout sessions helped the language team with ideas and techniques to enhance their product as development moves into the second year.

Over the coming year, GLIFWC plans to engage in community outreach to keep member tribes apprised of language and food project developments. Keep an eye to Mazina'igan and [www.glifwc.org](http://www.glifwc.org) for updates.

## Niibin Mazina'igan preview: National Museum of the American Indian

Mazina'igan recently met with Smithsonian staff and toured the remarkable, four-story National Museum of the American Indian in Washington, DC.

While the Anishinaabeg and other peoples of the Great Lakes are well represented—including a wiigwaas canoe constructed by Red Cliff and Fond du Lac members—curators also explore native culture and history from North and South America in displays, exhibitions, and media.

On the museum grounds, landscapers replicate the diverse, native environments of the Chesapeake Bay region that includes hardwood forest, wetland, meadow, and demonstration croplands.

Consider the museum a highly-recommended stop for visitors to the DC area, as well as the companion NMAI located in New York City.

Watch for a closer look at NMAI in the forthcoming Niibin, or Summer, issue of Mazina'igan.



Made by the Aymaras of Bolivia and Peru, the totora-reed boat helped native people access productive fishing waters on Lake Titicaca and beyond.

## Understanding tribes, climate change, and what's at stake

Washington, DC—With increasingly frequent flooding and rising temperatures, Great Lakes ecosystems face a potentially rocky path into the future. Climate professionals are busier than ever identifying vulnerable resources and sharing strategies about making landscapes and communities more adaptable to environmental changes.

At the "Coastal Resilience in the Great Lakes Region" panel, GLIFWC Climate Change Program Coordinator Rob Croll shared with a national audience how some Ojibwe bands are addressing the challenges that come from environments in flux.

"All of our projects are informed by TEK," Croll said at the Rayburn House Building on Capitol Hill February 13. "TEK is traditional ecological knowledge. So we're talking about things like oral history, songs, stories, reports from current people who are hunting, fishing, and gathering out on the landscape in the Ceded Territories."

GLIFWC's Climate Change Program recently released two major studies: the Vulnerability Assessment and Tribal Adaptation Menu. The publications serve as important conduits to inform decision makers about what's at risk and how to engage with tribal nations to develop solutions to climate-driven changes.

"Wild rice is the most vulnerable species in our assessment," Croll said of the sacred food known as manoomin, or the good berry. "It's the reason why Ojibwe people live where they do. If wild rice



In the US House of Representatives Rayburn Building, GLIFWC's Rob Croll (left) participated in the panel discussion "Coastal Resilience in the Great Lakes Region" with Beth Gibbons, Executive Director American Society of Adaptation Professionals; Scudder Mackey, Chief, Office of Coastal Management, Ohio DNR; and Brody Stapel, Edge Dairy Farmer Cooperative.

disappears due to climate change—that represents an existential threat to Ojibwe culture."

Much of Croll's audience at the event sponsored by Environmental and Energy Study Institute had limited experience working with tribes, and the session ultimately helped create a better understanding about native world views and priorities. For more see: <http://www.glifwc.org/ClimateChange/>



# Growing Up Ojibwe: Spearfishing Adventures

Boozhoo gakina awiiya (Greetings everyone)! My name is Tommy Sky, I'm an Ojibwe from Bad River, and ziiigwan (spring) is one of my favorite times of the year. My family and I will net and spear fish during this season in hopes of harvesting some ogaawag (walleye), ginoozhe (northern pike), and mashkinoozhe (muskellunge).

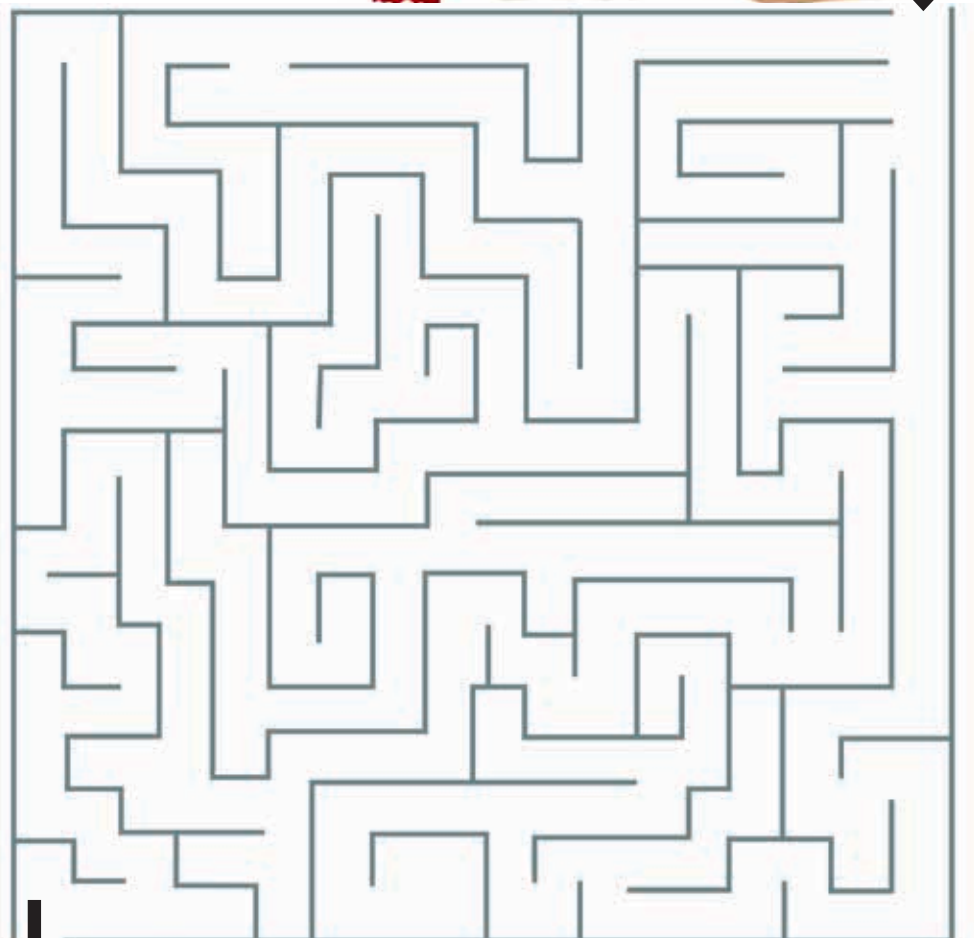
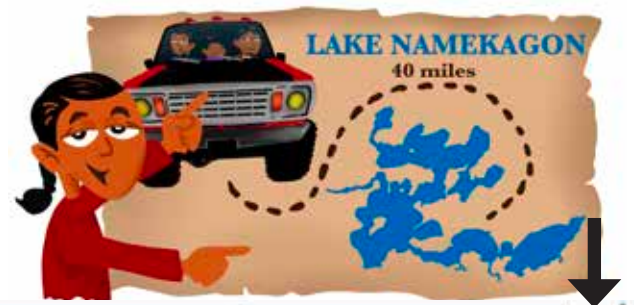
Traditionally we would use birch bark canoes, torches, and the anit (fish spear) would be made of bone, but today we can use regular boats and modern equipment. Once a lake opens, we need the proper permits to fish. We can only take the amount of fish on our permits. Spearing is definitely a lot of work and can be difficult in cold temperatures during the evening, which can be hard to see. My family works together to harvest, clean, package, and cook the beautiful gift of giigoonyag (fish).

Below are scenes from this sequel to Growing Up Ojibwe, originally published in 2019. To download a free copy of this new kid's publication go to [www.glifwc.org/publications/#YouthPublications](http://www.glifwc.org/publications/#YouthPublications). You can also request a printed copy by emailing [lynn@glifwc.org](mailto:lynn@glifwc.org).

—B. Jennings



Help Tommy get to Lake Namekagon.



## Fill in the missing vowels

giigoonyag • Ojibwe • ogaawag • anit • boozhoo  
• ziiigwan

\_\_ j \_\_ bw \_\_

b \_\_ \_\_ zh \_\_ \_\_

z \_\_ \_\_ gw \_\_ n

\_\_ n \_\_ t

g \_\_ \_\_ g \_\_ \_\_ n y \_\_ g

\_\_ g \_\_ \_\_ w \_\_ g

# American Indian Youth Literature Awards 2020

By Paula Maday, Staff Writer

**Philadelphia, PA**—On January 27, the American Indian Library Association (AILA) announced the winners of the American Indian Youth Literature Awards for 2020. Awarded biennially, these awards identify and honor the very best writing and illustrations by and about Native Americans and Indigenous peoples of North America.

According to AILA, “books selected to receive the award present Indigenous North American peoples in the fullness of their humanity.” Winners and Honor Books are selected in three categories: Best Picture Book, Best Middle Grade Book, and Best Young Adult Book.

Every year, as GLIFWC staff travel to classrooms across the Ceded Territory and host youth groups at our main office, we are asked about resources for teaching authentically about tribal cultures today. Within literature, the following books represent the best of the best.

Lara Aase, 2020 Awards Committee Chair, said of this round of awards, “We chose books that appealed to the young readers we know, and we were thrilled to see writers address contemporary as well as historic and traditional topics, including everything from fry bread to forced adoption to finger weaving, Native women military heroes to missing and murdered Indigenous women and girls, traditional tattooing to high school romance to grizzly bears. Many of us grapple with issues of identity; we are grateful to see authors and illustrators represent the myriad identities of young Indigenous readers.”

Teaching authentically about tribal cultures today means giving space and voice to the myriad identities of the people within them. We hope that by sharing these titles here, educators, parents, and we’ehn will find space for these stories within their lives and with the youth they guide.

## Best Picture Book

“Bowwow Powwow: Bagosenjige-niimi’idim,” written by Brenda J. Child (Red Lake Ojibwe), translated into Ojibwe by Gordon Jourdain (Lac La Croix First Nation), and illustrated by Jonathan Thunder (Red Lake Ojibwe), published by the Minnesota Historical Society Press. You can read my full review of “Bowwow Powwow” on page 23 of the Fall 2018 *Mazina’igan*: [www.glifwc.org/Mazinaigan/Fall2018/inc/pdf/fliplibook.pdf](http://www.glifwc.org/Mazinaigan/Fall2018/inc/pdf/fliplibook.pdf).

## Picture Book Honors

“Fry Bread: A Native American Family Story,” written by Kevin Noble Maillard (Seminole Nation, Mokuskey Band), illustrated by Juana Martínez-Neal (Peruvian-American), and published by Roaring Brook Press/Macmillan.

“Birdsong,” written and illustrated by Julie Flett (Cree-Métis) and published by Greystone Kids.

“At the Mountain’s Base,” written by Traci Sorell (Cherokee), illustrated by Weshoyot Alvitre (Tongva/Scots-Gaelic), and published by Kokila / Penguin Random House.

“We Are Grateful,” written by Traci Sorell (Cherokee), illustrated by Frané Lessac, and published by Charlesbridge.

“Raven Makes the Aleutians,” adapted from a traditional Tlingit story and illustrated by Janine Gibbons (Haida, Raven of the Double-Finned Killer Whale clan, Brown Bear House) and published by Sealaska Heritage.

# Jumping worms

(continued from page 1)

Until the invention of ballast water pumps in the 1880s, soil was used to keep ocean-going ships stable. When European ships reached east coast ports this soil was dumped out, along with earthworms and other soil organisms. Earthworms were soon transported far and wide by human activities including logging, road-building, fishing and horticulture. As they spread into natural forests, they began munching on the thick layer of leaves and spongy “duff” that acts like a blanket over the soil, leaving muddy, bare ground in their wake.

Today, earthworm-infested forests are the rule rather than the exception. The loss of the duff layer exposes the soil to erosion, compaction, freezing, nutrient leaching and increased rainwater runoff. It also destroys many of the fungi and microbes that form symbiotic (mutually beneficial) relationships with plants, and help them to grow and remain healthy. Millipedes, mites, insects, salamanders, voles, shrews, and ground-nesting birds that rely on the litter layer for food and cover have a much harder time surviving when the duff layer is degraded or gone. And seedlings of native forest plants often can’t get a foothold in the exposed soil.

In the Ceded Territory, earthworms greatly reduce the abundance of forest wildflowers such as ininiwindibiigeganan (white trillium), waaboozojiibik (wild sarsaparilla), migiziibag (big-leaved aster), naaniibide’oodegin (Solomon’s seal), agwingosibag (rosy twisted stalk), and most orchids. Seedlings of maples and other woody plants often become few and far between. Princess pines and moonworts (a group of fern relatives) are also highly susceptible to earthworm activity. Grasses, sedges, some ferns and many non-native plants are often tolerant of earthworms and become the dominant vegetation on the forest floor. Recently, earthworms were shown to be an important factor in the decline and dieback of ininaatigoog (sugar maple) in Upper Michigan. (see *Jumping Worm*, page 11)



Winners of the 2020 American Indian Youth Literature Awards. (American Indian Library Association, <https://ailanet.org/aila2020awards/> photo)

## Best Middle Grade Book

“Indian No More,” written by Charlene Willing McManis (Umpqua/Confederated Tribes of Grande Ronde) with Traci Sorell (Cherokee), cover art by Marlena Myles (Spirit Lake Dakota, Mohegan, Muscogee Creek), published by Tu Books/Lee & Low.

## Middle Grade Book Honors

“I Can Make This Promise,” written by Christine Day (Upper Skagit), with cover art by Michaela Goade (Tlingit, Kiks.ádi clan, Steel House), published by Harper Collins.

“The Grizzly Mother,” written by Hetxw’ms Gyetxw (“Bret D. Huson,” Gitxsan), illustrated by Natasha Donovan (Métis Nation of British Columbia), and published by Highwater Press.

## Best Young Adult Book

“Hearts Unbroken,” written by Cynthia Leitich Smith (Muscogee) and published by Candlewick Press.

## Young Adult Book Honors

“Surviving the City,” written by Tasha Spillet (Nehiyaw-Trinidadian), illustrated by Natasha Donovan (Métis Nation of British Columbia), and published by Highwater Press.

“Reawakening Our Ancestors’ Lines: Revitalizing Inuit Traditional Tattooing,” gathered and compiled by Angela Hovak Johnston (Inuk), with photography by Cora De Vos (Inuk), published by Inhabit Media.

“An Indigenous Peoples’ History of the United States for Young People,” written by Debbie Reese (Nambé Owingeh) and Jean Mendoza adapted from the adult book by Roxanne Dunbar-Ortiz, published by Beacon Press.

“Apple in the Middle,” written by Dawn Quigley (Ojibwe, Turtle Mountain Band) and published by North Dakota State University Press.

**GLIFWC Chippewa Ceded Territory Traditional Food Regulatory Systems Project staff will be in your community soon! Keep an eye on the GLIFWC Facebook page for upcoming Traditional Food Workshops and Trainings!**







# Ojibwemotaadiwag Anishinaabewakiing.

## They speak Ojibwe to each other in Indian Country.

“Gii-koonikaa gii-biboong. Ani-ziigwang, bijibiisaa. Ganabaj ina niibowa wii-gimi-wan? Amanj iidog. Apegish waa-iskaabiisiinog. Apane, gidaa-biindaakoojigemin. Nitam, niwii-izhaamin iskgamiziganing. Waabang, giga-maajaamin. Eko-niizhing, giga-ozhiga'igemin. Eko-nising, giga-taashkiga'igemin. Eko-niiyo, giga-naadoobiimin. Giga-ombigamizigemin. Eko-naano, giga-miijinaamin. Gaye, niwii-gii-kooyike. Giwii-kiigooyike na? Wiidookawishin ji-nakwebinagwa ingiw giigoonyag.”

(There was a lot of snow when it was winter. As spring begins, the rain comes. Perhaps there will be a lot of rain? I don't know maybe. I hope it will not dry up. Always, we should make a tobacco offering. First, we want to go to the sugarbush. At dawn, we all shall leave. Second, we all shall tap trees. Third, we all shall split wood. Fourth, we all will gather sap. We all shall boil it down. Fifth, we all will eat it. Also, I want to go fishing. You want to go fishing? Help me in order to find those fish.)

### Bezhiig—1

**OJIBWEMOWIN**  
(Ojibwe Language)

Double vowel system of writing Ojibwemowin.  
—Long vowels: AA, E, II, OO  
Waabooz—as in father  
Miigwech—as in jay  
Aaniin—as in seen  
Mooz—as in moon

—Short Vowels: A, I, O  
Dash—as in about  
Ingiw—as in tin  
Niizho—as in only

—A glottal stop is a voiceless nasal sound as in A'aw.  
—Respectfully enlist an elder for help in pronunciation and dialect differences.

### Niizh—2

*Circle the 10 underlined Ojibwe words in the letter maze. (Translations below)*

A. Inashke! Animikiibag! Gego daanginangen! Giwii-kizhiibiz.

B. Ikwe omanibinaan doodooshaaboojiibikoon imaa.

C. Ingiw ajidamoowaanowag ayaawag miikanaang.

D. Niwaabamaag ingiw miskominagaawanzhiig.

E. Gaye na niwaabamaag ode'iminanagaawanzhiig iwidi?

F. A'aw ishkokewijiibik aawi mashkiki.

G. Nimikawaa wiinisibag. Indaniibiishaabooke.

H. Izhaadaa agwajiing!

**VTA Verbs, Transitive, Animate;**  
Actions to him/her

**Mikaw!**—Find him/her!  
**Gitigaazh!**—Plant him/her!  
**Ganawenim!**—Take care of him/her!  
**Ozhiga'!**—Tap him/her for sap!  
**Ininaatig (oog)**—Sugar maple(s)  
**Ininiwinzh(iiig)**—Milkweed (s)  
**Miinagaawanzh(iiig)**—Blueberry plant(s)  
**Apakweshkway(ag)**—Cattail(s)  
**Ziigwang, mikaw a'aw ininaatig! Ozhiga'!**—  
As it's spring, find that maple tree! Tap him/her!  
**Niibing, mikaw a'aw miinagaawanzh.**—  
As it is summer, find that blueberry plant!  
**Giganawenimaag ina ininiwinzhiig?**—  
Do you take care of the milkweeds?  
**Eya'!** Nimikawaag idash Inganawenimaag. —  
Yes! I find them and I take of them.

### Niswi—3

**IKIDOWIN ODAMINOWIN**  
(word play)

**Down:**

- always
- no
- rain comes
- first

**Across:**

- I wish, hope that
- medicine
- over there
- s/he is
- there

### Niiwin—4

**Wegonen enendaman ziigwang?**—  
What are you thinking as it is spring?

Niwaakaa'iganing **indaa**-binaakwe'ige.—  
At my house I should/could be raking.

**Gidaa**-izhaa waabigwaanii-adaawewigamigong wayiibaa.—  
**You should/could go to the flower shop soon.**

Gitigaaning **niwii**-padakidoomin gitigaanens.—  
**In the garden we will plant vegetables.**

**Gaawiin** niwii-titibiwebishkawaasii ditibiwebishkiganing.—  
**No, I do not** want to pedal my bicycle.

**Ninga**-izhaa iskgamiziganing.—  
**I shall definitely go to the sugarbush.**

Mii'iw.—That's it.

- adaawen iniw miinikaanan.
- maajaa Zhaawanong noongom.
- Zaaga'iganing imaa binaakwe'ige
- Ani-ziigwang, megwayaak bimose.
- Iskgamizigan gemaa waakaa'igan niwii-miijinaamin gitigaanensan. :-).

**Online Resources**  
ojibwe.lib.umn.edu  
ojibwe.net  
glifwc.org  
glifwc-inwe.com

**Translations:**  
**Niizh—2** A. Look! Poison Ivy! Don't touch it! You will itch. B. The lady picks the dandelion there. C. Those goldenrods are there by the road. D. I see the raspberry plant. E. Also, do I see strawberry vines over there? F. That Shepard's purse is medicine. G. I find wintergreen. I make tea. H. Let's all go outside!  
**Niswi—3** Down: 1. apane 2. gaawiin 3. bijibiisaa 5. nitam Across: 4. apegish 6. mashkiki 7. iwidi 8. aawi 9. imaa  
**Niiwin-4** 1. We definitely will buy those seeds. (Inga- -min) 2. You should/could leave to the south now. (gidaa-) 3. By the lake there, no, I am not raking. (gaawiin. -siin). 4. As spring arrives in the woods I shall definitely walk. (inga-) 5. At the sugarbush or at the house we will eat vegetables. (-ing)

There are various Ojibwe dialects; check for correct usage in your area. The grammar patterns may help a beginner voice inanimate and animate nouns and verbs correctly, as well as create questions and negate statements. Note that the English translation will lose its natural flow as in any world language translation. This may be reproduced for classroom use only. All other uses by author's written permission. Some spellings and translations from *The Concise Dictionary of Minnesota Ojibwe* by John D. Nichols and Earl Nyholm. All inquiries can be made to **MAZINA'IGAN**, P.O. Box 9, Odanah, WI 54861 Lynn@glifwc.org.

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# TEK specialist brings fusion of language, culture, and forestry experience

Michael Waasegiizhig Price joins the GLIFWC team as traditional ecological knowledge (TEK) specialist. Price is Anishinaabe and an enrolled member of Wikwemikong First Nations.

For the last 20 years, he has lived and worked in Anishinaabe Akiing in northern Minnesota. Before coming to GLIFWC in January, Price served as forest ecology instructor at Leech Lake Tribal College (LLTC) in Cass Lake, Minn.

During his tenure at LLTC, he worked to integrate Anishinaabe language and traditions into forestry curriculum to make the science more culturally relevant. In December 2019, Price took two LLTC forest ecology students for an intensive 2-week research expedition to Costa Rica to study canopy gaps in tropical forests; this project was funded by Salish Kootenai College and the National Science Foundation.

In 2012, he received his Master of Science in Forestry from the University of Montana—Missoula and in 2018, Price received a Certificate of Ojibwe Language Instruction at Bemidji State University.

Price, however, said his most valuable education has come from the teachings of Anishinaabe elders including Tobasanokwut Kinew-iban, Basil Johnston-iban, Leroy Littlebear (Blackfoot), Henrietta Mann (Cheyenne), Wallace Humphrey, Nancy Kingbird, Robert “Bob” Jourdain and Bob Shimek, as well as other traditional knowledge-keepers who have kept and preserved indigenous ways of life.



# Ojibwemowin story developer focused on young learners

From Rainy River country to points south into the United States, Misty Rose Peterson, or Gizhibaaawaanakwadook, has lived in Ojibwe communities as a child and young adult. Possessing dual citizenship in the US and Canada, Peterson is a Fond du Lac Band member and so-called status Indian, enrolled in the Ontario First Nation, Couchiching.

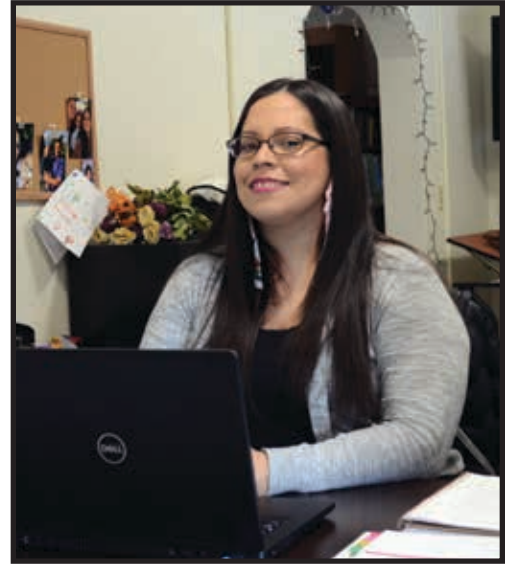
With widespread connections to language through extended families, plus formal study, Peterson developed a knack for sharing Ojibwemowin, especially with youngsters. She brings that skill to GLIFWC’s latest language project, which aims to infuse Ojibwemowin into the developing minds of preschoolers.

On the Administration for Native Americans-funded project entitled “Maajii-Ojibwemowag (They Begin to Speak Ojibwe),” Peterson has begun working with elders to collect and refine stories for a young audience. She’s part of a project team that is creating content for both printed materials and an interactive website for young language learners.

From Fond du Lac Tribal & Community College, Peterson earned an Anishinaabe Language Certificate and an Associate of Science in Elementary Education. She also gained experience working as a teaching assistant at Fond du Lac Reservation Head Start, instructing K12 at Minisinaakwaang Leadership Academy and with elementary students at FdL Ojibwe School.

Peterson currently lives in Odanah, Wisconsin with her daughter. She travels extensively to participate in pow wows, round dances, and big drum.

—CO Rasmussen



# Jumping worms arrive continued

(continued from page 9)

While European earthworms have been tough enough on northern forests, things may be about to get even worse. In recent decades a second wave of earthworms has arrived, this time from eastern Asia. Three species in particular—*Amyntas agrestis*, *Amyntas tokioensis*, and *Metaphire hilgendorfi*—are spreading rapidly in North America.

At first glance these Asian earthworms look similar to the European “dew-worms” (*Lumbricus rubellus*) and the well-known nightcrawler (*L. terrestris*). But they behave quite differently. Instead of stretching and contracting their bodies as they crawl, they move with an S-shaped motion similar to snakes. When alarmed they thrash around and even jump into the air. They can even shed their tails to fool predators.

Instead of making tunnels like nightcrawlers and most other European earthworms, they live in the leaf litter (until they consume it) and in the top inch or so of soil. Their odd behavior gets people’s attention, leading to colorful nicknames like “crazy worms,” “jumping worms,” “Alabama jumpers,” “Georgia jumpers,” and “snake worms.”



**Asian jumping worm.** Body gray to brown, firm, moist, and nearly smooth. Band (clitellum) milky-white to light gray, closer to the head, flush with rest of the body, and completely encircling it. Adults up to 6 inches long. (Tom Potterfield, Flickr photo)

**European nightcrawler.** Dark reddish head grading to light pink tail. Slimy and soft, with flattened tail. Clitellum pink to reddish, farther from head, slightly raised above rest of the body and only partly encircling it. Adults 6-8 inches long. (Joseph Berger, Bugwood.org photo)

Asian earthworms were first found in Wisconsin in 2013 at the UW-Madison Arboretum. As awareness of these “jumping worms” spread, more sites were found. Today jumping worm infestations have been found in nearly all the counties in the southern half of the state, as well as Marinette County and four western Wisconsin counties. Jumping worms have colonized parts of Lower Michigan and Minnesota as well.

Jumping worms have an annual life cycle. The eggs are encased in a capsule with a tough outer covering, called a “cocoon.” These eggs begin hatching when the soil warms up, usually in May. The young worms grow rapidly and reach adulthood in about 60 days. These worms start laying the second generation of eggs in July. By midsummer jumping worms can reach densities of over 100 adult worms per square yard.

The second generation matures and lays another batch of eggs in early fall. With the onset of freezing temperatures all the worms die, leaving only the egg-filled cocoons to overwinter and start the cycle all over again.

Because they’ve arrived so recently, the long-term effects of jumping worms on northern forests aren’t well understood. But there is growing evidence that they may be even more destructive than European earthworms.

They consume nearly all the soil organic matter, and transform the “topsoil” into a granular soil similar to used coffee grounds. This granular soil doesn’t hold moisture well, and tends to dry out.

Plants have trouble extracting nutrients and water, leading to wilting and nutrient deficiencies. The bare ground these earthworms leave behind is perfect for worm-adapted invasive plants like garlic mustard, hemp nettle, and common buckthorn.



**Granular soil produced by jumping worms.** (Josef Gorres, University of Vermont photo)

## Help prevent the spread of jumping worms

Jumping worms typically find their way to people’s yards in municipal compost, mulch or “topsoil” from somewhere else. The cocoons can easily be carried with mud on boots, gardening tools, and vehicles and heavy equipment. Potted plants are common vectors for these earthworms.

For more on the jumping worm invasion, including tips on keeping them from spreading to your part of the northwoods, see:

- <https://dnr.wi.gov/topic/invasives/fact/jumpingworm/index.html>
- [www.dnr.state.mn.us/invasives/terrestrialanimals/jumping-worm/index.html](http://www.dnr.state.mn.us/invasives/terrestrialanimals/jumping-worm/index.html)
- [www.theatlantic.com/science/archive/2020/01/jumping-worms-are-taking-over-north-american-forests/605257/](http://www.theatlantic.com/science/archive/2020/01/jumping-worms-are-taking-over-north-american-forests/605257/)

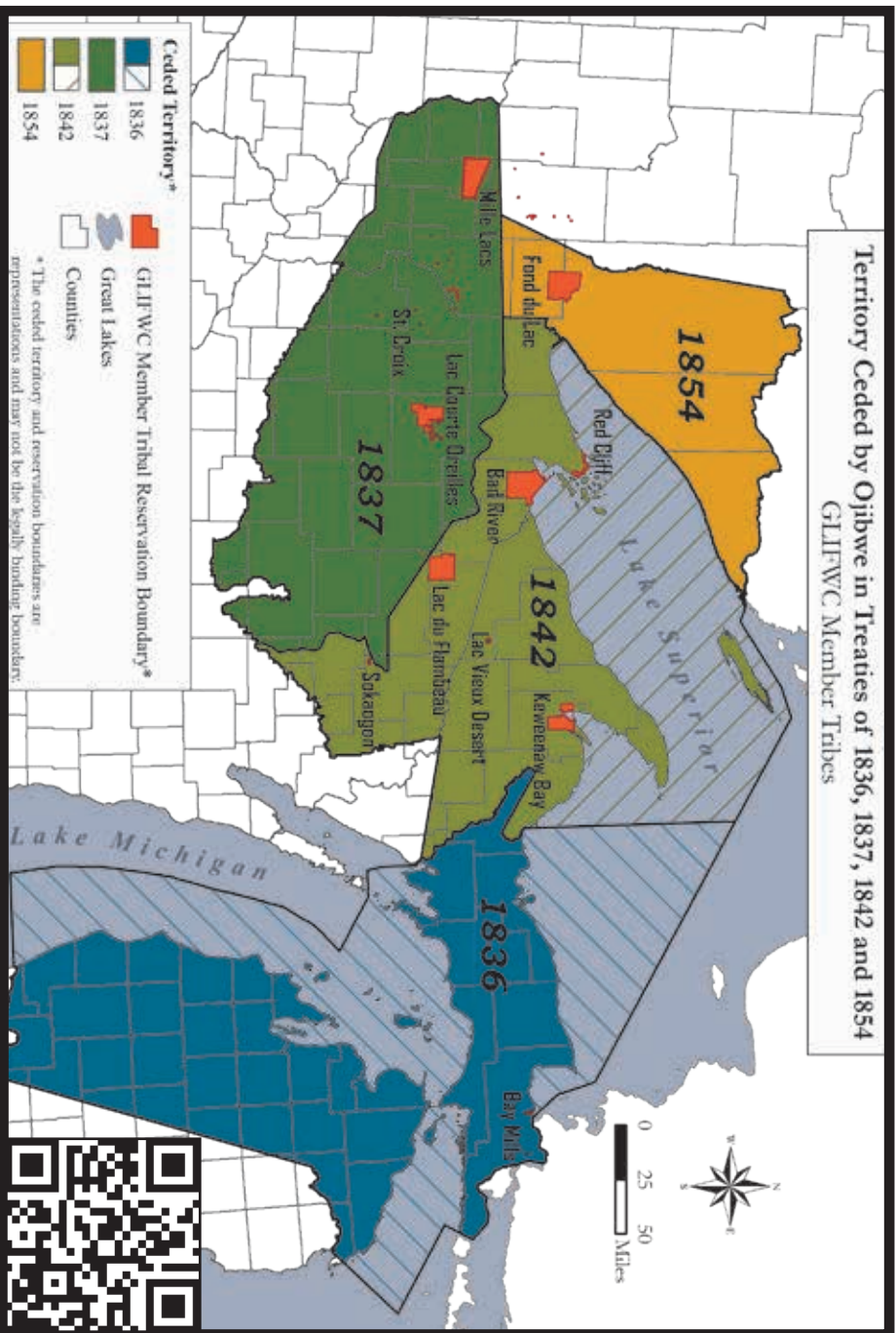


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## Ojichidaa Storytellers in the education scene

GLIFWC, in collaboration with Wisconsin Department of Public Instruction and Wisconsin Historical Society, recently released a series of lesson plans that accompany the treaty rights resources that have been circulating the internet. Each publication contains lesson plans, enduring understandings, essential questions, vocabulary words, and extension activities.

The six videos center around the treaty rights controversy that erupted as a result of treaty reaffirmation following key court decisions. The following videos are on the GLIFWC resources link or on YouTube:



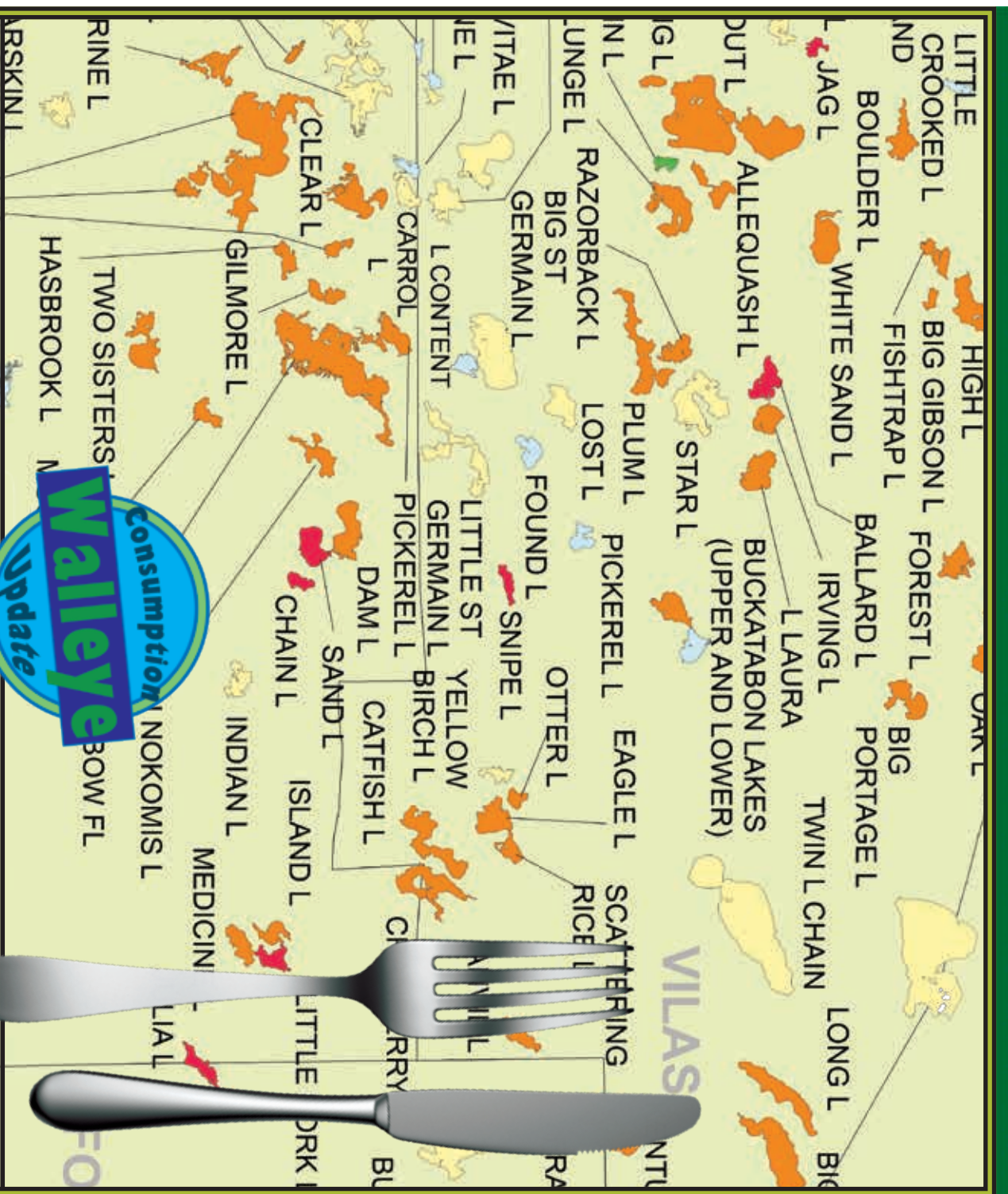
Crossing the Line: Tribble Brothers, Every Step: A Healing Circle, Gathering the Pieces: The Jondreau Decision, Lifting the Nets: Gunnoe Decision, Milkwendagoziwag They are Remembered: Sandy Lake, Place of the Pike: Ginozhkekanning.

Visit the following links on the GLIFWC webpage or the Wisconsin First Nations webpage for free access to the educational materials.

[http://glifwc.org/publications/pdf/whs\\_glifw\\_classroom\\_resource.pdf](http://glifwc.org/publications/pdf/whs_glifw_classroom_resource.pdf)  
<https://wisconsinfirstnations.org/ogichidaa-storytellers/> —B. Jennings

# Mazina'igam

A Chronicle of the Lake Superior Ojibwe



## ZIGWAN 2020

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