Mazina'igan

A Chronicle of the Lake Superior Ojibwe

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Solid spring fishing season

Restocking household freezers, community nutrition programs

Lynn Carrick, BMIC, with a 52-lb lake sturgeon from Black Lake Michigan. (BMIC photo)

By Charlie Otto Rasmussen
Editor

In the lowlight of early evening, a rolling cacophony of woodland frog song pressed against the cars and trucks zooming past lakeshore wetlands of the Ojibwe Ceded Territory. As they have for a millennia, spring peepers beckoned to Anishinaabe harvesters to begin the open water fishing season. And while the call went out a bit later than expected in 2023, the promise of fish in the lakes and rivers held true.

The southwestern reaches of the Ceded Territory typically lead off the spearing season in the lake country that occupies the intersection of Wisconsin-Minnesota border. But it was the rocky waters of Upper Michigan's Rapid River that opened the slow-to-develop walleye spearing season on April 12. Fitted in waterproof chest waders, Bay Mills Indian Community fishermen plucked the first walleyes of the season from the Little Bay du Noc tributary that empties the upper peninsula interior into Lake Michigan. Spearing poles doubled as walking sticks for Ojibwe fishers as they navigated boulders, cobble, and fast moving ice-water.

By early May, BMIC citizens were wrapping up their harvest, taking home a total of 107 ogaawag, said Justin Carrick, Bay Mills Conservation Dept. All fish were documented, and the season's creel split roughly even between males and females. Brothers Lynn and Tylor Carrick capped the inland spearing season on a trip to Lower Michigan's Black Lake, home to a hardy lake sturgeon population. Over consecutive nights May 5 & 6, they filled the tribe's two name' tags with 52-inch and 62.5-inch fish. A limited number of permits are shared by 1836 Treaty tribes and state-licensed residents each year.

About the time Yooper river fishing was heating up, smaller lakes were shedding ice in Wisconsin and adjacent Minnesota waters. Fourteen spearfishers from Bad River and St. Croix bands trekked south to lakes that opened in west-central Wisconsin, kicking off the state's inland season April 22. Many more harvesters followed in the coming weeks as wind, rain, and occasional warm sunny days burned off the lake **(see Spring ogaa harvest, page 12)**

Ikwewag sew strong bonds in Red Cliff

By Jenny Van Sickle
GLIFWC Outreach Specialist

Project LAUNCH (Linking Actions for Unmet Needs in Children's Health), a nationwide initiative, is helping create new Circle of Healing programming at the Red Cliff reservation. The project features family navigators focused on holistic mental health and cultural well-being of families and their children through intricate prevention and treatment strategies.

Red Cliff was just one of three tribal communities in the United States to receive the five-year grant funding from Substance Abuse & Mental Health Services Administration (SAMHSA) in 2019. The award helped initiate LAUNCH programming at the local Noojimo'iwewin (We Heal) Center, just up the road from the Legendary Waters Event Center.

Circle of Healing Administrative Assistant, Shaleena Montano, who is expecting her second child, joined various staff members and participants in describing the importance of preserving cultural knowledge through learning how to plan, design, and sew a ribbon skirt.

"The skirt is a bonus result of our time sewing together," said Montano, a Red Cliff tribal member. She emphasized how important spending time with aunties and female mentors can be for young girls in the community. "When we get together, there's so much laughter and good energy being captured right into their skirts and memories."

Shaleena Montano, Project LAUNCH Administrative Assistant leans in to assist Lizzie Gordon, 14, with a ribbon skirt on the sewing machine. (J. Van Sickle photo)

The Circle of Healing program also features a home visiting component to empower new mothers/families while nurturing cultural connectedness. Amaris Andrew-DePerry, a home visitor and doula, organized the Saturday morning event. She explained how difficult it can be for young people and adults to ask for teachings and cultural support, especially during difficult times, when they might need it most.

"Our work is warm, where women and girls can talk openly about resources and connectedness, it makes our families stronger from the inside out," said Andrew-DePerry. **(see Circle of Healing, page 12)**

Essential Ojibwemowin

ikwewag—women

COMING SOON!

Maajii-Ojibwemowag
(They begin to speak Ojibwe)

Giiwedinong: Stories of the Flyers

Tribal storytellers Niiyogiizhig (Wesley Ballinger) and Saagijiwegaabowiik (Jennifer Ballinger) **share tales** featuring opichi (robin), gijigijigaaneshiinh (chickadee), and aginjibagwesi (goldfinch).

Each book uses simple Ojibwe words and phrases sharing lessons and cultural elements of flyers. These Ojibwe language resources will be distributed to tribal Head Start, Early Head Start, and other **early childhood programs** within GLIFWC's member tribes.

Be sure to check GLIFWC's *Facebook* page for updates!

For more information contact ANA Language Project Director, Melissa Maund Rasmussen at *melras@glifwc.org*.

Anishinaabe insights

Invasive species: casualties of colonization

By Michael Waasegiizhig Price
GLIFWC TEK Specialist

Purple loosestrife *(Lythrum salicaria)* is a beautiful wetland plant that has long been considered an invasive species. The spike flowers vary from bright pink to deep purple that can be seen from far away. This plant can be found in wetlands, roadside ditches, croplands, and along lakeshores in the Ceded Territories.

Originating from Europe and Asia, purple loosestrife was first introduced in the early 1800s by European settlers for cultivated flower gardens. Beekeepers also introduced this plant for nectar production because of the abundance of flowers on one spike.

Over time, purple loosestrife began colonizing wild rice beds in northern Wisconsin. Soon, it was seen as an "invader" because it grows in dense, homogenous stands choking out native vegetation. Today, it is a well known invasive species, because of the supposed threat to do harm to manoomin (wild rice) and other native species.

Purple loosestrife

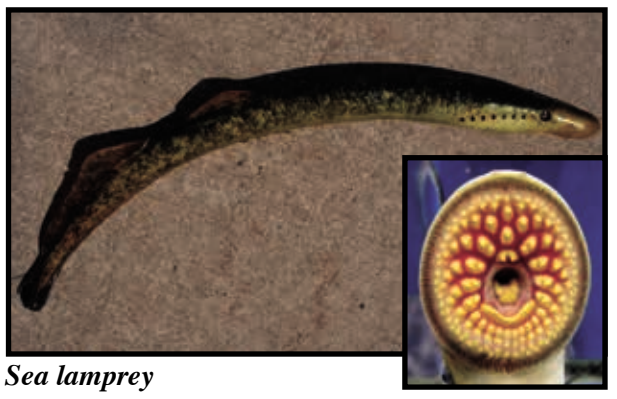
The term "invasive" invokes fear and uncertainty. Invasive species is synonymous with "trespasser" or "intruder." This term is based on the idea that a newly arriving invader has the potential to do irreparable harm to a crop or ecosystem, and that our lives will never be the same again if we allow this invader to spread.

Zebra mussels

Zebra mussels, who originated from the Caspian and Baltic Seas in Eastern Europe, arrived in North America in the ballast water of cargo ships crossing the Atlantic.

Zebra Mussels attach to solid objects and eat phytoplankton in the murky inland waters, thus stealing food from young maturing fish. The presence of zebra mussels in Lake Michigan and Lake Huron is partly responsible for the substantial decline in lake whitefish.

Sea lamprey, originating from the Atlantic Ocean, is known as an aggressive parasitic species who attaches to the bodies of fish and consumes their blood and bodily fluids until the fish dies. Whitefish and lake trout, both culturally and economically important species to Anishinaabe people, declined to the point that the fisheries were closed in Lake Superior until the development of lethal control efforts, which resulted in a 90% reduction of sea lamprey populations.



Sea lamprey

Garlic mustard is considered an invasive species that chokes out ephemeral floral species, such as bloodroot, trillium, and hepatica, in forested areas and floodplains. Forest floors can be inundated with pure stands of garlic mustard thus decreasing biodiversity of forest ecosystems. One effective way of controlling garlic mustard is by pulling up the plant by the roots in early spring just before seeding, which is GLIFWC's preferred management method over using herbicides.

Many species of plants, fish, birds, and animals are victims of human colonization and globalization. These species were introduced, either carelessly or intentionally, by the actions of humans for economic or aesthetic reasons, or by sheer accident.

Many of these species, now seen as refugees in a new environment, create an imbalance within an ecosystem community by diminishing local bio-diversity or negatively impacting resources important to humans. Scientists and resource manag-

(see Invasive species, page 18)

Ojibwe leader, educator joins Wis Natural Resources Board

Madison, Wis.—Wisconsin Governor Tony Evers announced three appointments to the Natural Resources Board, including Bad River Band's Dylan Bizhikiins Jennings. The May 5 selection is significant, bringing an indigenous voice to the state institution which sets policy for the Department of Natural Resources on concerns ranging from water quality to hunting seasons.

"Our [Native] communities have longstanding environmental knowledge that I believe can help contribute to some of the environmental issues we are encountering today," Jennings said.

Jennings joins a Board emerging from a recent period of turmoil when state politics factored heavily into how the committee functioned. As for his role on the Board, Jennings said his priority is the health of the resources.

"As someone that spends a lot of time hunting, fishing and harvesting with my family, I know how invaluable these beings, these resources are to all of our communities," he said. "I'll do my very best to help contribute and most importantly to listen to all tribal and non-tribal constituents."

Currently a Northland College instructor, Jennings brings experience serving as an elected leader of the Bad River Band of Lake Superior Chippewa; from an internship at GLIFWC, he rose to head the Public Information Office exposing him to landscape-level natural resources issues across northern Wisconsin as well as Michigan and Minnesota.

Gov. Evers also added longtime conservationist Jim VandenBrook to the Board and reappointed Paul Buhr, a dairy farmer from Wisconsin's Driftless Area. Board members are nominated by the governor for six year terms. The terms are staggered to allow the Board's composition to include appointments from more than one governor. While the state Senate is charged with confirming appointments, new Board members typically begin serving right away. **—CO Rasmussen**

A four-seasons harvester, Bad River Band's Dylan Jennings brings everyday field experience and cultural knowledge to the Natural Resource Board following his appointment by Wis. Governor Tony Evers in May.

Winnie Willis, 6, holds up her first birch bark (wiigwaas) basket at a class taught by Laura Winter and Phil Savage. Winter, a 2021 Maada'ookiing (the distribution) recipient works at the Misaabekong Ojibwe Immersion program at Lowell Elementary in Duluth, Minnesota. Savage is the 13 Moons coordinator.

13 Moons is a collaboration of Fond du Lac (FdL) Tribal College Extension Program, FdL Tribal & Community College, FdL Resource Management, and the USDA-National Institute of Food and Agriculture.

For more information on their work please contact 218-878-7123, *Facebook* or *thirteenmoons@fdlrez.com*.

Ceded Territory news briefs

Mining moratorium a water quality safeguard in 1854 Ceded Territory

A sprawling wilderness of interconnected lakes and rivers has received environmental protections from the United States government. The Department of the Interior announced last winter that 225,000-acres of federal land near Minnesota's Boundary Waters is under a 20-year mining moratorium, restricting access to a large deposit of copper, nickel, and precious metals.

"This action will help protect the Rainy River watershed, including the Boundary Waters Canoe Area Wilderness and the 1854 Ceded Territory of the Chippewa Bands, from the potential adverse impacts of new mineral and geothermal exploration and development," said the US Interior Department in a statement.

The US Forest Service and Bureau of Land Management invested more than a year studying potential environmental and cultural impacts of the proposed Twin Metals mine. Mining copper, nickel and associated minerals carries significant risks to watersheds and water quality. **—CO Rasmussen**

Deer farm rules address CWD in Minnesota

St. Paul, Min.—In a move to reign in the always-fatal cervid ailment chronic wasting disease (CWD), Minnesota state lawmakers have agreed on provisions to tighten controls on the captive deer industry. Among the measures announced in May, no new deer farms would be permitted in Minnesota—a state that already contains more than 200 facilities that keep deer concentrated within fenced enclosures where diseases are more easily spread.

GLIFWC tribal representatives have long called for restrictions on—or the outright elimination of—farms where white-tailed deer, elk, and other four-leggeds are bred to produce large antlers, then killed in so-called "canned hunts" for prices that range from $5,000-$25,000. Captive deer facilities are sprinkled across the Ceded Territory, through Minnesota, Wisconsin and Michigan.

Wildlife researchers identify deer farms as a leading source for the spread of CWD into wild waawaashkeshi herds—both through captive deer that escape their enclosures or nose-to-nose contact along farm fence lines. While the Minnesota legislation does not call for double fencing to prevent physical contact between animals, it would allow authorities to require fence upgrades to better prevent escapes. **—CO Rasmussen**

Annual State of the Tribes address by Sokaogon Chippewa Chairman

Chairman VanZile takes a moment to recognize all 12 tribal nations from across Wisconsin, esteemed guests, elected leaders and state supreme court justices.

Madison, Wis.—Mole Lake Band's Chairman, Robert VanZile, Jr., delivered the State of the Tribes address March 14, in Madison, Wisconsin. The annual event, organized by Great Lakes Inter-Tribal Council, fills the state capitol's rotunda with tribal leaders, members of the assembly, state senate, executive branch appointees, and Governor Tony Evers.

It's an opportunity for elected state leaders to hear a unified, sovereign voice that expresses a clear vision on proposed initiatives and legislative needs. VanZile's speech was preceded by Lac du Flambeau's Wayne Valliere who offered an opening prayer.

"We value our traditions and culture, and we love our country," said Chairman VanZile, who recognized Native American membership in the armed forces. VanZile also emphasized the possibilities and responsibilities of state and tribal partnerships in the modern era.

VanZile encouraged the legislature to support a list of recommendations being considered in the Special Committee on State-Tribal Relations, as well as addressing healthcare, PFAS, mental health, sovereignty, gaming, Act 31, mascots, and Missing & Murdered Indigenous Women & Relatives.

For more information on the recommendations to the Joint Legislative Council, please visit: *docs.legis.wisconsin.gov/misc/lc/study/2022/2406*

—J. Van Sickle

Hare snares lead to prized catch

By Jenny Van Sickle, GLIFWC Outreach Specialist

Odanah, Wis.—Mashkiiziibii Bad River Youth Services hosted a three-day waabooz (snowshoe hare) workshop focused on education, health, and the traditional practice of snaring.

Bad River hosts a variety of youth programing which includes the Healthy Lifestyles program that works to prevent or delay the onset of diabetes in tribal youth.

"It's important that we're creating opportunities that encourage physical activities while being outdoors to get kids off their screens for a bit," said Project Manager, Nate Ante.

Tanner Derusha, 15, attended all three days of the waabooz workshop which included lessons on how to tie a snare with picture wire. On the third day, his hard work paid off. "Out of the 11 snares we set, I couldn't believe it when I saw it in the very last one. I was so relieved," said Derusha.
(see Hare snares, page 6)

Tanner Derusha kneels next to a successful snare. (Bad River Youth Services photo)

Climate change in plain sight

GLIFWC's 2023 Climate Change Vulnerability Assessment identifies the snowshoe hare as one of the most vulnerable animal beings. "Part of what makes the snowshoe hare highly threatened by climate change is their phenotypic mismatch," explained GLIFWC's Biological Services Director, Jon Gilbert. Shifting snowfall (falling later and staying later) from its more traditional months leaves hares to starkly stand out and particularly vulnerable to rampant predation.

Snowshoes, who are largely solitary creatures, differ from cottontail rabbits who maintain their darker coats year-round and tend to stay burrowed in underground tunnels during the cold months and live in groups. Snowshoe hares do have the capability to shift their seasonal molting, thanks to its phenotypic plasticity, but whether waabooz can adapt fast enough is the question.

Temperature extremes vex Upper Michigan sugarbush

By Charlie Otto Rasmussen
Editor

L'Anse, Mich.—Sometimes things just work out. You give it your best try, and viola!—aspirations met, you're all set. Then you have something like the 2023 sugarbush season at Dynamite Hill Farm—home to a pair of Ojibwe producers specializing in maple syrup, maple sugar, and other local foods.

"It was our largest effort yet for the smallest return," said Jerry Jondreau, who runs the maple operation with his partner Katy Bresette. "We're grateful for what we got, but it was a tough year by us."

With their young family in tow, Jondreau and Bresette began installing the first of 750 taps into Gichigami south shore maple trees in March. Interconnected with tubing, spouts, and fittings, the Dynamite Hill woods eventually sported 200 more taps than the previous season. Jondreau said they looked forward to a potentially big production year. But the weeks ahead delivered a series of stops-and-starts in the flow of maple sap. Despite the increased effort, their yield dropped to just one-third of 2022's volume.

"Temps went from way too warm to way too cold—from the teens to 80-degrees—for the sap the run," Jondreau said. "Then there was a one three-day stretch when it ran really well, yet never reached freezing at night. Never seen sap flow like that."

The conventional recipe for good sap flow—in late winter, early spring—calls for daytime temperatures above 32 degrees F, followed by freezing temps at night. Pressure within the tree gets the sap moving, forcing it out through the tiny holes maple producers create with a drill. Collected en masse, gallons of sap are boiled down to make maple syrup, candy, and sugar.

Jondreau suspects an atmospheric clash with this winter's polar vortex reported by climate scientists influenced the wild temperature swings and odd sugarbush season. As an acute observer of weather for decades, he said this past spring is not an atypical event.

"This is a warning. This is what normal is becoming if we do not address climate change," Jondreau said. "All food producers should be concerned about the direction we're heading."

Iskigamizigan (sugar bush) season, clockwise: Lac Vieux Desert youth tapped maple trees west of Watersmeet, Mich; a bulging bag of maple sap ready to be collected for the evaporator; it takes lots of stirring over steady heat to make maple candy (J. Higgins, CO Rasmussen photos)

Going small

Jondreau said there are sugarbush success stories for large producers in 2023, depending on their position in the upper Great Lakes region. Small home-use operations tended to fair well across the landscape provided they had their trees tapped in time.

Sixty miles southwest of Dynamite Hill, Lac Vieux Desert Band's Tribal Historic Preservation Office hosted a demonstration sugarbush for tribal youth. With assistance from GLIFWC Warden Jason Higgins, Tribal Historic Preservation Officer Richard "TC" Siewertsen worked with local students to tap 18 maple trees.

Following an asemaa ceremony among the maple trees west of Watersmeet, native kids experienced the full production cycle from tapping and collecting to evaporating sap down to syrup, candy, and sugar. Higgins said their maple sap haul was about right for educational production with some left over to send home to families. The sugarbush activities were part of Lac Vieux Desert Boys & Girls Club programming that more recently included a walleye spearfishing trip to Lake Gogebic after ice-out.

If the sugarbush season did provide one common thread for Michigan producers large and small, it included the fact that most everyone needed snowshoes to access their trees. Snowfall ranged from 150-inches to 250-inches in the Michigan 1842 Ceded Territory.

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(Pronounced Muh zin ah' ĭgun)

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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 *glifwc.org* and our *Facebook* page.

On the cover

Wetland habitats populated by purple loosestrife and other non-local plants are common throughout the range of the zhashagi (blue heron). Ojibwe elders, traditional theorists—plus GLIFWC staff—are taking a hard look at how these "newcomer" beings fit into Ceded Territory ecosystems. Commonly known as invasive species—some may have a beneficial role to play in Ojibwe Country and beyond. See pp 2, 6, 8, and 13 for more discussion from *Mazina'igan* writers. (©Gordon L. Wolford photo)

Walleyes make a quiet comeback on Lake Mille Lacs

By Javier Serna
For Mazina'igan

It took years of conservative harvests and quotas, but the Lake Mille Lacs ogaa (walleye) fishery appears to be nearly recovered, a viewpoint shared by both tribal and state fisheries biologists.

The 132,500-acre Minnesota lake on the western edge of the 1837 Ceded Territory had gone from a reliable producer of walleye harvests for Ojibwe and state-licensed fishers to a reclamation project for interagency managers for much of the past decade.

Aaron Shultz, inland fisheries biologist with GLIFWC, said the time has finally come for a more positive outlook of the lake's ogaa fishery. "I think when [people] hear 'Mille Lacs,' they think the fishery is not doing well because they get such negative press coverage," he said.

Minnesota Department of Natural Resources and Ojibwe treaty tribes agreed to drastically cut back harvest a decade ago, concerned by a number of factors, including changing ecological conditions and fewer young walleyes surviving to adulthood. (Figure 1)

"We realized that recruitment was not quite what it used to be," he said. "There weren't enough young fish to replace the adults that were coming out of the system. The ecosystem was changing. We got spiny water fleas and zebra mussels. Luckily, we didn't lose natural recruitment. We can't say the same for many lakes in Wisconsin."

It was only about eight years ago when fisheries' biologists observed some of the lowest abundance ever recorded, Shultz said. (Figure 2)

Mille Lacs' fisheries managers developed tools over the last decade to forecast where the fishery may be going in the future, allowing both agencies a more informed approach for planning ahead. They included benchmarks based on where the fishery was at a given time and where managers wanted to take it.

"It's been paying off. There's been a slow, gradual recovery in the adult population," Shultz said, noting a near doubling of pounds of adult ogaa captured in gill nets from what was seen at the low point of 2015-2016. "If you allow the fishery to recover, you are eventually going to reap some rewards.

Since the arrival of aquatic invasive species, the Lake Mille Lacs food web has evolved, decreasing zooplankton abundance and increasing water quality. Both may have negatively impacted the lake's walleye population. (COR photo)

Measuring recovery: high water quality, low walleye productivity

With the ongoing walleye recovery, one reality has emerged: backed up by research and fishery science is the idea that the lake's productivity—and the amount of fish it could support—may have been artificially inflated by faulty septic systems around the lake. Shultz noted core samples taken by Minnesota DNR that suggest changes of phosphorus levels in the lake over time. Shultz said he and Tom Heinrich, Minnesota DNR's Lake Mille Lacs area fisheries manager reviewed those numbers.

"From what we could tell, they are returning to levels consistent with pre-industrialization," Shultz said. "It may mean that in the 1900s, phosphorus levels were artificially inflated due to industrial activities." Aside from faulty septic fields, fertilizers from farms and lawns may have increased productivity of the lake, and by extension, the abundance of fish, including ogaa.

Heinrich, asked about the lake's current status, put some emphasis on what may be a different lake reality. "When people talk about the lake being recovered, if they think it will recover to the way it was in the 1970s, it is not," Heinrich said.

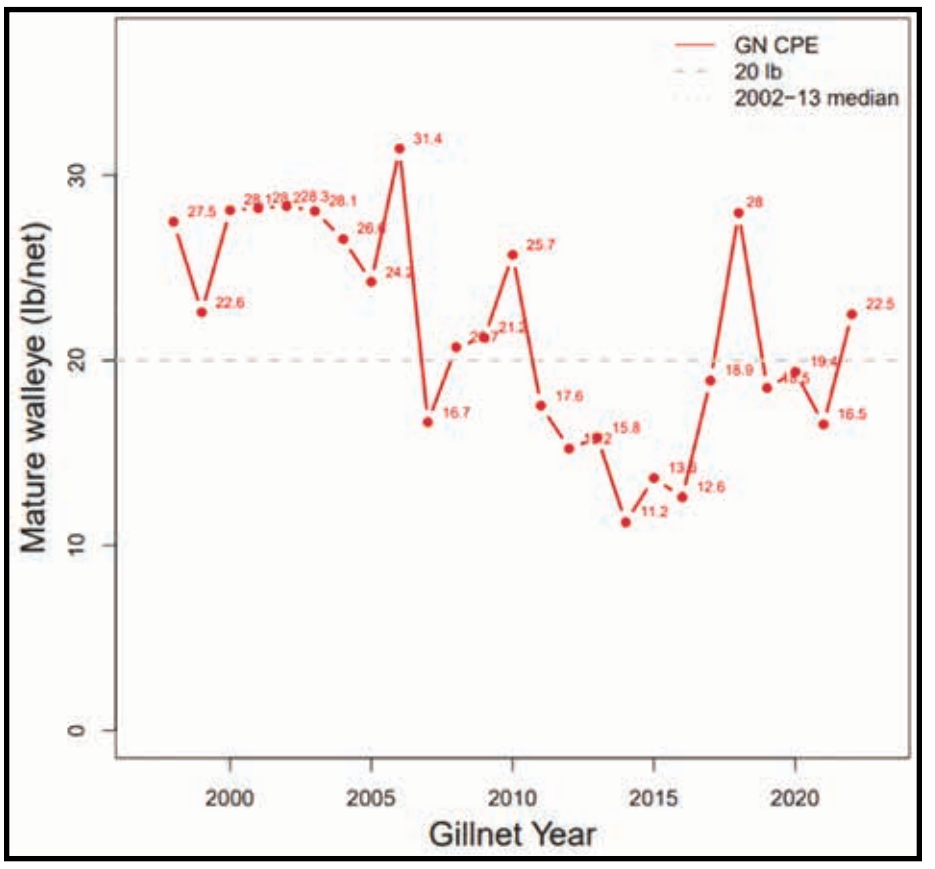


Figure 2. Red line indicates the mature ogaa (walleye) lbs/net captured in 52 gill nets from 1999 to 2022 in Mille Lacs Lake. Grey dashed line indicates the goal set by the Mn Fisheries Technical Committee, an average of 20 pounds of mature ogaa per net lift. Note 28 pounds per net lift observed in 2018 was likely an outlier.

Lower numbers of invasive zebra mussels coupled with increased zooplankton has improved yellow perch numbers on LakeMille Lacs over the last few years. "That shows the system may be coming into balance right now," said Tom Heinrich, MDNR.

Now in the 2020s, Mille Lacs Lake enjoys outstanding water quality. But with it comes a tradeoff.

"Great water quality doesn't produce a lot of fish, Heinrich said. "Overall, the system is pretty healthy now. The story is bigger than walleyes."

One sign that walleye numbers are doing better and, perhaps, approaching recovery status, is comparing the amount of walleyes pulled out of the lake during Minnesota DNR's fall gill netting survey. The goal is 20 pounds of adult walleyes per net lift, a goal that has been reached the last few years. It was developed based on historical averages.

"We are on the border for being fully recovered," Shultz said. "That gives me hope that we have been able to pull 20 pounds per lift for several years now."

Shultz said while state and tribal biologists may be on the same page on the walleye fisheries' current state, there may still be a gap on how many fish may be harvested, state biologists still being more liberal. "But I think we are all in the same ballpark for what is sustainable for that system," he said. "I don't think we are that far apart."

Heinrich concurred.

"I agree that we are not that far apart," he said. "We can have intelligent conversations and work on issues. The disagreements come in with the tribes being more conservative than the state. The state is more willing to push it more than the tribes are."

Things have really come a long way since where they were when the harvest was cut dramatically a decade ago. Prior to that, combined safe harvest levels could hit 400,000 pounds of walleyes.

"The way we are approaching this now, probably the right way, I think we could ramp up harvest from one year to the next," Heinrich said, noting that he doesn't think safe harvest will ever be able to ramp up to 400,000 pounds again. But, 200,000 pounds might be doable, in his mind, and that the most recent safe harvest level was about 175,000 pounds.

The 2013 safe harvest level was 250,000 pounds. A year later it was pared down to 60,000 pounds.

"It bottomed out at 40,000 pounds in 2015," Heinrich said. He agreed there is a more positive story to be told about the lake, after a decade of lower harvests. "When it was producing a heck of a lot of fish, it was artificially high," he said, noting that clearer water via zebra mussels has translated to lower productivity.

For state and tribal managers, the health of the Lake Mille Lacs ecosystem is ultimately the top priority. And as collaborative research helps biologists continue to improve their understanding of the big lake, indigenous and sport fishers can look forward to a quality walleye fishery.

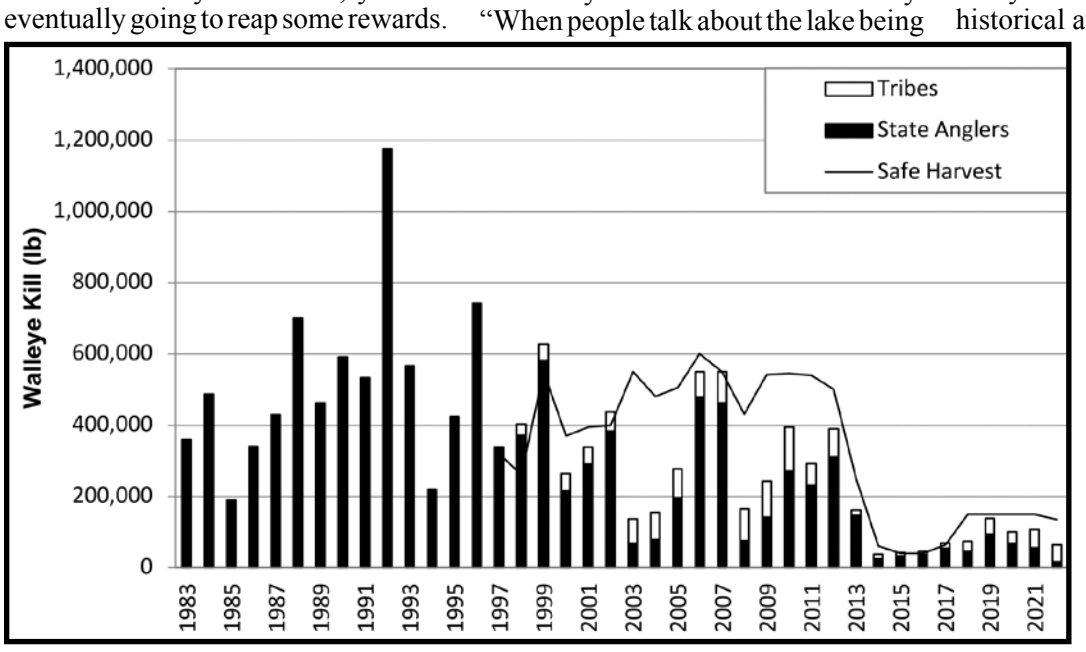


Figure 1. History of ogaa (walleye) harvest by tribes and state anglers from 1983 to 2022 in Mille Lacs Lake, Minnesota. Safe harvest limits are indicated by the solid line.

Not another one!

Non-local beetle spreads into the Ceded Territories

By Steve Garske, GLIFWC Invasive Species Coordinator

As many of you know the emerald ash borer is established and spreading across the northwoods, though (good news) more slowly than originally expected. This is probably due to healthy populations of woodpeckers and other predators in the region, combined with a colder climate than further south. But non-local beings just keep coming, often with human assistance.

While the emerald ash borer has been eating its way through the region's ash trees, another non-local being has been quietly spreading into the northwoods, munching highbush cranberries and other viburnum shrub species as it goes. The viburnum leaf beetle (scientific name *Pyrrhalta viburni*, or VLB for short) is an inconspicuous little brown insect that's barely a quarter of an inch (5-6 mm) long.

The VLB was first reported in North America from Nova Scotia, Canada in 1924, though breeding populations weren't reported until the 1970s. The first US report was in 1974 from Maine. Since then, the VLB has spread across the northeastern US and adjacent Canada, reaching southern lower Michigan by 2003 and southern Wisconsin by 2009, where it's now well-established.

In 2019, the VLB was reported from Hurley, Wisconsin, on Michigan's western border. Then last summer this writer was collecting leaves from a large European highbush cranberry (*Viburnum opulus*) population just east of Lake Gogebic in western Upper Michigan, for a University of Minnesota research project. The leaves of nearly all the highbush cranberry shrubs were riddled with small holes, revealing another VLB infestation.

With highly destructive non-local forest beings such as the emerald ash borer and Asian jumping worms spreading across the region, the VLB has moved into the Ceded Territory mostly unnoticed. But it can do a lot of damage to highbush cranberries and other viburnums. The small, caterpillar-like larva overwinter as eggs and usually hatch out in early to mid-May, when the weather starts to warm up. They chew lots of small holes in the leaves, sometimes damaging them so badly that only the veins are left. Around mid-June they crawl down to the ground and pupate just below the soil surface, emerging as adults in late June or early July.

Viburnum leaf beetle egg masses on a European highbush cranberry twig. (S. Garske photo)

Viburnum leaf beetle larvae feed on European highbush cranberry leaves. (Paul Weston, Bugwood.org)

The beetles spend the rest of rest of the summer eating larger, oblong holes in the remaining leaves. The females chew pits in the twigs and lay several eggs in each pit, which they cover with bits of chewed wood, held together with a glue-like substance. Each female can produce around 500 eggs by the end of summer. The adults are good fliers, and often migrate to plants that haven't been infested yet.

A viburnum leaf beetle adult. (S. Garske photo)

In its native Europe, the VLB's favorite host is European highbush cranberry. (A popular horticultural form of this plant is called "snowball bush.") It also attacks a number of native viburnums, including downy arrowwood (Ojibwe *wabanwe'ak; Viburnum rafinesquianum*), southern arrowwood (*V. dentatum*), mapleleaf viburnum (*aniib; V. acerifolium*), nannyberry (*aditeminagaanwanzh; V. lentago*), and the native highbush cranberry (*aniibiminagaawashk; V. trilobum*). Damage is usually heaviest on the lower leaves, and shaded plants are usually hit more heavily than those growing in full sun. This damage weakens the plants, and individuals that are repeatedly defoliated often die within two or three years.

As it spreads across North America, the VLB has the potential to seriously impact highbush cranberries and other viburnums. In a 2017 study in Pennsylvania, a severe drop in the abundance of southern arrowwood caused by the VLB was linked to a drop in insect and spider abundance, resulting in decreased fitness of migrating birds. Besides being an important source of food for a variety of wildlife, native highbush cranberries are an important traditional food, and make a delicious jelly.

Researchers are looking into how the European highbush cranberry coexists with the VLB in its native range. They're also looking for natural enemies of the VLB that could be introduced as biocontrols. Meanwhile, VLB populations can be locally suppressed by removing twigs with VLB egg masses and destroying them.

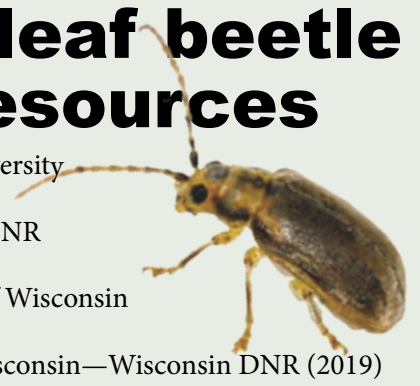
Viburnum leaf beetle online resources

Viburnum Leaf Beetle—Cornell University
⇨*hort.cornell.edu/vlb/index.html*

Viburnum Leaf Beetle—Minnesota DNR
⇨*tinyurl.com/5cxzpyvu*

Viburnum Leaf Beetle—University of Wisconsin
⇨*tinyurl.com/rbhd59p7*

Leaf beetle spreading in southern Wisconsin—Wisconsin DNR (2019)
⇨*tinyurl.com/4f4327dv*



Hare snares

(continued from page 3)

Ante stated that exercising treaty rights is a way to "honor the fight that came before us."

To set the snares, participants trekked through two feet of heavy March snow in the Pine Flats area. Ante reminded participants that snaring was a way their ancestors got fresh meat during the winter months. He added: "it's important to experience what survival might feel like and to learn how to connect with the earth during all seasons."

Nate Ante, Bad River Healthy Lifestyles manager, holds up a hand tied snowshoe hare snare near Bad River's Pine Flats. (JVS photo)

Snaring season stretches through winter from October 1-March 31st. Currently, there is no set bag limit and snowshoe hares can be hunted with rifles, handguns, bows, or crossbows year-round, said Miles Falck, GLIFWC's Wildlife Section Leader.

The Healthy Lifestyles program provides seasonal cultural activities, such as hiking, wild rice and maple syrup camps, dip netting, fishing, spearing, and ice fishing trips. Ante, a Bad River tribal member, reminds students that their tribe has a lot of knowledge to pass on and "when youth listen to traditional teachings they'll stay on the right path, plus it's fun."

Visit Mashkiiziibii-Bad River Youth Services at their new *Facebook page* or at the Annex building in Odanah, Wis.

For more information about off reservation regulations: *data.glifwc.org/regulations/small.game.php*

Nibi tops priorities for Midwest Climate Adaptation Science Center

By Rob Croll, GLIFWC Climate Change Program Coord.

Headquartered at the University of Minnesota–Twin Cities since its inception in 2021, the Midwest Climate Adaptation Science Center (MW CASC) is the newest of the nine regional CASCs and one of only three with tribal representation.

As partners in the effort to guide climate adaption strategies, GLIFWC and the College of Menominee Nation–Sustainable Development Institute (CMN-SDI) contribute to the Consortium Leadership Team, assisting with tribal engagement in CASC activities, and providing input on science research priorities in the yearly CASC project solicitation.

In addition to GLIFWC and CMN-SDI, tribes are also represented on the MW CASC Advisory Committee by staff from the Wisconsin Tribal Conservation Advisory Council (WTCAC), the 1854 Treaty Authority, Minnesota Chippewa Tribe, and Bureau of Indian Affairs.

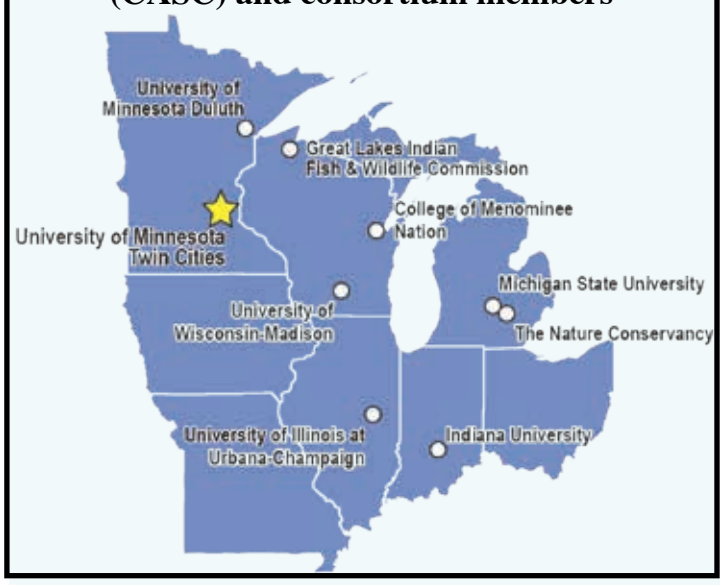
Yearly science priorities guide researchers in designing projects for CASC funding that target issues faced by natural resource and cultural resource managers from federal, state, and tribal governments with the goal of creating science that is reflective of the needs of communities and useful for resource managers and government officials.

Projects that address federal or state trust resources, species scheduled for review of protection status, economic or culturally important species, high priority conservation areas, public lands, and Tribal lands/ancestral lands/Ceded Territory are especially welcomed.

Eleven science priorities were selected for the FY24 project solicitation. While all of them are applicable in some way to tribal communities and values, the following stand out:

- Identify fish, wildlife, and ecosystems vulnerable to the impacts of climate change on water quality and quantity;
- Assess potential impacts of extreme rainfall on fish and wildlife management infrastructure, including but not limited to fish hatcheries, fish passage structures, and dams and culverts;
- Identify, design, and evaluate management interventions to maintain ecological integrity and ecosystem services under future precipitation patterns, focusing on traditional uses of birch, ash, maple, grassland communities and pollinators, and access to public lands;
- Assess the population-level effects of warming winters on cool and cold-water fish species in streams and lakes, including but not limited to impacts to fish relatives (i.e., fishes of concern for tribal communities);
- Inform the design of monitoring programs and early warning systems to detect and respond to climate change; and
- Identify barriers to and opportunities for the integration of climate adaptation in existing natural resource policies, programs, and practices.

Midwest Climate Adaptation Science Center (CASC) and consortium members



Many of the FY24 science priorities are focused on nibi (water)—quantity, quality, extreme precipitation, and early warning systems—while others focus on culturally important fish, animals, and plants, access to public lands (including access for treaty-guaranteed harvesting) and integrating climate adaptation into existing programs and policies.

The FY24 Project Solicitation was released on April 17, and Letters of Interest are due by May 31. Lead researchers must be employed by one of the consortium entities, but co-leaders can be from any institution, and tribal staff are encouraged to participate in MW CASC research.

For more information on the MW CASC, the FY24 Project Solicitation, or the Science Priorities, visit the new MW CASC Consortium website at *mwcasc.umn.edu* or email GLIFWC Climate Change Program Coordinator Rob Croll at *rcroll@glifwc.org*.

Climate migration and climate change in Michigan's Upper Peninsula

By Emma Dixon, University of Michigan

Clouds over Lake Michigan. (E. Dixon photo)

Gala Malherbe, a resident of Marquette, Michigan, for the last 23 years, summarized the reason for her long tenure in the area, saying, "We have always valued being outside and spending time outside over anything else." Marquette, with a population of over 20,000, is the largest city in the Upper Peninsula and sits on the shore of Lake Superior.

According to the Pure Michigan website, Lake Superior holds more than 10% of freshwater on the earth's surface. The future of the Upper Peninsula will be affected by climate change, but this region, which is rich in freshwater, may see an influx of residents escaping climate-induced crises elsewhere. The UN Refugee Agency estimates that 20 million people a year are already displaced due to climate change related events.

A 2022 study by researchers at the University of Vermont and the USDA found that currently, people in the US are migrating towards areas at risk of wildfire. They noted that future climate change may make those areas more and more difficult to live in. While U.S. census data shows that the population of Marquette has declined since 2010, a researcher at the University of Georgia published an article on projected internal migration due to sea-level rise in the United States, and Michigan was one of the top 15 states predicted to see an increase in population.

Despite facing environmental challenges of its own, Lake Superior retains a reputation as having incurred less damage from climate change than the other Great Lakes. Tyler Penrod, the Great Lakes Climate Corp Program Manager and Climate Adaptation Task Force Coordinator for the Superior Watershed Partnership and Land Conservancy, said, "I think the focus here on Lake Superior is so important because it's, I would say, the least damaged or impacted by human action of the Great Lakes. So I guess to outsiders, it may seem untouched and pristine, but there are a lot of issues…We've got a good thing here, but there's a lot of challenges coming our way that could change that."

In some respects, the challenges have already arrived. Heavy precipitation events have increased by 35% in the Great Lakes region since 1951, according to a Great Lakes Integrated Sciences and Assessments (GLISA) factsheet. A 2012 joint study from researchers at the NOAA-Great Lakes Environmental Research Laboratory and the University of Michigan Cooperative Institute for Limnology and Ecosystem research found that from 1978 to 2010, Lake Superior had lost 79% of its annual ice cover, the most of any of the five Great Lakes.

Rob Croll, a policy analyst and the climate change program coordinator for GLIFWC, noted that Lake Superior is also warming the fastest of the Great Lakes, which allows invasive species like zebra mussels to establish themselves and toxic algae blooms to grow. Croll was one of the authors of Aanji-bimaadiziimagak o'ow aki, a climate vulnerability assessment released by GLIFWC, which represents 11 Ojibwe member tribes.

The Aanji-bimaadiziimagak o'ow aki used traditional and scientific ecological knowledge to assess climate change in the Ceded Territories (of Northern Michigan, Wisconsin and Minnesota) and how it is predicted to affect species in the area. Many culturally important species were found to be vulnerable to climate change, including Northern wild rice, lake whitefish and snowshoe hare, to name a few. Responding to questions in an email, Omar Gates of GLISA said "Warming winters affect various sectors such as agriculture, forestry, and **(see Climate change, page 17)**

Bimiizii: a tough fit for the Great Lakes ecosystem

By Bill Mattes, GLIFWC Great Lakes Section Leader

Bimiizii (sea lamprey) made their way from the Atlantic coast to Gichigami (Lake Superior) via the man-made connections formed to allow ships access from the oceans to the upper Great Lakes. Lampreys are a unique being and cultures around the world acknowledge the importance and significance of lampreys to their local communities.

Different species of lampreys have different life cycles; however, juvenile lampreys are filter feeders, removing detritus from the water. Some adult lampreys are parasitic, feeding upon fish blood and body fluids. The sea lamprey is parasitic, where they have co-existed with other fish species, they do little harm to the overall fish populations.

However, in the Great Lakes, the fish they feed upon are much smaller and in much lower abundance than in the ocean, and the damage adult lampreys inflict upon native fish populations is devastating. If not for the current control program being implemented on an annual basis, and barrier dams, there would be far fewer fish to be caught in Lake Superior (see *glfc.org* for more information).

The bimiizii population in the Great Lakes is indexed every spring through mark-recapture studies on several tributaries. In Lake Superior, GLIFWC and the Keweenaw Bay Indian Community Natural Resources Department assist the US Fish & Wildlife Service-Sea Lamprey Control Program to perform these studies on several tributaries. For the past five years there has been a downward trend in the abundance of adult sea lamprey.

However, the population level is higher than the goal that has been set by fisheries managers from the tribes, states and Province of Ontario. Currently, there is research being done into the effectiveness of using supplemental controls (controls that are not lampricide or barrier dams) to lower the abundance of sea lampreys making their way to Lake Superior to feed on fish.

One of the supplemental controls being explored is downstream trapping of out-migrating newly transformed sea lampreys. GLIFWC and KBIC-NRD started trapping streams in late September 2022, continuing until winter ice-up to capture sea lampreys before they can make it to Lake Superior. Technicians are developing plans to resume this trapping program in autumn 2023.

The primary tools for controlling sea lamprey numbers in the Great Lakes remains to be lampricide and barrier dams. Lampricide is a chemical specifically made to target and kill lamprey. Recently, the Bad River system was treated to remove sea lamprey. The system is currently treated about every three years to keep the number of sea lamprey at a level that will allow for subsistence, commercial and recreational fishing.

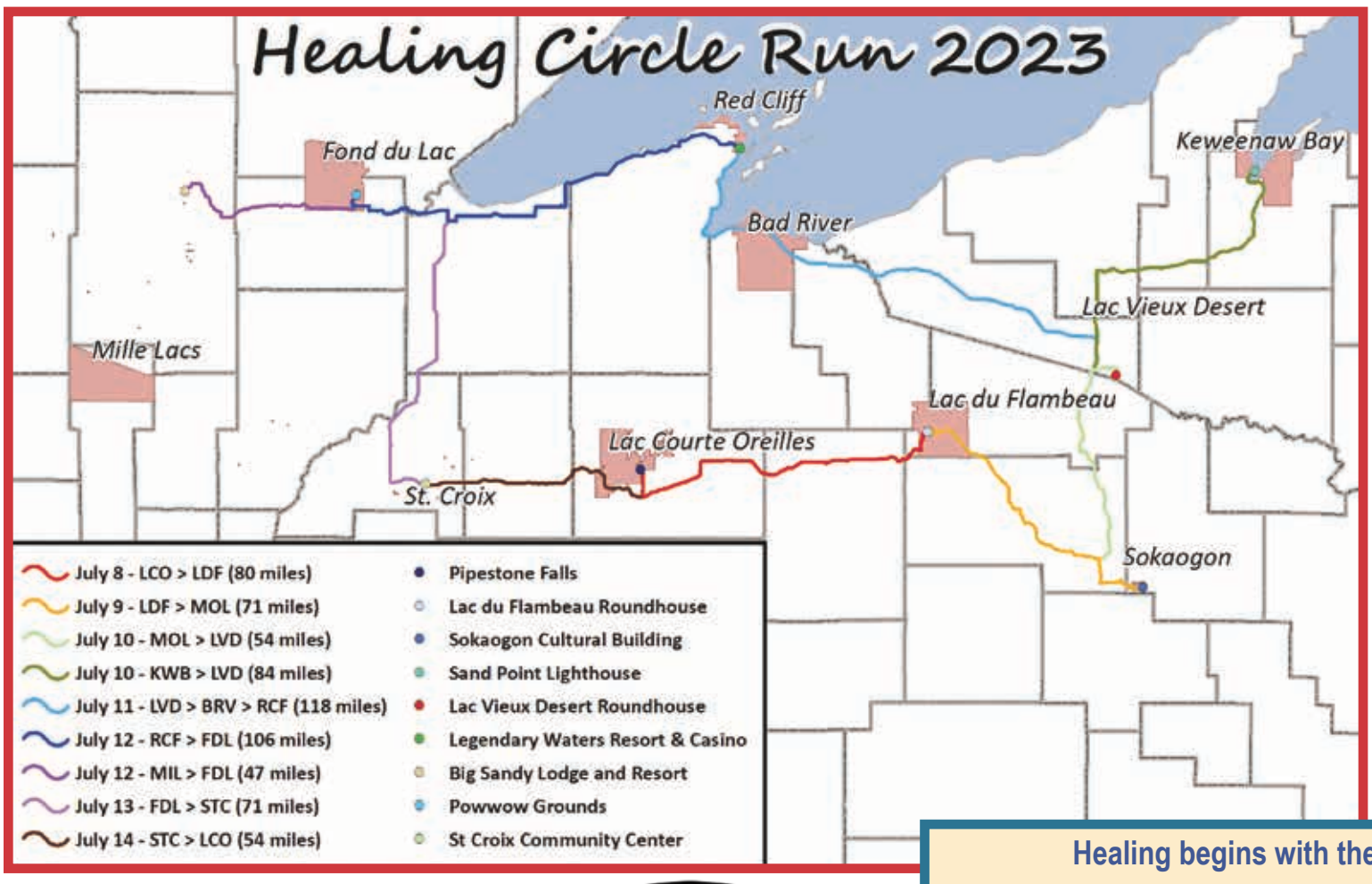
The success of the treatment is seen in the healthy populations of fish that can be found in stream and in the waters of Lake Superior. As recently as the 1960s, few lake trout were found in the waters of Lake Superior due to a combination of sea lampreys and overfishing. Today sea lampreys are controlled, harvests are limited, and fish are readily available for fishers.

Patrick LaGrew checks an eel net modified for use to capture newly transformed sea lampreys as they migrate from nursery areas in the upper Marengo River to their adult feeding area, Gichigami, where each lamprey consumes about forty pounds of fish. (B Mattes photo)

Barrier dams on Great Lakes tributaries prevent adult lampreys from migrating upstream to suitable spawning grounds. This dam is located on Wisconsin's Middle River along the Lake Superior south shore. (CO Rasmussen photo)

A US Fish & Wildlife Service technician monitors the infusion of the lampricide TFM into a Gichigami tributary. TFM targets larval lamprey before they develop into parasitic adults. (CO Rasmussen photo)

Technicians "mark" adult lamprey with a fin clip during late spring population index surveys. (CO Rasmussen photo)



July 8-14, 2023

The Healing Circle Run is a prayer for healing. It is an opportunity to pray for healing for ourselves, our families, our communities, our nation, Aki and all our relatives.

This 7-day run connects 10 tribal nations throughout the Ojibwe Ceded Territory. Join us as we travel throughout our homelands, or put in miles wherever you might be, in a walk/run of unity where "every step is a prayer."

For the most up to date information, visit *glifwc.org/hcr*, email Miles Falck or Jenny Krueger-Bear at *hcr@glifwc.org* or call (715) 682-6619.

Healing begins with the individual.

As a person heals,
they can help their family to heal.
As families heal,
they can help their communities to heal.
As communities heal,
they can help their nations to heal.

As individuals, families,
Communities, and nations heal,
they can help
Aki and our plant and animal relatives to heal.

Behind the design

In 2003, three different designs were printed on the official Healing Circle Run t-shirts. Twenty years later one of them is getting a reboot.

GLIFWC Executive Assistant Rose Wilmer's inspiration came from a medicine bear she saw on a free clipart site. Recalling her coworkers' art that year Wilmer said, "Jim (Schlender) had a fiery, flaming sun design with red lettering and Neil (Kmiecik) created a wispy-looking sun.

"I was looking at the stars in the design and thought that it would be pretty cool to make the stars larger to emphasize the tribal communities where the Healing Circle Run stops along the way," said Wilmer. Those same stars shine extra bright in makwa's reflection.

Wilmer also remembered that Kmiecik mentioned that Giiwe Martin's name was connected to the auroras, so to recognize Martin's hand in starting the Run, she added northern lights, "I wanted the design to honor Giiwe."

mamaajiin. anami'aan. maamawi.
(move. pray. together.)

Finding Les Petite Nations: Part two

By Professor Gregory Gagnon
For Mazina'igan

Editor's note: In **"Finding Les Petite Nations: Part Two,"** *Loyola University Professor Gregory Gagnon continues his exploration of indigenous history in Louisiana. Part One (Dagwaagin* ***Mazina'igan*** *2021-22) examined similarities with Ojibwe bands of the Upper Mississippi-Great Lakes region, including experiences with the French and ultimately all European peoples that settled the area. The French originally called native bands in Louisiana "les petite nations," or the little nations.*

Within Louisiana four federally recognized tribes are all that remain of what once were dozens. Among them, only the Chitimacha are in their ancestral homeland, while the others migrated to Louisiana to escape war, enslavement, and settlers. Together, the Chitimacha, Jena Choctaw, Coushatta, and Tunica-Biloxi nations collectively have a population of about 3,800 citizens. Some comparisons between reservations within Louisiana and GLIFWC member tribes continue from an earlier article.

Each of the Louisiana tribes originated in the Misty Past when a culture hero or heroes informed many of the characteristics of the tribe after a Great Flood. Shamans had special relationships with animals and plants and each tribe maintained a sacred fire which was renewed annually. Evil existed in the native world and when encountered was dealt with during the present; there was no post-death punishment.

Professor Gregory Gagnon

Tribes identified animals as especially important in their existence: Coushatta revered the owl; Chitimacha the giant serpent; Choctaw the gar fish; Tunica the rattlesnake; and the Biloxi added the panther. Each of the tribes contained matrilineal clans and women played important political roles. They still do. Each of the tribes built sacred mounds or squares where the important religious and political figures lived and led ceremonies. Political leaders—roughly identified as the "Son of the Sun"—were endowed with divine powers.

Similarities among the different tribes coalesced by the encompassing religious influence of the Mississippian Culture (aka Southeastern Ceremonial Complex) that stretched from the Dakotas to the east and southward during the period about 600 to about 1300. Its principal beliefs and organization was modified over time but the basics seem to have been generated at Cahokia (today's Illinois) and spread through commerce, the exchange of religiously important artifacts, and imitation. There was no single prescribed canon; regional and cultural variations were common and time magnified them.

Tribes are the third form of sovereignty in the United States and not a race.
—Professor Gregory Gagnon

Each of the current Louisiana tribes reflect Mississippian roots in its oral traditions. The Tunica-Biloxi clearly lived in a Mississippian style chiefdom even as late as the 1700s. Vestiges of this complex remain in the Choctaw tribal belief system and especially in their origin of the Choctaw in Nanih Wayh. Chitimacha ceremonies echo many Mississippian-like beliefs.

Europeans, Americans arrive

Each of the tribes met the DeSoto entrada in the mid-sixteenth century, and maintaining a history of opposition that drove the Spanish conquistadores away. Until the 1718 creation of New Orleans, the tribes evolved in an atmosphere of equality with the **(see Les Petite Nations, page 16)**

GLIFWC fishery assessment crews go the distance on Mille Lacs Lake

ogaawag by night

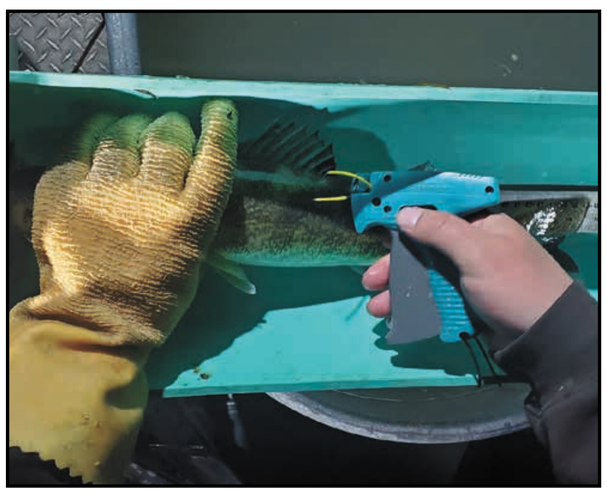


photo essay by Ed White

The spring spawning season—when fish are predictably accessible—for species like walleye and northern pike can seem like a flash in the pan. Adult fish cruise into their venerable spawning grounds, deposit eggs and milt, and are off to open waters. The window of opportunity to learn from these fish is short.

In collaboration with state and federal partners, GLIFWC and its member tribes fully mobilize their resources to meet the fish in the water. Among all the most significant providers to the annual diet of Ojibwe people in the Ceded Territory, Lake Mille Lacs merits the full attention of treaty tribes and GLIFWC during the late April-early May spawning season. In 2023, fishery assessment leader Ed White along with technicians Dane LaGrew and Douglas Keiser, handled hundreds of fish (and one ornery snapping turtle!). All fish were released in good condition.

By night: fisheries crews used "shock boats" to collect ogaawag, or walleyes, with dipnets in the Mille Lacs shallows. Using standardized survey techniques, researchers use the data to calculate trends in health and abundance of adult walleyes.

By day: checked daily, long, segmented steel mesh traps known as fyke nets were used to capture adult northern pike (ginoozheg) during their spawning runs up Lake Mille Lac tributaries along the western shoreline. Again, using mark-recapture protocols, fisheries managers hope to better understand northern pike population dynamics in the lake.

—CO Rasmussen

ginoozheg by day

The strawberry uncertainty

By GLIFWC Climate Change Staff

By many accounts ode'imin (strawberry) should easily be able to withstand climate change in the Ceded Territories. This plant being is found throughout Turtle Island, from the Arctic to the southern United States.

Ode'imin also occupies a wide variety of habitats, from forest to urban lawns, and was rated as one of the least vulnerable plant beings to climate change in *Aanji-bimaadizimagak o'ow aki* (GLIFWC Climate Change Vulnerability Assessment, Version 2).

And yet, harvesters and knowledge holders from across the Ceded Territories told us in Traditional Ecological Knowledge (TEK) interviews that there has been a noticeable decline in ode'iminan in their areas, with some reporting blossoms but no fruit, smaller berries, and a shorter growing season.

How might we explain the apparent contradiction between predictions and on-the-ground observations? One explanation might be changes in habitat over time, especially if harvesters are typically returning to the same places year to year. Another possibility is more variable spring weather with quick warmups followed by cold weather and frost after the plants have started growing or flowering. Finally, several elders told us in interviews that if people aren't using the gifts offered by our non-human relatives, they may stop giving them to us.

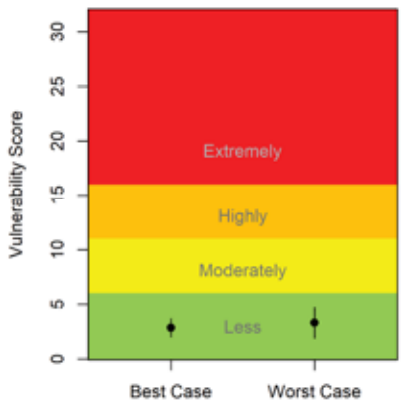
What are you seeing where you live? Tell us about changes in your area at *climate@glifwc.org*!

Range map of ode'imin.

Ode'imin

Ode'iminan (plural) / Strawberry / *Fragaria virginiana and Fragaria vesca*

Less Vulnerable
(Confidence Level: Moderate)



Climate change vulnerability scores for ode'imin on a scale of 0 (lowest vulnerability) to 32 (highest vulnerability). Dots indicate average score; lines indicate possible range of scores for each scenario.

General Description:

In the Ojibwe lunar calendar, the name of a month references important natural and cultural events that occur during that time, such as the gathering of food. Ode'imini-giizis, also known as the Strawberry Moon, falls around the month of June which is when strawberries are usually ready to be picked. According to many knowledge holders, it is the first wild fruit of the season to ripen. The entire plant being is known to be of use and of high importance. The root is beneficial in curing stomach problems and the leaves are known to stimulate appetite.

Ode'imin is considered one of the most important medicinal and ceremonial plants. Its fruit is sometimes referred to as the heart-shaped berry, with "ode" meaning heart and "min" referring to berry. In Ojibwe culture, when young females experience their coming of age (referred to as their first moon), they participate in a berry fast for the first year after their first moon. During this time they are to refrain from eating wild berries, especially ode'iminan. Once the year is up the fast is broken when an ode'imin is fed to them during a ceremony. The fruit is often incorporated into various other ceremonies and is considered a luxury.

Ode'imin occupies a wide variety of habitats, moisture gradients, and soils. In the Great Lakes, it is commonly found in forested habitats as well as sunny, drier areas such as meadows and fields. Ode'imin is found across the Ceded Territories and has a large range in North America.

Ode'iminan were mentioned in approximately half of the interviews with knowledge holders. All who mentioned ode'iminan expressed a concern over a decrease in their population and some mentioned a decrease in the size of the berries as well. During two separate interviews in Waaswaaganing (Lac du Flambeau), elders expressed rarely seeing ode'iminan anymore, and when they do, it is mostly just blossoms in the ziigwan (springtime) but rarely fruit in the summer. Those interviewed in Mashkiiziibiing (Bad River), Nagaajiwanaang (Fond du Lac), and Ginoozhekaaning (Bay Mills) stated the plants aren't doing as well anymore and expressed concern over smaller berries. A group of knowledge holders in Gete-gitigaaning (Lac Vieux Desert) shared that the growing season of the berries isn't as long as it was years ago. An elder in Gaa-miskwaabikaang (Red Cliff) shared memories of everyone picking ode'iminan when he was a child, which isn't so anymore.

During an interview in Odaawaa-zaaga'iganiing (Lac Courte Oreilles), an elder stated that the leaves, stems, and roots are all considered to be medicine for the heart. She often eats the entire plant and shared that her grandma used to make tea with the entire plant as well. At that time, they had an entire field of them where they lived near Signor in the southwest portion of Odaawaa-zaaga'iganiing. She attributed their decrease to the lack of prescribed burning. Ode'iminan are known to be adapted to surviving low to moderate intensity fires but are not fire dependent. The plants can endure fires and are able to re-sprout after one has occurred.

Summary of climate threats:

Ode'imin was in the 17th percentile relative to other plants and in the 22nd percentile relative to other beings in the vulnerability assessment. It can grow in many habitats and has good dispersal ability, a broad distribution, and many pollinators. It is unlikely to be affected by changes in precipitation, flooding, or droughts, and is overall unlikely to be affected by climate change. However, based on information from interviews, localized changes in the population or timing of ode'imin will continue to occur.

Factors that increase the vulnerability of ode'imin to climate change:

N/SI — Anthropogenic barriers: Development can be a barrier to ode'imin.

SI/I — Documented response to climate change: At least five different tribal communities mentioned that ode'imin was declining in their regions likely due to climate change or a climate change-related factor.

Legend

- GI — **Greatly Increase**: This factor greatly increases vulnerability
- I/GI — **Increase/Greatly Increase**: This factor may increase or greatly increase vulnerability
- I — **Increase**: This factor increases vulnerability
- SI/I — **Somewhat Increase/Increase**: This factor may somewhat increase or increase vulnerability
- SI — **Somewhat Increase**: This factor somewhat increases vulnerability
- N/SI — **Neutral/Somewhat Increase**: This factor may not increase or may somewhat increase vulnerability

Spring ogaa harvest

(continued from page 1)

ice from increasingly larger water bodies. By mid-May, Ojibwe bands had accumulated 26,775 walleyes and 114 muskies for tribal homes and community nutrition programs.

Eastward to Lake Mille Lacs, 1837 Treaty bands entered the season with an ogaawag quota that had edged up to 74,700 in 2023. The eight Ojibwe tribes also shared a 50,000-lb northern pike allocation. While formal ice-out on the big Minnesota lake wouldn't be declared until May 5—ten days past the long-term average—tribal spearers got an April 29 start along stretches of near-shore open water. By the first week of May both gill-netters and spearers were active on Lake Mille Lacs.

Ojibwe elder Randy Wise fished the Lake Mille Lacs western shore. (COR)

In the southern reaches of the Minnesota 1837 CT, Lac du Flambeau members harvested 599.9-lbs of ogaawag and 369.2-lbs of ginoozheg from Green Lake in Chisago County. Rush Lake provided an additional 9.6-lbs of walleye and 134-lbs of northern pike.

On the western side of Upper Michigan, late-opening (May 3) Lake Gogebic served as Lac Vieux Desert Band's primary walleye water, yielding 2,096 fish. Smaller 1842 Michigan CT lakes provided 683 walleye for a harvest total of 2,779 by May 14. The band also registered 10 muskellunge.

All harvest numbers are preliminary. At press time May 15, Ojibwe fishers were still plying the waters of the Ceded Territory in all three states.

Miigwech! For GLIFWC's off-reservation harvest monitoring program, hiring challenges brought a wave of fresh faces to Mille Lacs as staff from various Commission sections filled out the creel team ranks. Creel teams count, weigh, and measure fish harvested by Ojibwe fishermen at each boatlanding—a job that requires working late nights and early mornings. Miigwech to those who took a hiatus from managing data, ecology, and all sorts of vital roles at GLIFWC to help maintain the high standard of harvest monitoring tribes count on year after year.

Madison Bear, Fond du Lac Band Resource Management Division, decontaminates a tribal gill net before authorizing a fishing trip on Lake Mille Lacs from South Garrison Landing. Bear said the combination of hot water and a biodegradable disinfectant kills harmful plants and invertebrates. (COR)

Circle of Healing

(continued from page 1)

Part of the program's charm is that it takes place in small, comfortable space where aunties, nieces, grandparents, and grandchildren can sew together. Andrews-DePerry described the dual nature of the social-emotional work, where it's part building up, and part shedding away feelings like shame.

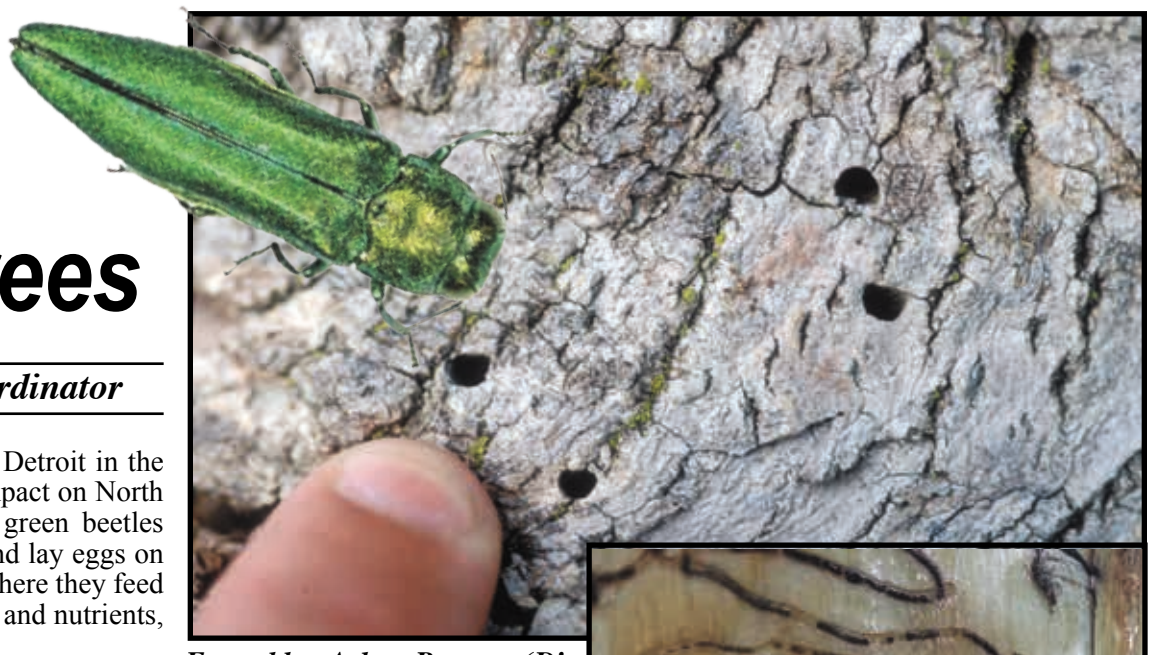
"Being disconnected from Ojibwe culture is not our doing," she said, describing at times seeing young girls at ceremony with no skirt, who feel left out. "Maybe we can stitch up more than just a skirt."

An added benefit of the program is that sewers can start their work in a setting where they can freely explore different types of materials, equipment, and techniques to find what works for them without running back and forth to the store or spending a fortune. Andrew-DePerry noted that ribbon skirts are being worn more and more these days in different settings, where women have casual skirts and some that are saved for more special events and occassions.

To learn more: *amaris.andrews@redcliff-nsn.gov* or *tinyurl.com/59wmk4a5*

Fatal boring beetle continues to diminsh northern forests

Recovery hopes sprout from "lingering ash" trees



Emerald Ash Borer 'D' shaped exit holes. D. Hermes, Bugwood.org

By Hannah Arbuckle, GLIFWC Outreach Coordinator

Since its accidental introduction from Asia to suburban Detroit in the early 1990s, the emerald ash borer (EAB) has had a major impact on North American ash trees and forest ecosystems. These metallic green beetles emerge from ash trees every spring to feast on their leaves and lay eggs on their bark. As the eggs hatch, the larva burrow into the tree, where they feed on the soft inner bark. This feeding disrupts the flow of water and nutrients, ultimately killing the tree.

Ash trees (mostly green, black, and white ash) make up as much as 20-40% of forests in the Midwest. Often considered a "foundation species" in North American ecosystems, they provide habitat, food, and shade for many other species. Loss of ash is impacting forest ecosystems already under stress from habitat fragmentation and climate change.

Culturally, ash provides the perfect materials for the Ojibwe tradition of basket-making, a tradition that goes back many centuries. These baskets have been used for a wide variety of tasks, such as picking berries, boiling maple sap, and storing food or utensils. The stories and traditions surrounding basket-making are also threatened by increasing EAB populations.

In early March, the EAB was detected in trees along a roadside in the town of Lincoln in Vilas County by Wisconsin Department of Natural Resources Forest Health staff. This marks the 67th county detection since EAB was first found in Wisconsin in 2008, and the first detection this year. This leaves only five Wisconsin counties without an EAB detection. The EAB was federally deregulated as of January 14, 2021, so this new occurrence doesn't trigger any new restrictions on the movement of ash wood within the state.

The loss of ash is leading to a cascade of negative effects on forest ecosystems. But people are fighting back, using an integrated pest management approach. Part of this approach involves finding and breeding "lingering ash". Through a sort of genetic luck-of-the-draw, a select few manage to stay relatively healthy after the EAB has wiped out nearly all other ash trees around them. Using time-tested breeding techniques, twigs from these rare "lingering ash" can be brought back to a plant nursery and grafted onto ash tree rootstocks. These twigs eventually produce flowers that are manually cross-pollinated with flowers from other resistant ash trees, to produce offspring that are even more resistant to the EAB. The goal is to produce resistant trees that can fend off the borer indefinitely.

United States Department of Agriculture researcher Jennifer Koch hopes to breed ash trees that consistently kill 80-90% of larvae that attack them in field trials. Once this is achieved, restoration efforts using these EAB-resistant ash trees can begin.

There is a certain sense of urgency for natural resource agencies and others when it comes to locating lingering ash. That's because while lingering ash often have some resistance to EAB, they are not completely immune to attack. They need to be detected within a few years after the general "die-off" of neighboring ash trees, so that twigs can be gathered from them before they too are killed. As EAB spreads throughout the Ceded Territory and beyond, it's going to be important for people to recognize lingering ash trees and report them, so they can be included in breeding programs.

These beautiful woven baskets made of black ash were created by April Stone of Bad River. (S. Garske photo)

S-shaped tunnels created by EAB larva as they munch their way through the inner bark of a black ash. Removing the bark of this tree has exposed two cream-colored larvae. (S. Garske photo)

The use of biocontrol agents is another method being used to control the EAB. Biocontrol involves identifying, rearing, and releasing insects or other beings that are natural enemies of troublesome invasives. Finding and testing biocontrol agents for host-specificity and effectiveness is a time-consuming effort. It's critical to find biocontrol species that do not harm anything except the targeted species.

In the case of the emerald ash borer, tiny, stingless parasitoid wasps from the borers' native range in eastern Asia are being released to reduce EAB populations. The USDA-APHIS center in Brighton, Michigan raises these wasps and ships them for release.

As of 2023, four species of wasps have been released across EAB's new North American range. After the USDA approves a release site, local groups release the wasps and complete follow-up monitoring. Already in some Lower Michigan plots, EAB mortality rates from the biocontrol wasps are around 60-70%. Additionally, native woodpeckers find the borers particularly delicious and act as native biocontrol agents. In the same Michigan plots, woodpeckers kill up to 40% of the EAB larvae.

Individual trees can be protected from the EAB through the use of certain systemic insecticides. While insecticides can be used by homeowners and municipalities to save limited numbers of trees, they are impractical for use on a landscape level and could have adverse effects on the environment. Restoring ash to the land will involve all three pest management approaches: the deployment of genetically EAB-resistant trees, the use of biocontrol agents, and insecticides where appropriate.

As the EAB continues to spread through the northwoods, it is especially important to be able to recognize any lingering ash trees that may be out there. Identifying and reporting lingering ash is one good way to help protect ash tree populations. As you will recall, lingering ash are large mature ash trees that have survived after all other ash trees around them have died from the borers.

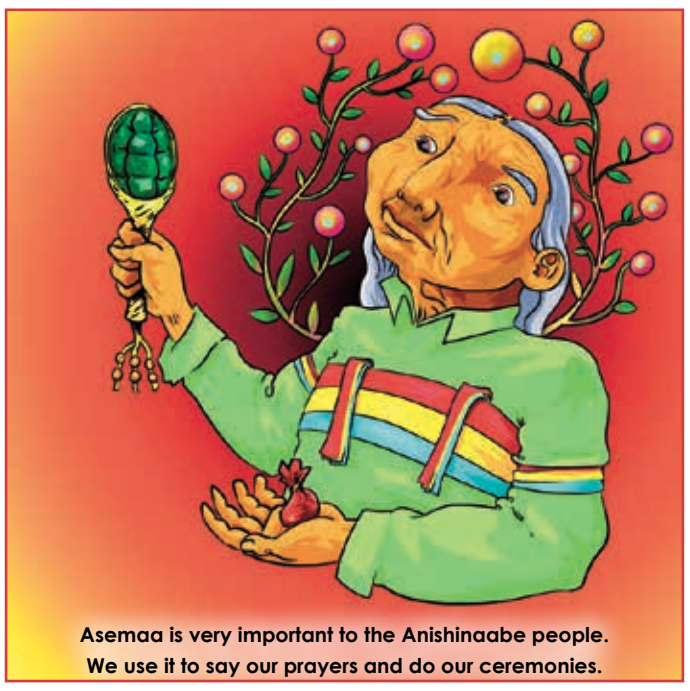
But first, it's helpful to learn to identify EAB-infested trees. Tell-tale signs of an EAB infestation include 1) bark flecking in the large branches and trunk of the tree, caused by woodpeckers feeding on EAB, 2) Die-back of the upper branches, 3) the appearance of "suckers" on the truck, as the upper branches die, and 4) cracks in the bark, caused by EAB larvae tunneling. This can cause the bark to split open, revealing S-shaped larval tunnels underneath.

Lingering ash trees are rare, which means the public can play an important role by reporting any lingering ash trees they might come upon to local and state natural resource departments. You can also record lingering ash tree locations with the "TreeSnap" app, found on the Apple Store and Google Play. TreeSnap allows you to tag trees so scientists can locate them for research.

If we all continue to work together to prevent and treat the EAB, generations to come will get to enjoy all the bounty and beauty ash trees have to offer.

Maajii-Ojibwemowag They Begin to Speak Ojibwe

Asemaa *Stories of the Plants: A Zhaawanong Book*



Asemaa is very important to the Anishinaabe people.
We use it to say our prayers and do our ceremonies.

Gibiindaakoojigemin for many things.
This is the way we show respect for the spirit of the plant
or the animal. Apiitendaagwad.

Download the complete storybook: ***glifwc-inwe.com/zhaawanong.html***

Additional coloring pages can be downloaded at:
glifwc-inwe.com/printables-birth-to-5.html

Asemaa and the Ojibwe people

Asemaa (tobacco) is one of the four sacred medicines that the Ojibwe believe was given to them by the Creator, Gichi-manidoo.

Asemaa is used by the Ojibwe in everyday life, as well as during ceremonies and other imlportant events.

Asemaa is used as an offering, such as in a prayer or as in asking another spirit or person for guidance or assistance.

Always consult with a local tribal elder or kowledge holder to learn how to respectfully use asemaa.

(Maajii-Ojibwemowag Teacher/ Caregiver Supplemental Document)

Asemaa is a sacred mashkiki for our people. It is the way we offer thanks and speak with the Gichi-manidoo.

Tobacco ties can be used to offer asemaa, like this miskwaa one.

Ojibwe language word list

apiitendaagwas–it is highly valued
asemaa–tobacco
gibiindaakoojigemin–we offer tobacco
giiwedinong–to the north
mashkiki–medicine
miigwech–thank you
miskwaa–they are red
ningaabii'anong–to the west
waabanong—to the east
zhaawanong–from the south

Miigwech tribal storytellers
Anabiikwe and Mezinaanakwad (Dennis and CleoWhite)
& Niiyogiizhig (Wesley Ballinger) illustration & layout

For more information

Zhaawanong: Stories of the Plants is produced by GLIFWC's Administration for Native Americans Language Preservation and Maintenance project. There are four sets of books in this series: *Waabaanong: Stories of the Four-legged*, *Zhaanong: Stories of the Plants*, *Ningaabii'anong: Stories of the Swimmers*, and *Giiwedinong: Stories of the Flyers*.

Interactive webpages have been developed as a companion resource to Maajii-Ojibwemowag. The webpage (*glifwc-inwe.com*) features digital versions of the storybooks with audio and simple animations, and age-appropriate language learning games.

There is a printables webpage which provides a PDF version of each storybook, supplemental documents, and a coloring book adapted from each storybook which can be downloaded and printed for free.

Zaasijiwan
•It Ripples•

Ojibwemotaadiwag Anishinaabewakiing.
They speak Ojibwe to each other in Indian Country.

"Niibin. Ganabaj wii-kizhaate wayiiba. Nibagiz endaaso-niibin zaaga'iganing. Izhinaakaade Ode'imini-zaaga'igan.
Nishiime apane akakanzhebwe. "Wiisinidaa!" Gizhiiwe. Baanimaa, jiimaaning ninjiigewe'aamin. "Jiimedaa!"
Mii ezhi-giishkizhamaan mashkosiinsikaan. Aaniin apii waa-giishkizhang? Wiinitam.
Gaye ate gitigaan idash waabigwanii-gitigaan imaa. Niwaabamaag mandaaminag miinawaa okosimaanag.
Gaye ayaa mashkodiisiminag imaa. Izhaadaa gitigaaning! Miskominikaa. Miinan gaye! *I'iw, miigwech*.

("It is summer. Maybe it will be hot soon. I go swimming every summer at the lake.
The lake is named Strawberry Lake. My younger sister always cooks on the grill. "Let's all eat!" She speaks loudly.
Later, in the canoe we paddle along shore. "Let's all canoe!" And then I mow the lawn. When will s/he mow the lawn?
It's her/his turn. Also there is a garden and flower garden there. I see corn and squash. Also there are beans there.
Let's all go to the garden! There's a lot of raspberries. And blueberries too! *That's all, thanks*.)

Bezhig—1 OJIBWEMOWIN (Ojibwe Language)

Double vowel system of writing Ojibwemowin.
—Long vowels: AA, E, II, OO
W<u>aa</u>booz—as in f<u>a</u>ther
Miigw<u>e</u>ch—as in j<u>ay</u>
Aan<u>ii</u>n—as in s<u>ee</u>n
M<u>oo</u>z—as in m<u>oo</u>n

—Short Vowels: A, I, O
D<u>a</u>sh—as in <u>a</u>bout
<u>I</u>ngiw—as in t<u>i</u>n
Niizh<u>o</u>—as in <u>o</u>nly

—A glottal stop is a voiceless nasal sound as in A'aw.

—Respectfully enlist an elder for help in pronunciation and dialect differences.

Aandi waa-izhaa*yeg*?
Where will *you all* go?
Niwii-izhaamin baamaa…
We will go eventually…
Mazinaatewigamigo<u>ng</u>.
<u>To</u> a movie theater
Megwayaak miinawaa awasaakwaa.
In the woods and beyond the woods.
Mashkiig & jiigashkiig.
To the swamp and by the swamp.
Gichigamiing gemaa Gichi-Ziibiing.
To Lake Superior or maybe to the Mississippi River.
Bebezhigooganzhiiwigamigong miinawaa awakaanigamigong.
To the horse barn and to the barn.

Niizh—2 *Circle the 10 underlined Ojibwe words in the letter maze. (Translations below)*

A. <u>Gimiwan</u> agwajiing. Ataadiwag biindig.

B. <u>Ataagedaa!</u> Nindayaawaag niizh <u>biigwag</u>.

C. <u>Akawe</u>, inga-oninige. Ataadiwinag dashiwag.

D. <u>Wewiib</u>! Niwii-kabenaage <u>omaa</u>. Giwii-kabenooninim.

E. <u>Maagizhaa</u>. <u>Gemaa</u> niwii-kabenaage anishaa.

F. <u>Mizhodam</u>. Ingii-kabenaag.

G. <u>Nitaa</u>-ataage. Minwendaagwad.

M	Y	D	A	K								
D	I	A	S	W	E							
A	M	Z	O	N	W	A						
O	A	E	H	A	E	I	W					
W	A	T	G	O	I	B	S	I				
B	G	N	A	M	D	K	B	H	W			
I	I	‘	S	A	E	A	A	O	E	Z		
I	Z	J	H	W	G	I	M	I	W	A	N	
G	H	E	A	D	‘	E	Z	H	I	O	I	
W	A	K	M	I	K	W	D	B	I	S	T	
A	A	I	T	A	Z	A	O	A	B	K	A	
G	B	A	B	M	A	G	E	M	A	A	A	

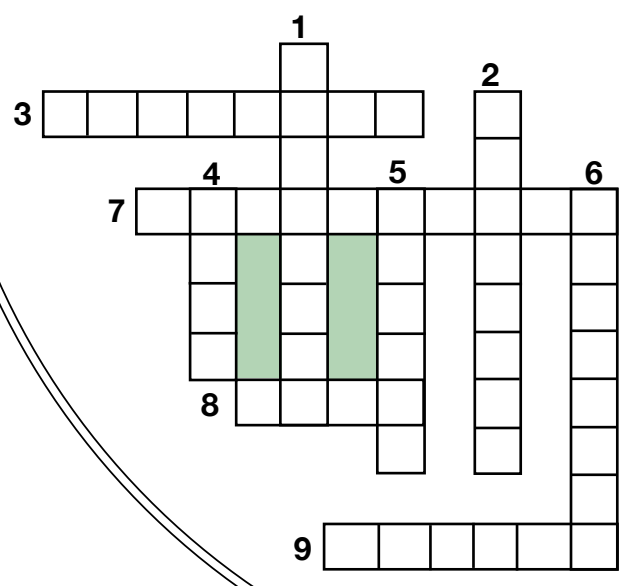
Onaabandanweweni.
Select it carefully

Niswi—3

IKIDOWIN ODAMINOWIN (word play

Down:
1. Let's all canoe!
2. his/her turn
4. there
5. who
6. garden

Across:
3. little sister/brother/ sibling
7. in the canoe/boat
8. also
9. blueberries



Minomaagwad wiingashk(oon).
It smells good, sweetgrass.

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

Niiwin—4

Awesiinh (yag)—Wild Animal(s); **Awesiinh—**wild animal; **Awesiinyag**—wild animals; **Bineshiinh(yag)**—Bird(s) **Bineshiinh—bird; Biineshiinyag**—birds

VTA: Waabam!—See him/her!
VTA: Minwenim!—Like him/her!

Niwaabam**aa(g)**.—**I** see him/her. **(them)**
Giwaabamaa banajaanh.—I see the baby bird.
Giwaabamaag.—I see the baby birds.
Niminwenim**aa(g)**.—**I** like **him/her**. **(them)**
Giminwenim**aa(g)** ina apichi(**wag**)?
—**You** like **the robin(s)**?
Biijise(wag).—S/he (they) flies here.
Oningwiigan(an)—Someone's wing(s) (NI)
Babaamise.—S/he flies about.
Boonam.—She lays an egg.
Niwaabandaan okoozh.
—I see its beak.
Miigwech!

wii-
gii-
ningii- -aa
niwii- -aag
-wag

1. Noongom, opichi _____-boonam.
2. Ni_____-izhaa Gichigamiing. Izhaadaa!
3. Wii-piijisewaad _____minwenim_____ bineshiinhyag.
4. Gichigamiing giizhkadinaag, _____-waabam_____ gekek.
5. Babaamise_____ miinawaa dazhe_____ Daga boonitoon!
6. Gakina-awiiya, Ojibwemodaa/Anishinaabemodaa niibing!

Translations:

<u>Niizh—2</u> **A.** It is raining outside. They are playing cards with each other inside. **B.** Let's all play cards. I have two cards that are spades. **C.** First, I will shuffle and deal cards. There are a certain number of playing cards. **D.** Hurry up! I want to win here. I want to beat you all. **E.** Maybe. Or maybe I will play cards for fun. **F.** S/he wins. S/he beat me. **G.** S/he really knows how to play cards. It is fun.

<u>Niswi—3</u> ***Down:*** **1.** Jiimedaa **2.** Wiinitam **4.** Imaa **5.** Awenen **6.** Gitigaan ***Across:*** **3.** Nishiime **7.** Jiimaaning **8.** Gaye **9.** Miinan

<u>Niiwin-4</u> **1.** Today the robin **laid** an egg. (gii-) **2.** I **want to** go to Lake Superior. Let's all go! (wii-) **3.** When/if they fly here, **I will** like the **birds**. (niwii- -aag). **4.** On a Lake Superior cliff, **I saw** a **hawk**. (Ningii- -aa) **5. They** fly about and **they** live in a nest. Please leave it alone! (-wag). **6.** Everybody, let's all speak Ojibwe/Anishinaabe language when it's summer!

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 <u>The Concise Dictionary of Minnesota Ojibwe</u> by John D. Nichols and Earl Nyholm. All inquiries can be made to ***MAZINA'IGAN***, P.O. Box 9, Odanah, WI 54861 *pio@glifwc.org*.

Edited by Jennifer Ballinger, Saagajiwe-Gaabawiik

Online resource maps potential Gichigami threats

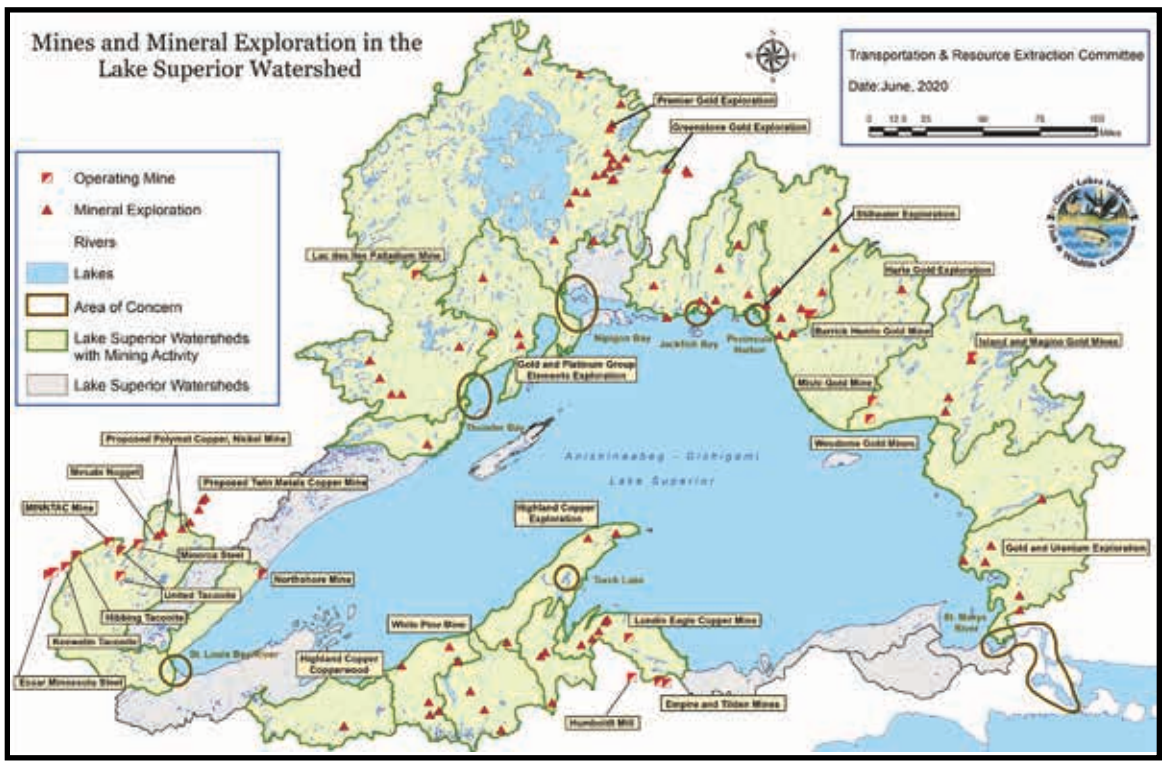
By Hannah Arbuckle
GLIFWC Outreach Coordinator

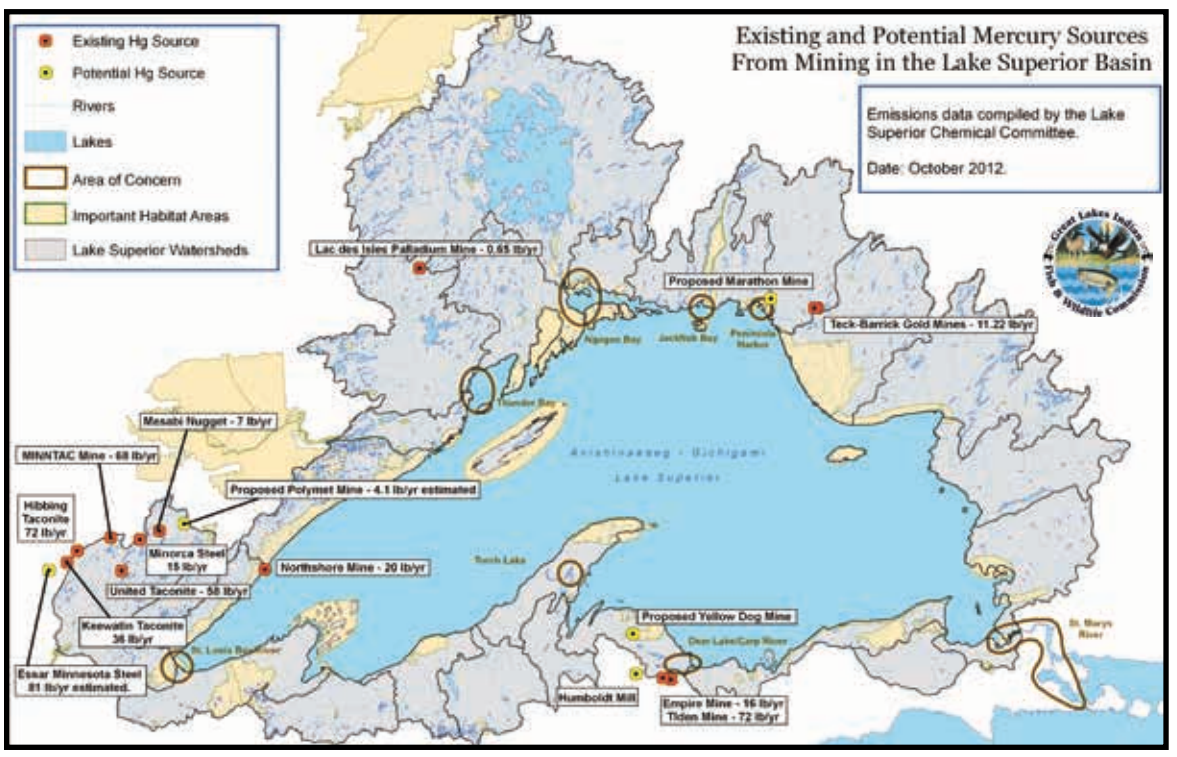
Anishinaabeg Gichigami (Lake Superior) and its watershed basin provide spectacular natural beauty and life-sustaining resources; from pristine wetlands and sandy beaches to old-growth forests and rushing rivers, streams, and waterfalls. However, the ecosystem is fragile and can easily be degraded by human activity.

Metallic mining, pipelines, and other industrial activities are among the most serious threats Lake Superior is currently facing. Staying informed about these threats is critical to protecting the health of the big lake and those who utilize its waters to drink, eat, and play.

As part of our work in the Lake Superior Partnership Working Group (LSPWG), GLIFWC has developed an informative story map that identifies and tracks some of the ecological threats to Lake Superior.

GLIFWC staff work to protect and restore the Lake Superior ecosystem through collected and coordinated partnership action of the LSPWG and its subcommittee, the Transportation and Resource Extraction Committee (TREC). The LSPWG consists of scientists, managers, and staff from federal, tribal, and state government agencies as well as scientists from academic institutions. The TREC focuses on characterizing the potential impacts of mining and the transportation of oil and gas through the Lake Superior Basin and provides relevant information to the agencies involved in the LSPWG.





The TREC, which this story map was delivered out of, promotes the goals of the Zero Discharge Demonstration Program (ZDDP) and the broader ecosystem goals as outlined in the binationally developed Lakewide Action Management Plan (LAMP).

Titled "GLIFWC contributions to the TREC Subcommittee of the LSPWG," the story map is divided into sections, each centered around a different environmental threat including metallic mining, pipelines, and mercury in the Great Lakes basin. Additional information from webinars, presentations, and white papers are also available.

This story map is designed to be updated as the TREC committee continues to work on different issues. It is intended to be used as a public information tool, and the story map will remain public as updates are added in the coming years.

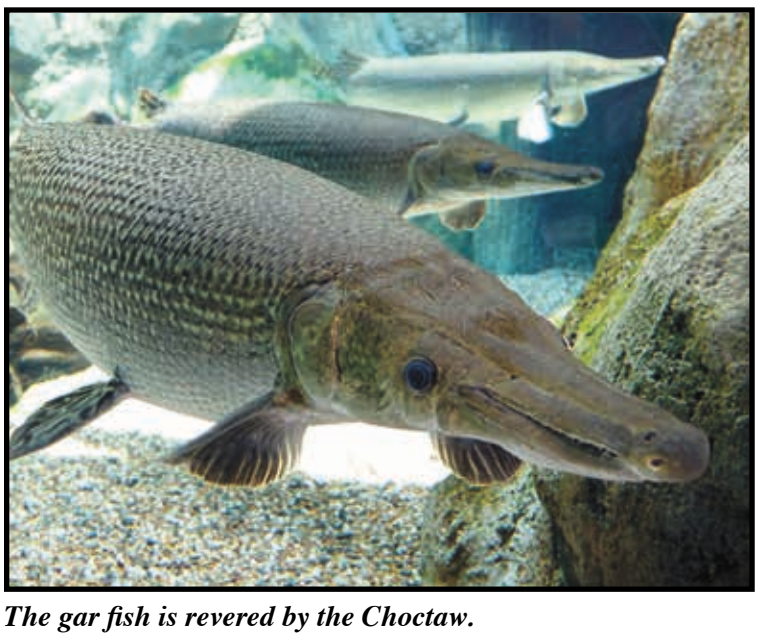
Stay informed on Lake Superior's emerging ecological threats. Access the story map at *arcg.is/19XaS90*.

Finding Les Petite Nations cont.

(continued from page 9)

French and even the English with only catastrophic diseases as threats aside from other tribes.

The primary French period ran from 1700 to 1760 when they were defeated by Britain. Spain replaced them as dominant power in Louisiana and recognized tribal lands and independence. They freed all Indian slaves. The Spanish left in 1803 and the United States took over. By this time the tribes were so weakened that military resistance to America's rule was out of the question. As they have always done, the tribes adapted.



The gar fish is revered by the Choctaw.

Americans took Indian land through simply ignoring Spanish grants and declaring the land vacant. United States legislation like the Swamp Land Acts of 1850 and 1851 allowed Americans to exploit resources like the cypress trees of the bayous. Louisiana Indians just hung on to what they could.

The Chitimacha were federally recognized right after WWI. Coushatta, once recognized, were simply left off the Bureau of Indian Affair's tribal list in 1953 so they ceased to legally exist. The BIA provided some services sporadically but mostly left them to the mercies of state and local government. Indians did not attend White schools as the racist doctrine of the nineteenth century designated them as "Colored." Tribal members also did not attend Colored schools, so many received no formal education at all. Chitimacha officials did leverage their recognized status to attend Carlisle Indian School, the Choctaw School in Mississippi, and Haskell. After years of struggle, the United States ultimately recognized the "migrant" tribes beginning in the 1970s.

Into the modern era

Casino revenue has helped a great deal because each tribe has been able to use profits to acquire more land, spin-off businesses, supply jobs for tribal members, and restore pride. Each tribe consciously emphasizes traditional connections, using casino profits to fund language, maintain traditional crafts and teach their cultures. Only the Chitimacha have their own K-8 school where cultural education is required. Each of the other tribes fund restoration programs for all citizens.

A problem shared with the treaty tribes of the Great Lakes is that they are expected to conform to White created stereotypes of Indians. To the extent we do not, non-Indians question whether tribal citizens are real Indians especially if they do not "look" like Indians. Americans need to be carefully taught that tribes are the third form of sovereignty in the United States and not a race. This is true within the Ojibwe treaty country and Louisiana alike.

Rescue training builds community safety, agency ties

Mille Lacs Reservation, Minn.—Immersion into cold water delivers an immediate shock to the human body. It hampers an individual's ability to think clearly and affects fine motor skills. Across the water-rich landscape of the Ceded Territory, it's essential to have proficient first responders that can provide timely assistance when victims are struggling. To help meet that objective, GLIFWC wardens conduct annual training as an agency and provides instruction to other jurisdictions to increase rescue capacity across the region.

"Interagency training is really important in developing working relations for emergency situations," said GLIFWC Warden Jim Stone. "Building those relations extends to managing law enforcement cases too."

Joined by GLIFWC Officers Gale Smith and Mike Soulier, Stone taught cold water rescue training at Lake Mille Lacs with professionals from Mille Lacs Band (MLB) Emergency Management, MLB Tribal Conservation Officers, Garrison Fire and Rescue, and Mille Lacs County Sheriff's Office. Participants created their training site just offshore from the powwow grounds with an auger and long-bar chainsaw, cutting an eight-foot-square hole in the 30" thick lake ice.

Wearing cold water rescue suits for floatation and warmth, participants learned how to enter and climb out of icy water as individuals, moving on to various rescue scenarios using ropes and other equipment.

Stone said the year before many of the same first responders, plus US Fish & Wildlife Service officers, joined together to train with airboats—flat-bottomed watercraft powered by a propeller that can traverse open water, lake ice, and surfaces in-between.

—CO Rasmussen

GLIFWC Warden Jim Stone prepared Lake Mille Lacs area first responders for cold water rescue training session along the lake's west shore. (V. LaMoore photo)

From a square cut into the Lake Mille Lacs ice, conservation officers experienced a range of rescue scenarios during a GLIFWC-led training course. (V. LaMoore photo)

Climate migration & climate change

(continued from page 7)

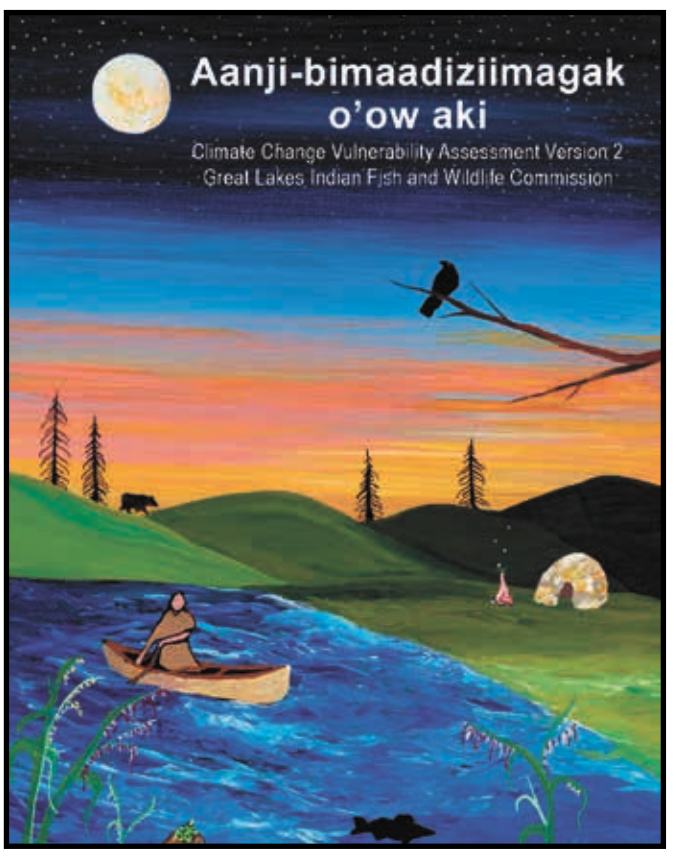
the economy through tourism (e.g., skiing and ice sports). Public health can be affected due to disease-carrying pests prospering during the winter from the warming temperatures."

Residents of the Upper Peninsula are already feeling the effects of these climate challenges. "We get calls all the time, not just from big agencies or units of government, but folks who live way out on the east side of the UP who, because of these high lake levels, are having severe erosion on their property," said Penrod.

Aubrey Maccoux-LeDuc, an environmental specialist for the Biological Services Department of the Bay Mills Indian Community, said impacts from migration to the region and the effects of industry are already happening. "So, just in this very specific region [the Eastern Upper Peninsula], we have already seen an increase in agriculture and that is forecasted to continue for our area," said Maccoux-LeDuc. "To potentially have an increase in agriculture without having the accompanying improvements and mitigation for some of those water quality impacts we see, that is certainly a concerning thing."

The COVID-19 pandemic has spurred changes in the real estate market as well. James Goriesky, a Marquette resident and owner of Griffin construction, said, "Since COVID, there's been a huge rush in people putting work into their house…There's not a lot of houses on the market. They are selling for way above what they normally would sell for. A lot of that is there is a lot of out-of-town people coming in."

Croll also mentioned this trend and noted that VRBOs and Airbnbs in the area near GLIFWC's office in Odanah, Wisconsin, have proliferated since the pandemic, putting strain on people who relied on long-term rentals and the efforts of tribes to recover stolen land. "Our tribes here are trying very hard to get back a lot of land that they lost through the Dawes Act," said Croll, "…and other government programs that were intentionally designed to separate indigenous people from their land… I've been told by several of my colleagues here [at GLIFWC] who are native that they view this as another wave of colonization…As prices for land blow up, it's that much harder for the tribes to reacquire the land that was actually promised to them in the treaties."



Aanji-bimaadiziimagak can be downloaded at tinyurl.com/uupnz8ju

Climate change and climate migration also have major implications for the agreements the federal government made with GLIFWC's member governments and the rights of tribal members to continue cultural practices. When the 11 tribes that make up GLIFWC signed treaties with the United States ceding the land that today is in the states of Michigan, Wisconsin and Minnesota, "They were guaranteed the right to continue their way of life, to hunt, fish and gather in the lands they were ceding to the United States," said Croll. But those rights were long infringed by state governments, "Tribal members were consistently being fined and arrested and jailed and having their equipment taken for over 100 years," said Croll.

In the late 20th century, court rulings finally affirmed the treaty rights agreed upon in the century before. Croll pointed out that climate change and major migration to the area could imperil those rights once again. "If climate change is to the point where the animals and plants that people have had relationships with for millennia leave, they can't follow them. Those homelands don't move. Those treaty rights don't move."

While the full extent of future migration to the Upper Peninsula remains unclear, according to Penrod, "Anecdotally, we've heard stories from realtors who said they've sold their last two houses to people who are fleeing a hurricane in Florida and wildfires out West. So it's starting to happen. But I think the data over the next couple of decades will kind of show how impacted we truly were."

It is clear that climate change has already come to the Upper Peninsula. Maccoux-LeDuc noted that intense storms have caused culverts to fail, and shrinking ice cover has caused food webs to undergo dramatic changes in Lake Superior. Any major population change would present new challenges for managing natural resources and the environment.

"I feel like in so many ways we barely have a handle on the current situation…trying to get everything around us prepared to mitigate and adapt to the climate change we've already seen and the further coming climate change, you know. So to add on to that the additional strain of additional land conversion, the industry and everything else. It's going to be a lot," said Maccoux-LeDuc.

(Emma Dixon is a recent graduate of the University of Michigan. She produced this story for an environmental journalism course (Environ 320) taught by Emilia Askari and Julie Halpert. The story was first published on dissectingthenews.wordpress.com.)

Minn North College graduate excited to continue care for four-leggeds

By Jenny Van Sickle, GLIFWC Outreach Specialist

Kayla Plucinski, a Bad River tribal member, knows GLIFWC.

"I grew up riding my little scooter through these halls, this place has played a special role all my life," said Plucinski.

Plucinski's mom, Lynn Plucinski, GLIFWC's PIO director of operations, recently celebrated 40 years working for the Commission. She shared how proud she was of Kayla and even braved a challenging drive to Ely, Minnesota, for the graduation ceremony during a particularly bad snowstorm. "I wouldn't have missed it for anything in the world," she said.

Plucinski's dad, Larry 'Moose' Plucinski, deputy tribal historic preservation officer for the Bad River Tribe added: "We always supported her decisions, we encouraged her to find what makes her happy."

Kayla Plucinski has worn many hats at GLIFWC from being a Biological Services Division intern in 2018 to working various events and state fairs with the Public Information Office.

"I was staffing the GLIFWC booth at the Minnesota State Fair in 2019 when I was approached by Monte Fronk about the SIRVS program," she said. Fronk, Mille Lacs Emergency Management Officer, encouraged Plucinski to get involved with SIRVS.

According to the University of Minnesota's website: "The Student Initiative for Reservation Veterinary Services (SIRVS) … serves tribal nations throughout Minnesota and neighboring states," by holding no cost pet clinics that provide routine animal care along with offering spay and neuter surgeries.

"We [Mille Lacs] were one of their first partners, it's a great program." Fronk recalled, learning about the initiative after many unplanned litters of dogs and cats were becoming a big problem in the 90's. "Families love their pets, but the costs of these preventative surgeries can be out of reach. By SIRVS providing routine animal care, it catches health problems early and spares expense versus finding health problems later."

Fronk noted the significance of Plucinski following an interest that sparked her passion and also felt a connection to her story being a 1989 Vermilion Community College (VCC) graduate himself.

"Through so many of our Ojibwe stories, clan systems, and teachings, whether it's the ma'iingan [wolf], waagosh [fox], or bizhiw [lynx] the four legged all have a deep purpose, she embraced her calling, her own purpose, and that's healing the distant relatives of traditional four-leggeds," added Fronk.

During a ceremony acknowledging Plucinski's accomplishments, Fronk noted how close she grew up around an organization and staff dedicated to the sacred and scientific protection of four legged beings and beyond.

"I guess it's no accident her calling is to care for animals," he said.

Dr. Raye Taylor, member of the SIRVS Program, and Dr. Lauren Bernstein, University of Minnesota/SIRVS Program Faculty Advisor were also present at Plucinski's ceremony.

Kayla Plucinski, center, was gifted two eagle feathers and a blanket from Monte Fronk, Mille Lacs. Dr. Lauren Bernstein, University of Minnesota/ SIRVS Program faculty advisor; and Dr. Raye Taylor, SIRVS, gifted her a stethoscope and peronalized stethoscope tags. Plucinski's parents, Larry and Lynn Plucinski, surround her. (JVS photo)

Just .02% of all veterinary medicine professionals have Native heritage. Dr. Raye Taylor, a Red Lake descendant noticed Plucinski had natural talent in the pet clinics right away and added: "her achievements will have a positive and lasting impact on generations of native children and families that she works with."

Plucinski still volunteers with the SIRVS program. Dr. Bernstein spoke highly of Plucinski's clinical skills and willingness to stay involved. "She'd never tell you she was top of her class, she's a remarkable young woman." Bernstein explained that the SIRVS program was launched 13 years ago and relies on community and tribal partners as liaisons to assist in the work SIRVS provides for pets on reservations.

Minnesota North College is formerly known as VCC. For more information on SIRVS, please visit: *sirvs.umn.edu*

Invasive species: casualties of colonization

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ers scramble to mitigate this imbalance in order to preserve cultural or natural resources as we know them.

What are the perspectives and insights of Anishinaabe people regarding invasive species?

Obviously, there is a wide spectrum of opinions among tribal members and there are no simple definitions or conclusions, but are there common cultural perspectives? Lee Obizaan Staples, who worked with GLIFWC in creating the Climate Change Vulnerability Assessment (2018) and the Tribal Climate Adaptation Menu (2019), coined the term for invasive species as *bakaan ingoji gaa-ondaadag*, which translates to *they who came from somewhere else, but live here now*. This term in the Anishinaabe language does not invoke fear, uncertainty, or danger, but instead identifies these species as newcomers to the region.

Another term that is commonly used at GLIFWC for invasive species is "non-local beings." Keep in mind that not all non-local beings are invasive species, and not all invasive species are non-local beings, but that will be a conversation for another time. Elders and knowledge-keepers grounded in Anishinaabe language and worldview are careful to not use harsh or incendiary words to describe plant and animal relatives.

In the book Awesiinyensag (2010), a collection of animal stories written entirely in the Anishinaabe language, the late Eugene Stillday from Red Lake Nation stated in the preface: *"Gego baapinenimaaken awiya! Giishpin izhichigeyan giga-bi-azhe-giiwendaagon! (Don't make fun of anyone. If you do, it will come back on you!),"* declaring that this book was not intent on ridiculing or disrespecting our animal relatives, only to contribute to the revitalization of Anishinaabe language through stories.

Members of the Voigt Intertribal Task Force, a treaty rights consortium consisting of Ojibwe tribal nations within the 1837, 1842, and 1854 Ceded Territories, recently had a lengthy discussion about the contrast between Western and Anishinaabe perspectives in identifying and dealing with invasive species. The discussions leaned more toward human responsibility and accountability as opposed to eradication and mitigation procedures for a particular species. Anishinaabe teachings identify the inherent right of all living beings to exist and require reflection and understanding by human beings before any defensive or mitigative action is considered.

When is it okay to eradicate a species that is destroying a cultural resource?

According to Anishinaabe teachings, it's never okay to kill thoughtlessly without humility, need, and reflection. It was recommended by members of the Voigt Intertribal Task Force that we, as Anishinaabe, must first understand why this newcomer species is here. Were we, as humans, responsible for its relocation? What is our potential connection or kinship to this new arrival? Is it a medicinal plant? Does it have qualities other than threatening a valued resource? This process may take some time in making acquaintance with a newcomer relative. Ironically, these invasive species have the qualities that most Americans cherish: determination, innovation, and rugged individualism!

After careful and mindful reflection, if it is deemed that we may have difficulty coexisting with a particular species, what actions should we take as responsible stewards of the land? Keep in mind that we are not stewards of all species on the land; most species will survive and thrive without our intervention; however, we must be accountable for our own impacts on the ecosystem community.

Before eradication measures are initiated for sea lamprey, GLIFWC scientists offer *asemaa (tobacco)* into the waters to recognize and honor the spirit of this remarkable species. In the Anishinaabe language, the names for sea lamprey are *ginebigomeg (snake fish)* and *bimiizii (moves around in the muck)*, both names describing and honoring the lamprey's unique characteristics and lifecycle.

Before traveling to the forest to pull up garlic mustard, GLIFWC staff hold a pipe ceremony to honor the spirit of this plant at the harvest site. It has been suggested internally that GLIFWC staff make garlic mustard pesto from the harvested plants and offer this as a reciprocation for mitigative action. With careful reflection and reciprocal intent, we, as humans, can learn to be better caretakers and knowledge-keepers of the land and waters.

Foraged Garlic Mustard Pesto

- 1 cup washed and drained garlic mustard leaves, moderately packed
- 2 tablespoons other fresh herbs, oregano, basil, or thyme (optional)
- 1 large garlic clove
- ¼ cup shredded Parmesan cheese
- 2 tablespoons pine nuts
- ½ teaspoon salt
- Dash black pepper
- ½-1 cup extra virgin olive oil

Place all ingredients, using 1/2 cup of the olive oil, in a food processor. Process until smooth, scraping the sides of the bowl as needed. Check the consistency of your pesto and add more oil if desired, pulsing the processor to combine.

Garlic mustard

Use as you would traditional pesto and store any leftovers in the fridge.

Senior level accountant returns home

Stephanie Smith, a member of the Red Cliff Band of Lake Superior Chippewa, counts on her experience to begin a new role as GLIFWC's Comptroller.

At UW-La Crosse, she earned her bachelor's degree in accounting in 2004. After graduation, Smith moved to Madison, Wisconsin, where she worked for a public accounting firm for almost six years and became an audit supervisor. Her experience varies across several industries, but Smith's primary focus has been in the financial sector and employee benefit plans.

Smith made her way back north when it was time to raise a family. For the past 12 years she's been working as a senior accountant in the health care field. In addition to her work at GLIFWC, Smith currently serves on her local city council in Hurley, Wis., where she lives with her two children.

"I am hoping my background and knowledge will benefit not only our accounting department but our entire organization, from helping to continue our clean audit reports to supporting GLIFWC tribes in their work to protect treaty rights." **—J Van Sickle**

Building capacity at human resources

An experienced human resources director with over 20 years of expertise in the field, Ashley Poch joins GLIFWC in the Administration Division. Her resume includes nine years in tribal government. Prior to GLIFWC she spent 7½ years with the Red Cliff Band in both the Accounting & Human Resources Department. She also worked for the Bad River Band as an assistant accounting manager.

Poch is from Killeen, Texas (Ft. Hood), an Air Force veteran, and is married with four kids. For the past nine years, Poch and her family have called northern Wisconsin home. "When I'm not busy taking notes or researching various topics, you can find me at home with my kids who range in age from 1-16!"

Poch earned her master's degree in business administration from Grantham University and holds a Professional Certification in Tribal Human Resources. Hired in January, Poch is taking on the role of human resources director where she'll focus on policies and procedures and work on the process of integrating Human Resources across GLIFWC's divisions. **—J Van Sickle**

Sandy Lake Ceremony July 26, 2023

Red Cliff Band elder and Hereditary Chief Robert Buffalo addresses the Mikwendaagoziwag gathering on July 27, 2022, at the US Army Corps of Engineers Big Sandy Lake Dam property. Twelve Ojibwe tribes situated in Minnesota, Michigan, and Wisconsin are the modern-day successors to the Sandy Lake annuity bands from 1850. With support from the US Army Corps, those 12 tribes joined GLIFWC in helping design and fund the Mikwendaagoziwag Memorial, which honors the sacrifice of all those who suffered and died over the winter of 1850-51 during an illegal government scheme to pull Ojibwe people from their homelands. (COR)

Essential Ojibwemowin

Onji-Akiing—From the Earth

RETURN ADDRESS:
GLIFWC
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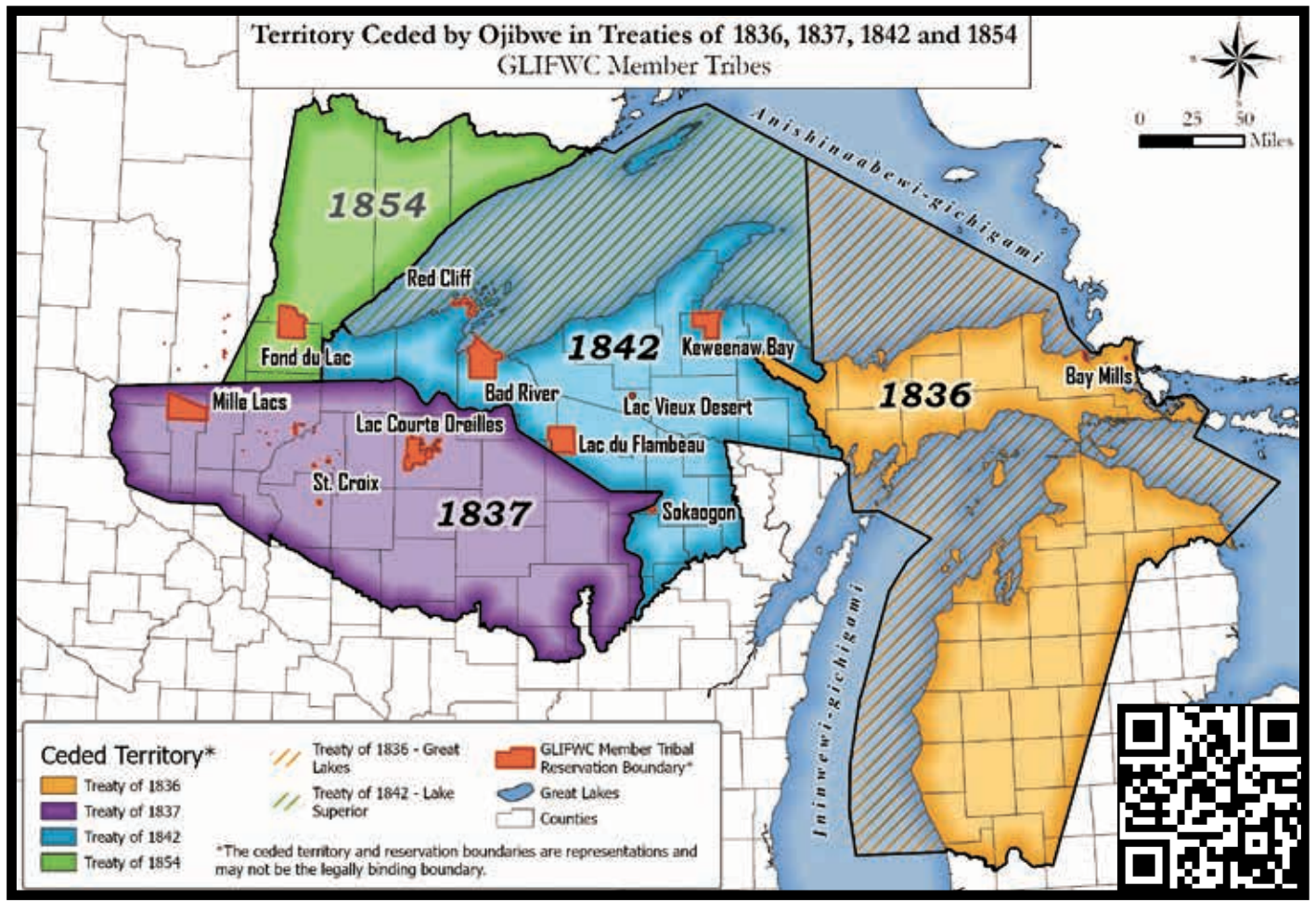
ODANAH, WI 54861



Mazina'igan

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