Mazina'igan
A Chronicle of the Lake Superior Ojibwe
Published by the Great Lakes Indian Fish & Wildlife Commission SUMMER 2022

Natural gems in the path of development

Environmental surveys uncover rare and endangered species

By John Coleman
GLIFWC Environmental Section Leader

Few people realize just how unusual the Bad River watershed is. Listed as a National Natural Landmark by the Park Service, an internationally recognized Ramsar site under the Convention on Wetlands of International Importance, and containing many State of Wisconsin Areas of Special Natural Resources Interest (ASNRI), it is exceptional in the Great Lakes. The watershed hosts the last remaining extensive coastal manoomin (wild rice) beds in the Great Lakes and provides spawning grounds for much of the Lake Superior fishery. It is also home to the piping plover, the northern long eared bat, and the wolf—all endangered species. As one indicator of just how unique the area is: the only record in Wisconsin of the mayfly family Neoephemeridae is in the Bad River watershed.

Recent threats such as the Penokee Hills iron mine proposal by Gogebic Taconite and the crude oil pipeline proposal by Enbridge Inc. have focused attention on the rare species and the thousands of wetlands and streams in the watershed. From 2011-2014 GLIFWC and Bad River Band staff focused on identifying wetlands and water courses in the watershed that would be obliterated or otherwise impacted by the large iron mining project under the Gogebic Taconite proposal. Ultimately the mining proposal was withdrawn. The company said it hadn't realized just how many high quality wetlands were in the project area. The current proposal to put 41 miles of oil pipeline through the upper reaches of the watershed has stimulated new interest in documenting the rare plants and animals that live here.

A wood turtle near the Potato River—part of the Bad River watershed. While this one may be too young to breed, adults can be seen on warm days looking for sandy soil near water in which to make a nest. (J. Coleman)

While Bad River Band biologists focused on documenting rare and tribally-important species within the reservation boundary, GLIFWC staff assisted in documenting those species in other parts of the watershed. In 2021 we began **(see Environmental surveys, page 15)**

Late ice-out pushes fishing well into May

By Charlie Otto Rasmussen, Editor

Swinging from one extreme to the next, the spring fishing pendulum delivered a markedly late open water season in the Ojibwe Ceded Territory. While treaty fishers found themselves plying freshwater lakes in late March 2021, thick ice and cold temperatures kept tribal boats mostly trailer-bound until the third week of April this season.

After midnight on May 1, Leslie Ramscyk logged details on every fish harvested from the Chippewa Flowage that night. Her creel team partner Sam Quagon took measurements and called out the gender of each fish. (CO Rasmussen photo)

When the lakes finally did give up their ice—generally opening along a southwest to northeast gradient—fishing moved along quickly for spearfishers who made the most of their sometimes limited opportunities.

Wisconsin

Situated some 40 miles north of the Ceded Territory's southern edge, Long Lake yielded the first ogaawag of the open-water fishing season April 19. Over two consecutive nights spearfishing the intricate shorelines of the 976-acre Chippewa County lake, Bad River Band fishermen harvested 104 walleyes.

By May 1, northern-tier lakes were shedding ice cover but cold, overcast skies made for spotty fishing. On the Chippewa Flowage, Jack Hamilton proclaimed the sprawling man-made lake the exclusive domain of small male ogaawag as chilly water temperatures appeared to slow spawning activity.

"It's all little ones out there," said Hamilton of Lac Courte Oreilles as a creel team documented his catch. "We saw two big ones, probably females, but the water's still too cold. The temps kept dropping and then all the fish cleared out by midnight."

A GLIFWC creel team punctuated his analysis as Sam Quagon called out details from every fish Hamilton and his partner harvested.

"Male, 12.7 [inches], male 15.5, male 15.1, female 15.5, male 13.9, male 12.7, male 14.1, male 15.4, male 16.3, male 13.4, male 13.6, male 14.1. male 14.2, male 14.5…," said Quagan in a clear and **(see Late ice-out, page 14)**

The supernatural -world- of the Ojibwe

googii **= dive underwater**
bic **= metal or mineral**

The largest lake in the 1842 Ceded Territory is situated in Upper Michigan. Lake Gogebic, or *googiibic* in Ojibwemowin, is inspired by the Great Underwater Panther known as Mishibizhiw, said Leon Boycee Valliere. A formidable spirit adorned with metal horns, Mishibizhiw is known to drown people in the freshwater lakes of Ojibwe Country.

Biiwaabik **= iron**
miskwaabik **= copper**

Anishinaabe insights
The politics of placenames

By Michael Waasegiizhig Price, GLIFWC TEK Specialist

Interior Secretary Deb Haaland (Laguna Pueblo), the first Native American to hold a cabinet position in the federal government, issued Secretarial Order 3404 declaring the word "*Squaw*" as a derogatory and offensive name, and ordered that name to be removed from all federal lands.

The origin of that name is unclear and controversial, but clearly it is seen as a racist and misogynistic term that denotes Indigenous women as a sub-human category. This term originated during the colonial period and many placenames across the country currently contain this name.

During the colonial period, many landforms that were sacred to Native people were given derogative or satanic names. Places like Devil's Tower in Wyoming, Devil's Lake in North Dakota, Squaw Tit Mountain in Maricopa County, Arizona, and the Witching Tree at Grand Portage, Minnesota were all deliberately named to demonize the Indigenous inhabitants of the area; all these places were sacred sites to those tribal peoples living there. Over time, these derogative placenames became official within the federal government and they reflect the brutal colonization of the continent.

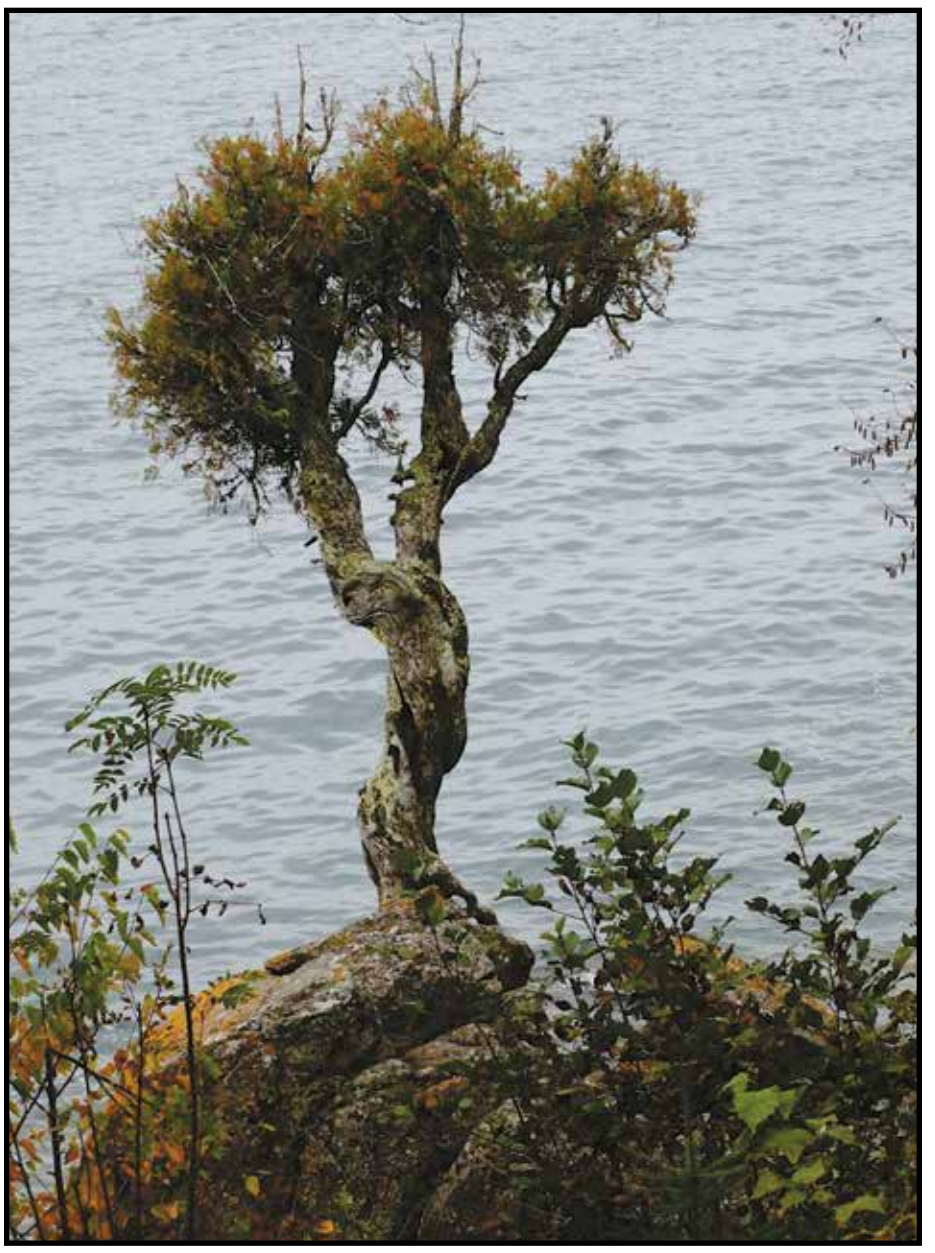
In April 2022, in response to Secretary Haaland's Order, GLIFWC assisted both the Bad River and Lac du Flambeau Bands to rename several, small waterways in Ashland and Price Counties in Wisconsin that were both named Squaw Creek; these waterways reside within the Ceded Territory of the 1842 Treaty area.

The task allotted a two-week window to get these names submitted to the U.S. Board of Geographic Names (BGN) within the U.S. Geological Survey. In a rushed campaign, three knowledge-keepers from both tribes, Leon "Boycee" Valliere of Lac du Flambeau, and April Stone and Edith Leoso of Bad River, submitted candidate names for the renaming process. Ms. Stone and Ms. Leoso submitted the name *Wazhashki-Ziibiins—"Muskrat Creek"*—for the waterway in Ashland County, reflecting on the abundant population of muskrats living in the waterway.

The waterway in Price County, near the Lac du Flambeau reservation, was renamed *Aabajijiwang—"The Place Where Water Continuously Flows*." Though we had a very short time to submit these names, it was done so with knowledge of the area and cultural protocol, but the Derogatory Geographic Names Task Force within the BGN will have the final say over which candidate names are selected.

From an Indigenous perspective, placenames are considered culturally significant or sacred, and they are part of the identity of that community. The names either reflect the unique characteristics of the landscape or they record historical events that took place at that particular location. Just by knowing and understanding the Indigenous pla-

(see Placenames, page 7)



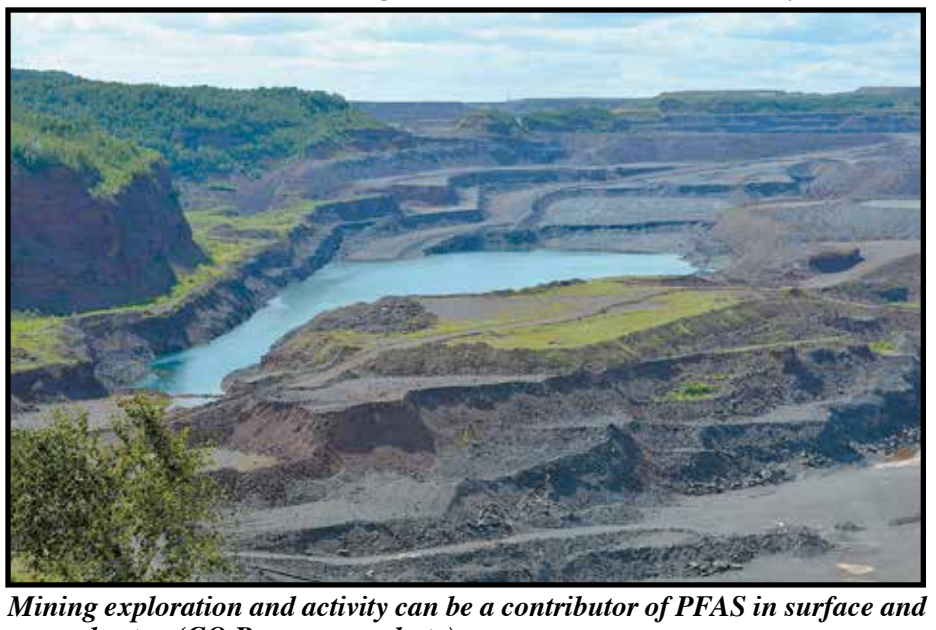
Manidoo-giizhikens, "Little Spirit Tree," rests upon a barren rock on the shore of Lake Superior near Grand Portage, Minnesota. (L. Polson photo)

Mineral exploration, sewage can contaminate groundwater with PFAS

By Caren Ackley, GLIFWC Environmental Biologist

With moniker like "forever chemicals," PFAS are attracting a lot of public attention over the past year or so.

PFAS, or per- and poly-fluoroalkyl substances, are a class of more than 5000 synthetic chemical compounds that are resistant to heat, water and chemical breakdown. PFAS are so stable due to the strong bond between carbon and fluorine atoms, one of the strongest bonds observed in nature. They have been called "forever chemicals" and once released into the environment they could be with us, well…potentially forever.



Mining exploration and activity can be a contributor of PFAS in surface and groundwater. (CO Rasmussen photo)

PFAS have been used for decades to manufacture many industrial and household products, most notably non-stick cookware, as well as fire retardants and firefighting foam, stain-resistant carpets, water-repellant fabrics and fabric treatments, and oil-resistant food packaging such as microwave popcorn bags and disposable food containers. PFAS can also be released into the environment from the use and disposal of these products.

Other sources include contaminated sewage sludge spread on fields and liquid leached from landfills into surface and ground waters. While some sources of PFAS are well known, other sources are more difficult to pinpoint because PFAS are transported rapidly and easily by water and air, meaning the site of detection may be far from the source. Not only have PFAS have been detected in produce and animal products stemming from contaminated soil, water, air, and animal feed, but also in some polar bears and seals in remote locations of the Arctic.

Another source of these emerging contaminants is lubricating fluids used during exploratory drilling in mining. This is a concern across the Ceded Territories where exploratory drilling has been proposed at the Reef deposit in Marathon County and Bend deposit in Taylor County. Mining may be regulated by State, County, and local governments. At each level the government may request chemical information and/or testing of lubricating fluids for chemicals like PFAS and should examine risk of them being introduced to the aquifer.

Currently, drilling companies are generally not required to disclose proprietary chemical information or submit samples for testing prior to their use unless requested or required by state or local governments.

Like mercury, PFAS bioaccumulate, meaning they build up over time and concentrations increase in species that are higher in the food chain. Continued research of PFAS in fish and wildlife has indicated that some compounds can

(see PFAS, page 3)

Ceded Territory news briefs

Michigan Gichigami near-shore eyed for spaceport

The Michigan Aerospace Manufacturers Association (MAMA), a trade association founded in 2007, has developed a plan to bring space launches to the Midwest, selecting a portion of a 26,000 square foot private estate in Upper Michigan as one of three facilities to support payload rocket launches into space. Under this plan, the property, known as Granot Loma, would host vertical launches through which horizontal rockets carrying satellites and other payloads would be launched into low-Earth orbit. A second facility would be a horizontal-launch site at the Oscoda-Wurtsmith Airport, about two hundered miles north of Detroit, where aircraft carrying satellites would take off from runways. Operations for both sites would be supported by a command-and-control center situated in the Upper Peninsula.

Businesses that use satellites pay aerospace companies a fee to transport their payloads into space, and those aerospace companies pay commercial spaceports for the use of their launchpads. MAMA has undertaken a feasibility study for the launch site at Granot Loma as a way to bring aerospace business to the Midwest.

Located in the 1842 Michigan Ceded Territory, rocket launches from the Granot Loma would likely follow a flight plan sending them at least partly over Lake Superior. Residents and environmentalists share concerns about noise from the launches disturbing aquatic animals, vibrations from the launches weakening the sandstone cliffs along the lake's shore, and rocket fuel or debris polluting the lake.

The final location of the launchpad and the flight path of each individual rocket is undecided. MAMA is currently exploring the acquisition of a portion of the property that would be necessary to develop the spaceport. Any such plan would need to be evaluated and approved by the Federal Aviation Administration. **—J. Vanator**

Moose numbers hold in 1854 Ceded Territory

Rocked by a dramatic population plunge a dozen years ago, the northeast Minnesota moose herd continues to show signs of stability after an interagency research team completed its latest assessment. At an estimated 4,700 animals, 2022 herd numbers show little statistical change over recent surveys, which are conducted most winters by biologists from Fond du Lac Band, 1854 Treaty Authority, and Minnesota Department of Natural Resources.

Biologists point to a strong calf presence as a positive indicator of moose herd health. Calves comprised an estimated 19% of the population in the latest assessment. Coupled with an estimated calf-cow ratio of 45 calves per 100 cows, researchers said the numbers suggest improvement in reproductive success.

Moose in the Minnesota Arrowhead region—which includes the 1854 Ceded Territory—experienced an historic die-off from 2009-2012. Researchers found that several key factors exacerbated by climate change were largely responsible for the decline in the moose herd. Parasites including brain worm and winter ticks caused sickness and death. Ill health further made moose more vulnerable to predation from wolves and bears. Today's moose population is 47% below its 2006 peak, the Minnesota DNR said. **—CO Rasmussen**

Gratitude—Reflecting on reading & stories

Maadagindan! is designed to elevate the voices of Native authors of children's books that focus on Ojibwe culture and the Great Lakes. Parents, teachers, educators and anyone that loves to read with children are welcome. "It has been an incredible honor to facilitate the spring 2022 book club – Maadagindan! Starting Reading!—this spring in collaboration with GLIFWC," said Anne Moser, a librarian with Wisconsin Sea Grant.

Sea Grant 2021 summer intern Morgan Coleman, provided readers with a powerful selection of books and opportunity to explore the rich stories, experiences and cultural traditions of Ojibwe life. The four books featured this spring were led by honored guests: Hannah Arbuckle, Kathleen Smith and Michael Waasegiizhig Price of GLIFWC, and the author of *The Water Walker*, Joanne Robertson.

"Their stories and perspectives were a true gift to all of us and brought a deeper understanding of the themes and stories we read. I am forever transformed as an educator, librarian and steward of our Great Lakes," said Moser.

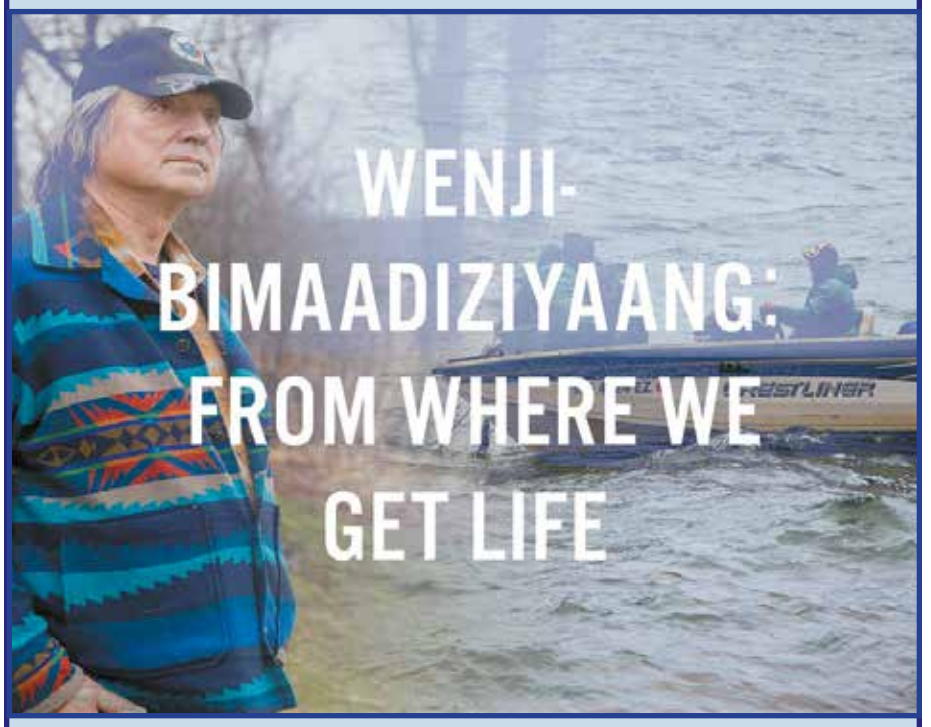
Maadagindan! will reconvene in September of 2022 and will meet once a month on Zoom. If you are interested in attending, please send a message to *akmoser@aqua.wisc.edu* to be added to our mailing list. Or explore our website: *go.wisc.edu/maadagindan*.

Request for Proposals

GLIFWC is preparing a formal RFP for a short film on Ojibwe Treaty Rights set during the time period from 1985-1991 in Wisconsin known as the boatlanding protest era. Following the Lac Courte Oreilles *LCO/Voigt Decision*, Ojibwe tribes and state officials negotiated elements of off-reservation harvests as protests against natives rocked the state.

For potential contractors, please stay tuned for an announcement or contact *pio@glifwc.org* for more information. See the "Ogichidaa Storytellers" *ogichidaa.org* for more on production style.

Wenji-Bimaadiziyaang



In the Treaty of 1837, Mille Lacs Band and other Ojibwe tribes ceded 13 million of acres of land to the United States government. Following its rise to statehood, Minnesota officials soon enacted a policy to deny Ojibwe people their treaty-reserved rights to natural resources. Wenji-Bimaadiziyaang tells the story of the political and legal fight to reaffirm Ojibwe treaty rights in the Minnesota 1837 Territory after more than 150 years of persecution.

View Wenji-Bimaadiziyaang and other Ogichidaa Storytellers videos at *ogichidaa.org*.

PFAS continued

(continued from page 2)

accumulate in commonly consumed fish and game tissue. The chemical stability of PFAS means that the likelihood of consumption and risks to human health may continue long after these substances are released into the environment. Questions remain about the toxicity of each of the thousands of PFAS and the levels of exposure that are harmful to humans and wildlife, mainly because most have not been tested. A growing body of evidence suggests PFAS exposure is linked to health issues such as infertility, testicular cancer, thyroid and pancreatic disorders, non-alcoholic fatty liver disease, and kidney and liver damage. Some of the main pathways of human exposure to PFAS include consumption of contaminated drinking water, foods that have been in contact with treated packaging and, like mercury, through the consumption of fish harvested from tainted waterbodies.

The drinking water quality standard for PFAS recommended to the Wisconsin Natural Resources Board (NRB) by Department of Health Services (DHS) and WDNR is 20 parts per trillion (ppt), based on the health advisory standard issued in 2016 by US Environmental Protection Agency (EPA). PFAS have been detected in municipal waters at dozens of sites across Wisconsin, including in Madison, Milwaukee, Eau Claire, La Crosse, Peshtigo, Rhinelander and Wausau.

The detection of PFAS in waters across Wisconsin have been met with varying degrees of concern. For example, all municipal wells in Wausau were found to contain PFAS at levels higher than DHS recommendations of 20 ppt. The city is providing residents with bottled water and water filtration systems as a "band-aid" fix, with plans to upgrade their water treatment facility to be capable of removing PFAS in drinking water to below 20 ppt. This filtration technology is in the pilot study phase, but once implemented it would be the first in the state.

However, in February 2022, the NRB voted to increase the recommended drinking water standard to 70 ppt, the current EPA recommended drinking water standard, which is more than 3 times the limit recommended by the DHS and DNR. Furthermore, following a lawsuit filed by Wisconsin Manufacturers and Commerce lobby, a Waukesha County judge ruled in April 2022 that the DNR has no authority to require businesses to test for or clean up PFAS contamination until they have been deemed "hazardous substances" by the EPA.

By contrast, the Minnesota Pollution Control Agency released the PFAS Blueprint in February 2021 that provides a roadmap for protecting the environment and human health from PFAS contamination and exposure. The state of Michigan created the Michigan PFAS Action Response Team (MPART) in 2017 to monitor and address growing concerns of PFAS contamination and exposure. PFAS contamination and human exposure have come to the forefront of GLIFWC's attention, partially due to the mixed response from state agencies.

GLIFWC is working with state, federal and academic partners to develop testing programs for the environment and treaty protected resources which will establish baseline data for future environmental monitoring and assessment. This will ensure safe consumption of fish and other wild foods across the ceded territories for future generations.

Our goal is to help answer unanswered questions such as where are PFAS areas of concern, how does this impact tribal harvesters, and what are safe levels of consumption? We cannot protect our resources if we do not know the threats.

—J. Rasmussen contributed to this article

Lac du Flambeau hosts youth spearing camp

First strike: Stephanie Jack, 12 spears her first walleye with Edward Poupart, Jr., 15 near Lac du Flambeau May 7, 2022 (JVS photo)

Waswaagoniing was bright with smiles marking a memorable night

By Jenny Van Sickle, Staff Writer

As Lac du Flambeau' s youth spearing camp got underway in early May, Wayne Valliere (Mino-Giizhig) started the evening off with a teaching: "Mishibizhiw (water spirit) looks around for people that are disrespecting the water. He takes care of the water on behalf of the Anishinaabe, when he sees the Anishinaabe putting their tobacco in the water it makes him happy, and what that will do is calm the lakefor us. It'll make it easier to harvest and see the fish. We always respect the water because the water is our life. It's the life blood of our grandmothers and without it none of us can live," said Valliere, an Ojibwe language and culture teacher at the Lac du Flambeau Public School.

The annual camp is uniquely Ojibwe; fishing occurs at night using 10-foot spears and every fish harvested is documented. Kids of all ages piled into camp at Little Trout Lake and embraced their roles and ability to measure, sex, and clean their harvest. They also paid close attention to instructions about boating safety.

Elders talked to the younger kids about the importance of keeping an accurate count of fish harvested and about different types of permits, both on and off reservation. Everyone at camp had a job from unpacking the drum, setting up the food, to tending the fire and helping launch the boats. Down by the shoreline, older kids stood ready to help transfer and trade out kids waiting for their turn to hop in and out of fishing boats.

At 11:00 p.m. after a couple hours of youth fishing, it was finally Stephanie Jack and Jenessa Lussier's turn to step into the boat. At age 10 they both had participated in camp before but this was the first time they would be up in the bow to spear.

Edward Poupart, Jr., 15 kept a supportive eye on the girls' techniques, gave advice on their stance, and showed them how to use the tools. In no time at all, the girls each harvested their very first walleyes and ended the night with two apiece.

"They took this seriously and still had fun, I'm proud of them." said John Johnson, Jr. who drove the boat. "Sometimes I see kids around here growing up and I think, hey, I was there when they got their first walleye," he said.

John Johnson, Sr., Voigt Intertribal Task Force Chair, talked about the evening and upcoming plans. "We'll take our younger kids and put them up front, each with one of our young men to stand up with the younger ones, showing them what to do. We've been helping these kids learn how to take care of their elders, their families, and part of learning is teaching so everything we do here tonight they will hold dearly in their hearts and hopefully they remember what they learned tonight," he said.

All fish harvested will be served up at Lac du Flambeau's next community feast where the boys will talk to elders about their experience teaching the younger kids at spearing camp.

MAZINA'IGAN STAFF:
(Pronounced Muh zin ah' ĭgun)

Charlie Otto Rasmussen.....Editor
Lynn Plucinski .....Assistant Editor
Jenny Van Sickle .....Staff Writer

MAZINA'IGAN (Talking Paper) is a publication of the Great Lakes Indian Fish & Wildlife Commission, which represents eleven Ojibwe tribes in Michigan, Minnesota and Wisconsin.

Subscriptions to the paper are free to United States and Canadian residents. Subscribe online at: *glifwc.org/mazinaigan/subscribe.php* write **MAZINA'IGAN**, P.O. Box 9, Odanah, WI 54861; phone (715) 682-6619; or e-mail: *pio@glifwc.org*. **MAZINA'IGAN** is also available in electronic format.

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

In coordination with the Army Corps of Engineers, GLIFWC is planning a return to Sandy Lake, Minnesota for the Mikwendaagoziwag Ceremony on July 27. The Mikwendaagoziwag Memorial (pictured) recognizes the sacrifice of Ojibwe people over the winter of 1850-51 when a group of government officials led by Territorial Governor Alexander Ramsey attempted to illegally force Ojibwe people to abandon their eastern homelands and move to Sandy Lake. The scheme resulted in 400 Ojibwe deaths and suffering for thousands. Ramsey ultimately failed and Ojibwe headmen negotiated permanent reservations around their homelands in the 1854 Treaty. (CO Rasmussen photo)

Lac du Flambeau Chair John Johnson, Sr., his son John Johnson, Jr., and his son Genebik Johnson, 12, prepare their boat to head out spearing at Little Trout Lake. (JVS photo)

Younger kids at camp gathered around the drum to sing and dance before heading out on the lake for the evening. (JVS photo)

Fishery crews launch annual effort to estimate adult walleye population

By Jenny Van Sickle, Staff Writer

At Windfall Lake in southern Sawyer County, the springtime air temperature feels warm despite reading just above 30 degrees.

Of the many walleye lakes GLIFWC surveys, Windfall Lake is on the smaller side and manageable at just 1.6 miles of shoreline. GLIFWC crew Henry "Butch" Mieloszyk, inland fisheries technician since 1984 and Inland Fisheries Technician Ed White, since 1987, joined Biologist Mark Luehring in strapping on rain gear, boots, and launched their boat just after 9:00 pm in late April, searching for adult ogaawag.

"These counts are important to have accurate population estimates, to analyze trends over time, and to set the annual quotas for treaty-protected tribal harvests," said Luehring.

Many lakes are assessed annually for juvenile abundance, but adult population estimates like this one occur on a rotating basis. An early review of the data suggests that the adult walleye population has dipped slightly at Windfall Lake since its last count in 2017, likely because of lower natural reproduction rates.

This past spring, GLIFWC operated three assessment crews, with St. Croix and Mole Lake fisheries departments also running spring surveys.

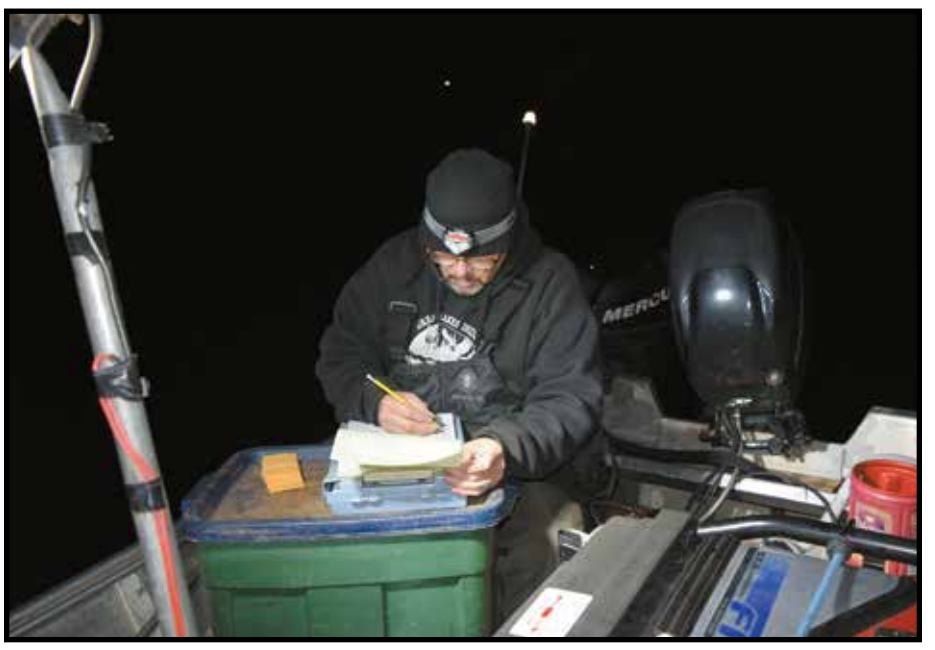
A stubborn spring ice-out made this season challenging. Usually there's a flurry of action to catch and count the walleye when the water is 40-50 degrees. Typically, crews are racing to mark, recapture, and report during the slim window of ideal spawning conditions between ice out and just before the water reaches 50 degrees, Luehring explained.

"It's May, and we are still waiting for lakes in northeast Wisconsin to open, bringing a rare break in surveys," Luehring said.

On the water

Escorted by the lively chorus of spring peepers, biologists step onto their rubber pad to activate the electrical charge before lowering the long arms of the electro-fishing apparatus into the water. Crews can comb through long empty zones and suddenly hit a hot spot of spawning walleye. The impossibly long handle on the net takes real skill to retrieve the temporarily stunned fish.

"Unfortunately, on some lakes, we're noticing more and more aluminum cans, tires, and golf balls littering the shallow walleye spawning habitat," said Luehring.



Ed White, Inland Fisheries Technician since 1987 with GLIFWC records the sex and measurements of walleye during spring assessment (2022). (J. Van Sickle photo)

After a spin around the lakeshore collecting walleye, the crew of three work smoothly and efficiently, calling out walleye measurements, sex, and survey status: "new" or "recap," noting a fish that has already been caught or *recaptured* noticeable by an identifying small clip taken from the tail fin. White records and tracks the data to build a dynamic and sufficient sample size. Biologists retrieve the walleye one at a time from the on-board holding tank before a swift motion of marking, clipping, and measuring prior to returning the fish to the lake.

At the close of the spring assessment, GLIFWC biologists and Wisconsin DNR biologists exchange information from the spring population estimates. Reports are shared to help develop a seasonal summary that will be available in dagwaagin (fall). In addition to the surveys that each agency is conducting on its own this spring, GLIFWC Inland Fisheries Division is partnering with the DNR to tackle the expansive shorelines on the recapture surveys of the Chippewa Flowage and Long Lake (Washburn Co.).

Forecasting the future of fishing in Wisconsin

Study calls for less resistance, more adaptations in fisheries management

Figure 1. Wisconsin offers diverse recreational (a–c, f–j) and tribal (d, e) fisheries in all seasons, from coldwater trout streams to warmwater rivers and lakes. Climate change threatens to alter fishing opportunities across the state and therefore complicate fisheries management, as habitats transition from supporting cold and coolwater fisheries to warmwater species. Top row: (a) brown trout/namegos (M. Mitro), (b) brook trout/maazhamegoons (M Mitro), (c) walleye/ogaa caught in the recreational ice fishery (G. Sass), (d) tribal walleye/ogaa spearing (CO Rasmussen), and (e) muskellunge/maashkinoozhe speared during tribal harvest (CO Rasmussen). Bottom row: (f) cisco/odoonibiins (Z. Feiner), (g) yellow perch/asaawe caught ice fishing (G. Sass), (h) bluegill/agwadaashi (C Kolstad), (i) largemouth bass/ashigan (A. Kerkhove), and (j) black crappie/gidagagwadaashi (credit: G. Sass)

As lakes across the upper Midwest get warmer, cold-water species of fish are finding it harder to thrive. In Wisconsin, that trend is especially noticeable in struggling walleye populations. Walleye are incredibly important to many indigenous communities, a top target in the state's sport fishery, and a popular item on many restaurant menus. Tribes and the state of Wisconsin spends millions each year on efforts to keep the walleye fishery running.

However, according to reports in a special issue of the *Journal of Fisheries Management and Ecology*, it is time to rethink some of those efforts.

For the majority of our lakes, it will eventually cost too much time and money to keep them all supplied with enough stocked fish to support a "grow and take" walleye fishery. Which means it is time, Zach Feiner (Primary Investigator) says, to accept the things we cannot change.

That kind of fishing flexibility is going to be key, Feiner says, because "within our lifetime, by mid-century, we're going to be at a place in our Wisconsin lakes where it's mostly a warm water fishery (Figure 1). "There will be fish," he says, "they will just be different fish." Read the full article at: *https://onlinelibrary.wiley.com/doi/full/10.1111/fme.12549.* **—A. Shultz**

Ceded Territory SCIENCE

Rehabilitation plans for Ogaa Lakes of Concern in 1842 Ceded Territory

By Aaron Shultz, Mark Luehring, Joe Dan Rose & Adam Ray, GLIFWC Inland Fishery Biologists

A number of lakes in the Ceded Territories have experienced declines in ogaa (walleye) over the past two decades. This has prompted numerous efforts by tribes, GLIFWC, and Department of Natural Resources (Minn., Wis., and Mich.) to resist declines in ogaa populations (e.g. more conservative regulations, increased stocking of large fingerlings, research projects, habitat restoration) while continuing to provide shared fishing opportunities.

While these strategies are showing preliminary signs of benefit within some walleye populations, other populations are not responding as hoped. Lake ecosystems and their fisheries may respond differently to actions taken by humans, possibly resulting in mixed responses and different timetables for rehabilitation. As ecosystems experience change, the relationship between humans and their relatives (in this case ogaa) should be flexible, and new approaches may be needed.

Clear (Oneida), Katherine (Oneida), Anvil (Vilas), and Laura (Vilas) have all experienced declines in production and/or survival of young fish and subsequent decreases in the adult walleye population. Historically, these lakes had self-sustaining walleye populations where natural reproduction and recruitment provided good walleye fisheries (Figure 1).

Looking to the future, some of these lakes are predicted to support cool water fisheries, while others are not (Table 1). In the short-term (5-10 years), a rehabilitation plan that attempts to restore cool water fisheries in these lakes may be the best approach, while also evaluating progress and keeping other approaches on the table.

(See CT Science, page 14)

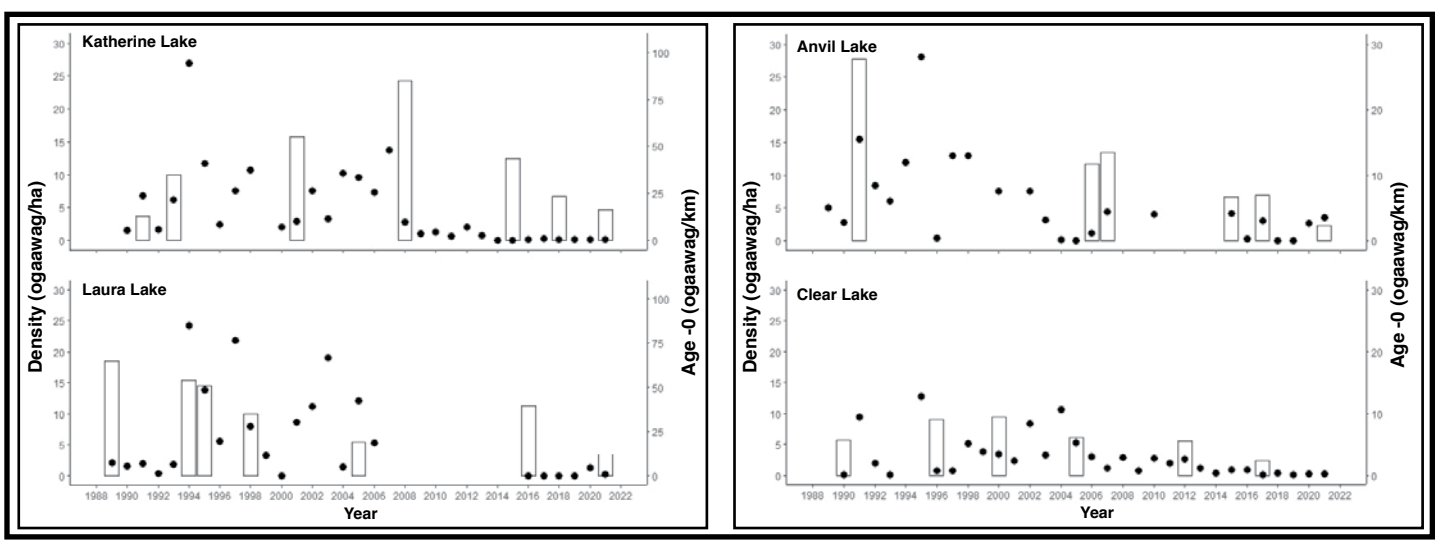


Figure 1. Adult density of ogaawag (walleyes** Sander vitreus**; number of fish per hectare, indicated by the open bars) and catch per unit effort of age-0 ogaawag (indicated by closed circles) in electrofishing surveys from 1989 to 2021 in Anvil Lake, Clear Lake, Katherine Lake, and Laura Lake. No surveys were conducted in years without data. Note the secondary y-axis scale is different across lakes.

Lake	Species Suitability (2018)	Species Suitability (2050)	Probability of Species Dominance (2040-2064)	Probability of Species Dominance (2065-2089)	Vulnerability to Climate Change	Refuge for Walleye Under Future Conditions
Clear	Warm-water, Cool-water, and Cold-water Species	Warm-water and Cool-water Species	High largemouth bass abundance >49%, naturally reproducing walleye populations <49%	High largemouth bass abundance >49%, naturally reproducing walleye populations <49%	High	Unlikely
Katherine	Warm-water, Cool-water, and Cold-water Species	Warm-water and Cool-water Species	Naturally reproducing walleye populations >49%, high largemouth bass abundance >49% probability	Naturally reproducing walleye populations >49%, high largemouth bass abundance >49%	High	Likely
Anvil	Warm-water, Cool-water, and Cold-water Species	Warm-water and Cool-water Species	High largemouth bass abundance >49%, naturally reproducing walleye populations <49%	High largemouth bass abundance >49%, naturally reproducing walleye populations <49%	High	Unlikely
Laura	Warm-water, Cool-water, and Cold-water Species	Warm-water and Cool-water Species	Naturally reproducing walleye populations >49%, high largemouth bass abundance <49%	Naturally reproducing walleye populations >49%, high largemouth bass abundance >49%	High	Likely

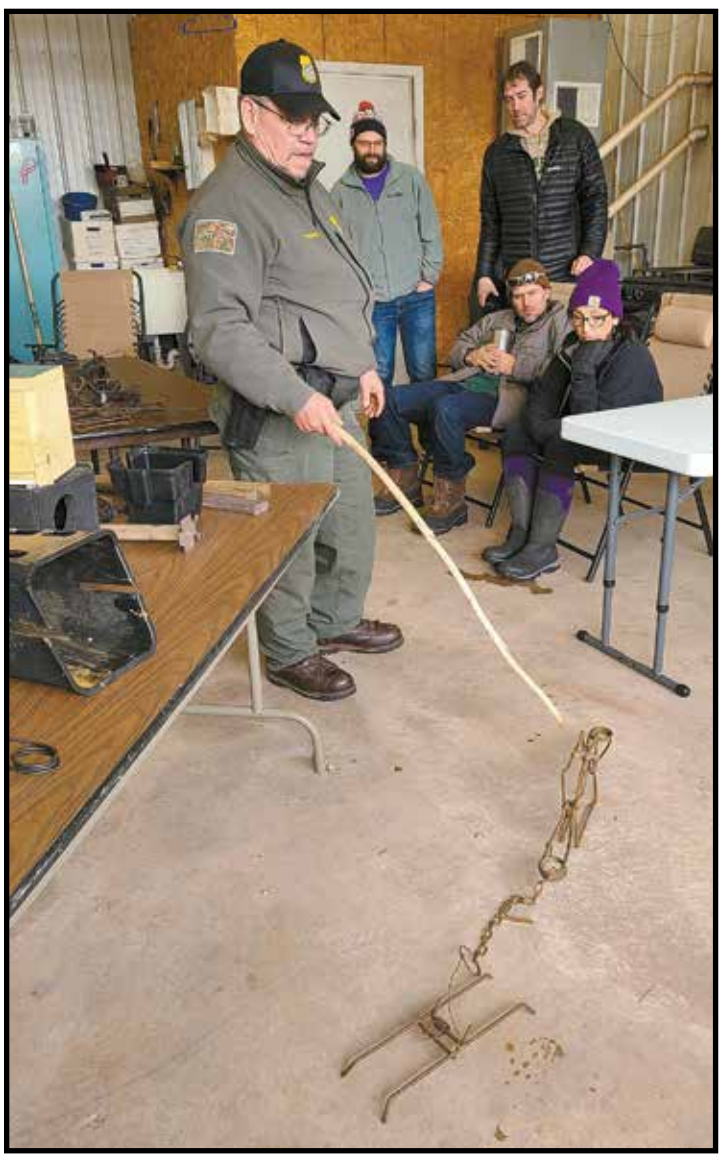
Table 1. Water temperature is an important variable determining how suitable a lake is for different fish species. The Midwest Glacial Lakes Partnership used projected climate scenarios to predict future water temperatures for lakes throughout the region. Suitability models were run to estimate whether representative warm-water (e.g., bluegill (agwadaashi)), cool-water (e.g., northern pike (ginoozhe) and walleye (ogaa)), and cold-water (e.g., cisco (odoonibiins)), burbot (mizay), and lake trout (namegos) fishes are likely to be present in 2018 and 2050. Similarly, Read et al. 2016 generated predictions of species dominance largemouth bass or walleye in these lakes under future conditions for two time periods, 2040-2064 and 2065-2089. The table above summarizes these findings and the likelihood these lakes will be refuges for walleye in the future.

Wardens, biologists share know-how in wildlife trapping & tracking workshop

By Tanya Aldred
GLIFWC Carnivore Biologist

The Biological Services Division at GLIFWC has held a series of skills trainings over the past few years. The staff gets together and shares stories and skill sets that range from fishing, hunting, beadwork, cooking, and harvesting. These gatherings, called ReCharge Skill Trainings, involve a team-work approach to our jobs at the Commission.

On March 16, GLIFWC Conservation Warden Roger McGeshick led a wildlife trapping skills workshop for GLIFWC staff. McGeshick is a certified trapper education instructor, regularly teaching tribal members and others how to trap wildlife for fur harvest. All GLIFWC staff members and tribal employees were encouraged to come and participate in this educational event in Odanah, Wisconsin.



GLIFWC Conservation Warden Roger McGeshick prepares to set off a body-grip trap. (T. Aldred photo)

Fisher tracks appear after a fresh snowfall in northern Wisconsin.

McGeshick gave thorough instruction on the use of multiple types of tools used for harvesting wildlife, discussing in great detail the use of foothold traps, cable restraints, colony traps, body grips, scents, lures, and baits. He also explained the different makes and models of traps to use on various types of species. There are specific rules, regulations, and season dates associated with all species.

Wildlife trapping requires skills and knowledge of wildlife biology, habitat types, seasonal movement, and food habits of various species—experience that can take years to develop. Both tribal and state fisher, otter, and bobcat harvesting for market sale has steadily decreased over the years. Most tribal harvesters now trap for sustenance or use furs for regalia and ceremonial items.

Restraining traps include foothold traps and box traps. These same live traps are also utilized by biologists for research purposes such as collaring and radio-tracking species of interest. Other "types" of traps/tools that are now widely used are trail camera sets for both research or aesthetic purposes on tribal, private, state, and federal properties to document presence or absence, along with the phenology, of various wildlife species. The use of trail cameras provides useful information on wildlife movement and habits in a non-invasive approach.

Another non-invasive way to 'trap' a species is with a hair snare. A hair snare is a device that draws an animal in with lure or bait. A metal brush inside that device collects hair samples when the animal brushes past it. Hair samples can then be used to identify the animal species and collect DNA from the hair root.

Another very important aspect of trapping began in 1996, with the Association of Fish and Wildlife Agencies that developed a program for regulated trapping known as "Best Management

(see Trapping & tracking, page 20)

The politics of placenames

(continued from page 2)

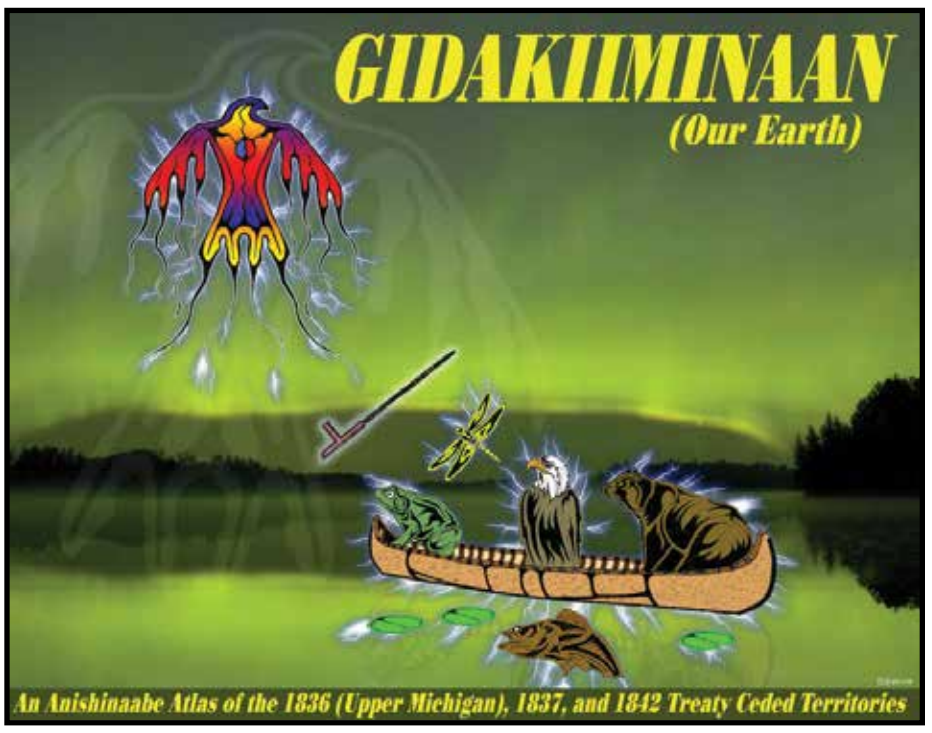
cenames, the landscape becomes an encyclopedia of Indigenous knowledge. In the Anishinaabe language, the name for the Namekagon River is translated as "*the Place of Abundant Sturgeon*." The Anishinaabe name for Chequamegon Bay is translated as "*the oblong body of water*." Many placenames have been preserved through the oral tradition over many generations.

In 2007, GLIFWC published an atlas entitled, *Gidakiiminaan* (Our Earth), which contains 100's of Anishinaabe names of rivers, creeks, lakes, bays and peninsulas across the 1836, 1837, and 1842 Ceded Territories of Michigan, Wisconsin and Minnesota.

Attitudes about derogatory and colonial placenames have been slowly changing over time. In 2003, after a contentious political skirmish, Squaw Peak in Phoenix, Arizona was officially renamed Piestewa Peak in honor of Army Spc. Lori Piestewa, the first Native American woman killed in combat during the Iraq War of that year. In 2015, Mount McKinley, named after the 25th U.S. President William McKinley, who had never set foot in the state of Alaska, was officially renamed Denali, which means "*The High One*" in the Athabascan language.

Secretary Haaland's Order is a step in the right direction, but there is still much work to be done to decolonize the landscape for our future generations. *Manidoo-giizhikens*, "*Little Spirit Tree*," is the name of the small cedar tree that rests upon a barren rock on the shore of Lake Superior near Grand Portage, Minnesota.

In 1731, French explorer, Sieur de la Verendrye, wrote about this tree in his journals and described it as a mature tree at that time. The small tree is a sacred site for the people of the Grand Portage Band of Ojibwe and is protected by tribal authority. But, for most of the tourism industry, it is still regarded as the "*Witching Tree*" in their brochures and is sought by many tourists visiting the area. The politics of placenames continues.



Gidakiiminaan (Our Earth)*, which contains 100's of Anishinaabe names of rivers, creeks, lakes, bays, and peninsulas across the 1836, 1837, and 1842 Ceded Territories of Michigan, Wisconsin, and Minnesota. Download* ***Gidakiiminaan*** *tinyurl.com/gidakiiminaanatlas*

Of big birds, ma'iinganag, and the natural world

By Peter David, For Mazina'igan

After 35 years as a GLIFWC employee, it's pretty natural to look back and ponder how the environment and the more-than-human beings in it have fared over my tenure. Thoughts about "what's gotten better and what's gotten worse" often rolled through my mind in the last year or two, especially when talking to students who are naturally more familiar with current conditions than with what it was like before their time. This interests me too because I hold concerns that each generation seems to inherit a world that is ecologically less healthy than the generation before them.

There certainly are many things that have gotten worse. Climate change leads that charge, and one can make a nearly endless tally of all the many different ways that plays out. And while I don't for a minute want to overlook all the attention our world needs right now, I do want to give a little attention to the first half of the question: what's gotten better?

One of the first things that jumps out is that it was a pretty good era for a number of species of large birds. People growing up now may not be aware of just how great the changes have been for some of these species.

While I was still in college, I did "LTE" (limited-term employment) work with the Wisconsin Department of Natural Resources, including working with the wildlife health specialist. A bonus of that work was helping out on some of the early turkey releases the state conducted in an effort to bring this species back to Wisconsin.

After helping collect some biological samples, I would get to release some of these hefty birds into their new world, and was quite a kick—sometimes literally—to have one leave your arms and find the lift to reach the closest wood lot. While some folks in the program certainly held high hopes for the effort, I doubt if anyone back then imagined that transplanting less than 400 wild Missouri turkeys in southern Wisconsin would eventually result in the birds being present in every county in the state—and that hunters would take nearly 50,000 birds in 2020 alone.

Also during my college years, another student in the department was working on reintroducing trumpeter swans to the state. It was a tough challenge and the early fight was all uphill, which is pretty remarkable when you are working in a marsh. The early goal for that effort was to reach 20 breeding pairs in the state, and biologists gave themselves two decades to reach it. It turns out that all that time was needed to reach that initial goal, but then the population took off. Now about 6000 trumpeters grace the state, and nearly every decent wild rice bed in the north supports a pair, sometimes more.

A similar story can be told about a similar species. Today, most folks don't think it unusual to see newly hatched goose chicks just about anywhere in the state, but this was not always the case. Like swans, geese were eliminated from the state as a breeding population. When I first started representing Ojibwe tribes at the Mississippi Flyway Council Technical Section meetings, goose harvest regulations throughout the Midwest were based entirely on the status of geese that bred in Canada, and only showed up here during migration. But geese have come back big as well, with an estimated spring breeding population of 180,000 birds in Wisconsin in 2021—and that was before all those cute little yellow chicks hatched.

Ma'iingan. (K. Plucinski photo)

Want more examples? Think bald eagles or sandhill cranes. Despite their slow maturation and low reproductive potential, the sighting of a sandhill crane that was a rarity for your grandparents is now not all that unusual, even up in the Ojibwe Ceded Territory. And the sacred migizi (bald eagle) has continued a recovery that began with the banning of DDT right up to the present. The number of active nests in the state now numbers about 1700—compared to 108 in 1973. With the documentation of a nest in Milwaukee County just this year, every county in the state can now boast of having breeders.

These stories are reminders of how our perspectives or expectations about the more-than-humans beings are often incorrect. Many folks once believed that **(see Of big birds, ma'iinganag, and the natural world, page 18)**

GLWQA at 50: increase Indigenous engagement to strengthen agreement

By Hannah Arbuckle, GLIFWC Outreach Coordinator

This year the Great Lakes Water Quality Agreement (GLWQA) celebrates its 50th anniversary. The Agreement recognized of the need for international collaboration to protect and heal the Great Lakes. Canada and the United States first signed the agreement in 1972 for the purpose of restoring, protecting, and enhancing the waters of the Great Lakes and its basin. It has since been amended in 1983, 1987, and lastly in 2012, each to adjust the focus and priorities for current conditions of and threats to the Lakes.

Remediation crews are completing a multi-year project to clean up industrial waste along the Chequamegon Bay shoreline. (CO Rasmussen photo)

While it is a binational agreement, the GLWQA recognizes that the involvement and participation of state and provincial governments, tribal governments, First Nations, Métis, municipal governments, watershed management agencies, local public agencies, and the general public—all groups crucial to the success of agreement objectives. While we celebrate the GLWQA mission, partners, and success, one can't help but reflect on the future of the agreement.

In many ways, the latest iteration of the Agreement has made great strides in understanding what it takes to assess and address priority issues. This includes its first recognition of the importance of intergenerational management, and the direction to assess Indigenous Knowledge when implementing the Agreement.

However, the implementation of these elements of the Agreement has spurred increasing chatter among academic and scientist communities about just how fully the United States and Canadian governments are involving other governments, including tribes, First Nations, and Métis to have more influence in managing natural resources. As original caretakers of these lands and waters, more robust participation of these governments and their Indigenous Knowledges can only enhance the work being done under the Agreement.

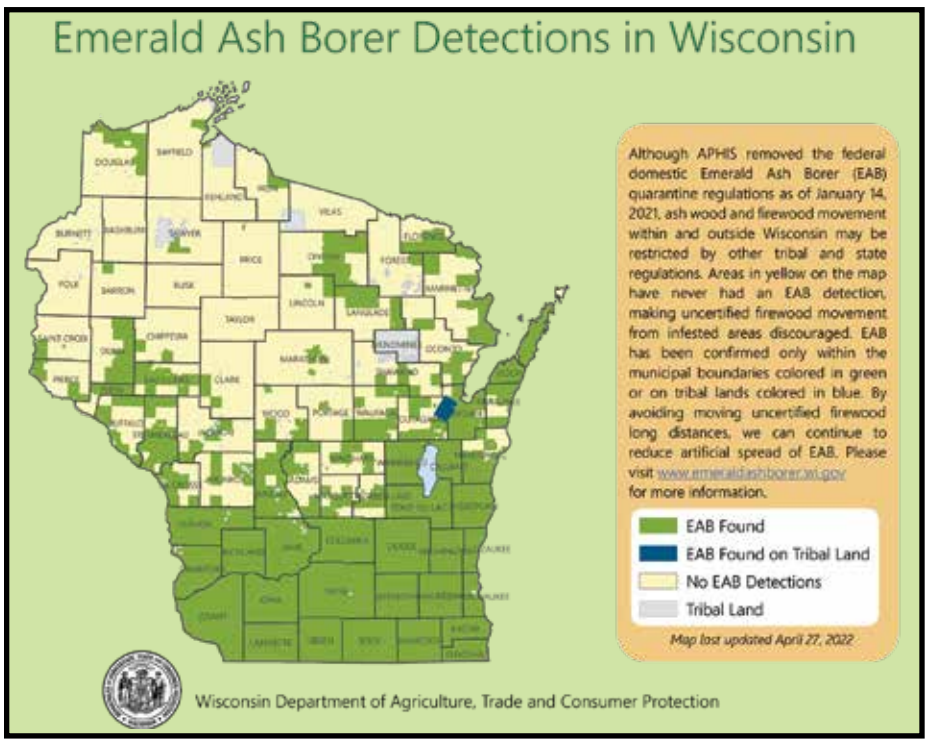
In the next 50 years, what do we want our lakes to be, to look like, and mean to us? Who will have access, control, and the ability to manage our resources for future generations?

While we are celebrating 50 years of international collaboration of healing our great lakes, let's not forget to think ahead, and always plan to make it even better.

EAB tightens its grip on northern Wisconsin

By Steve Garske, GLIFWC Invasive Species Coordinator

As noted in the *Dagwaagin* (Fall) Mazina'igan, an emerald ash borer (EAB) infestation was confirmed in Iron County, Wisconsin in June 2021. This spring another EAB infestation was found in a park in the City of Bayfield, in northeastern Bayfield County, Wisconsin. This infestation was detected in a white ash (*Aagimaak*) tree by a park volunteer, and confirmed by the US Department of Agriculture in early March 2022. A few weeks later EAB larvae were collected from green ash (*Emikwaansaak*) trees in a forested swamp along the east side of Ashland, in Ashland County, Wisconsin. These EAB occurrences mark three new county records in northern Wisconsin within the last year.



Known EAB infestations by Wisconsin township, as of April 2022. An updated, interactive version of this map is at *datcpservices.wisconsin.gov/eab/index.jsp* ***.***

First detected outside Detroit in 2002, the EAB has now spread across much of eastern North America, killing nearly all the white, green and black ash (*Baapaagimaak*) trees in its path. (Another eastern North American species, blue ash, is somewhat resistant to EAB and has fared a bit better.) In much of lower Michigan and northern Ohio, where the EAB has been established for more than 20 years, nearly all the ash are dead. The same is true for parts of eastern Upper Michigan. All is not yet lost however.

Across it's native range in eastern Russia, China, Korea and Japan, the EAB is considered a minor "pest" of Asian ash trees. Outbreaks were unheard of until recent decades, when North American ash species (including white and green ash) were widely planted in China, providing a feast for local EAB populations. Part of the reason EAB rarely causes problems for Asian ash is because natural predators and parasites keep EAB populations at low levels.

The light-colored areas ("flecking") on these ash trees were caused by woodpeckers pulling the outer bark off the trunk to get at the EAB larvae below. These trees are in a black ash swamp on the southeast side of Ashland. (SG photo)

The most promising control method for EAB in North America so far involves the release of these natural EAB enemies. After extensive testing for host specificity, three of these insects (all stingless, parasitoid wasps) were approved for release in the US in 2007. The first releases were made in Lower Michigan later that year.

Two of these insects (plus another parasitoid wasp that was approved in 2015) continue to be released at multiple sites in the upper Great Lakes region. There is mounting evidence that as these insects increase in numbers, they will suppress EAB levels enough to give younger ash trees an opportunity to mature and produce seed, and allow them to maintain a presence on the landscape.

Combined with the eventual re-introduction of resistant ash and natural selection for resistant ash in the wild, these tiny insects will hopefully allow ash to once again become a significant part of future Great Lakes forests.

Another reason that the EAB is only a minor "pest" of Asian ash trees is that Asian ash are much more resistant to EAB than Turtle Island's trees are. Countless centuries of natural selection has given Asian ash species the ability to quickly react to attacking EAB larva and destroy them. As one research paper put it, EAB larvae that survive long enough to burrow their way into the bark of a Manchurian ash tree (a close relative of black ash) are just beginning their struggle for survival, as the tree's bark will encase and kill nine out of ten of them. In contrast, North American ash species seem to not even realize they're being attacked until it's too late.

Emerald ash borer larvae leave S-shaped tunnels under the bark of this black ash in Iron County, Wisconsin (September 2021). These larvae would have emerged as adults in late spring or early summer of 2022 or 2023. (SG photo). Inset photo: Adult EAB beetle. (CC BY-NC 2.0)

In rare cases, more-or-less healthy individual trees or small groves of related trees (generally green or white ash) have been found in infested parts of Michigan, Ohio and elsewhere, years after all the ash around them are dying or dead. These "lingering" ash trees appear to either be less attractive to the EAB, or more able to resist or repel infestation, or both. These trees are now being used as breeding stock, in an attempt to breed trees that are more resilient and resistant to the EAB.

Of all the ash species the EAB has encountered so far, black ash is the most susceptible. It has only been in the last several years that resistant black ash populations have been found. The apparent scarcity of resistant black ash is probably due in part to the fact that black ash is seldom planted, and that natural stands usually occur in wetter, more inaccessible areas.

In the coming years, the EAB could virtually eliminate large black ash from the landscape. The loss of these iconic trees will be (and in some cases already is) a major loss to traditional users of ash trees. Not only the trees risk being lost, the stories and traditions surrounding this ancient tradition risk being lost as well. The age-old tradition of weaving baskets from black ash is threatened like never before.

A major challenge for traditional users will be getting through the years when little if any ash is available. One way to do this would be to stockpile lots of pounded ash strips, as Stone has mentioned. Another way would be to store whole logs underwater. Logs can be stored submerged in streams and rivers for years and still retain their properties. Depending on water temperature and other factors, EAB are unable to survive in logs stored underwater for longer than about 10 to 16 weeks.

One thing that everyone can do in the coming years is to keep an eye out for those rare pockets of ash that are green and growing, when all the large ash trees around them are dying and dead. Those are the trees that have the potential to save their species.

(see Emerald ash borer, page 20)

"Black ash basket making itself will never be forgotten because weaving techniques can sometimes transfer easily from one medium to another. Pick up a basket making book and you'll find evidence of splint work everywhere. The loss will be felt through the inability of traditional ecological knowledge holders to share those lessons of identification and harvest of baapaagimaak in its natural habitat to others, in real time. Agencies must work together with basket makers as plans are made to harvest and store raw splint material for future basket making..and..it is imperative that we basket makers hold on to this knowledge as we move through this changing time."

—April Stone, Bad River basketmaker

Mashkiki musings

Get to know your local leek patch

By Kathy Smith, GLIFWC Manoomin Ganawandang

Aaniin, what a beautiful ziigwan we've experienced! A time of renewal for our animal and plant relatives. Everyone is outside, enjoying warmer weather, after biboon finally released its hold. Since temperatures have risen and the sun warmed the soil, the mashkikiwan (medicines) are starting their life cycle.

As we all know, the medicines need to rest and need to "know" winter. The manidoonikaa (many bugs) are coming out. The first mijiim (food) of the season is available for gatherers.

Our plant relatives are known as an ephemeral—lasting for a short time; approximately within a three-week harvesting timeframe from my experience. These are the first available greens for Anishinaabe people. Aki is unique, sometimes making pockets of plants available at different times that you still may be able to harvest. This crazy weather is making it hard to predict. Observation is the key to knowing when our foods and medicines are ready for harvest.

The ziigwan (spring) ephemeral, *Allium tricoccum*, is also called ramps or wild leeks. In Ojibwemwoin, they're known as zhigaagawenzhiig. Zhigaag is the word for skunk in Ojibwe.

These plant relatives thrive in rich, moist, deciduous forests. They are also found along with other ephemerals like bloodroot, trout lily, dutches breeches and trilliums. It is a perennial that grows from a bulb. They are strongly rooted in the soil. The patch that I harvest from is near a creek and has a rocky layer under the soil. Zhigaagawenzhiig have a distinct smell of garlic and taste a little like onion.

They grow in shady, wooded areas and are in season usually around for just a few weeks. They are a low growing green plant with usually 2-3 bright green leaves. They have a white bulb with a reddish-maroon tinge on the stem. I visit a few areas throughout the season to get to know the medicines and observe the growth in all stages. I also do a lot of asking from elders and do a lot of research.

(see Harvesting in a good way, page 18)

Zhigaagawenzhiig (ramps or wild leeks) thrive in rich, moist, deciduous forests. The leaves are smooth, and elliptical-shaped. Zhigaagawenzhiig have a distinct smell of garlic and taste like a green onion. (K. Smith photos)

Zhigaagawenzhiig guidelines

- Select patches that are approximately, 6ft x 6ft in size in forests abundant in Wild Leeks. rule of thumb use your own height as a good example.
- Never take more than 5% of the patch and harvest from a different area the following year.
- Using a small digging tool, remove a small section of dense growing Leeks.
- Carefully knock the soil from the roots back into the hole where you dug from. This soil also contains dormant seeds. As they are going through a stratification process. Hence the two years it takes to propagate.
- Separate the small immature leeks from the large ones you are harvesting.
- Replant the small ones in the hole or use them to propagate a new patch. Replace the leaf mulch back around.

Recent changes to date-regulated Wisconsin waters help support manoomin stewardship

Ojibwe rice chiefs have long-established opening dates for manoomin harvest on lakes and rivers within the Ceded Territory. Date regulation helps protect wild rice plants from damage before its seed heads reach maturity. In a posting from 2011, Bad River Band rice chiefs opened a portion of the Kakagon River and the full lengths of Bear Trap Creek and Wood Creek to harvest. (CO Rasmussen photo)

By Amy Cottrell, Wetland Ecologist

Manoomin (wild rice) harvest within the Wisconsin Ceded Territory is date-regulated on many waterbodies. While Minnesota and Michigan officials maintain oversight of manoomin resources, only Wisconsin has established regulations allowing harvest within a specified timeframe.

Date regulations help limit premature harvest by preventing ricers from harvesting too early, a practice that can damage seed heads and limit optimal growth as wild rice comes to full seed. For novice ricers, a list of open waters can simplify the waterbody selection process. Greater yield per effort is often documented from date-regulated waters. This increase in harvest success is a draw for both beginner and experienced ricers.

Additionally, the life cycle of wild rice varies considerably across waterbody type. For example, wild rice tends to ripen earlier on rivers and flowages than within inland lakes. Having water-specific regulations allows for rice to fully come to seed prior to harvest.

Finally, it is difficult to quantify the effect that date regulation has on viability and yield of wild rice, though it's assumed that any protection provided in proportion to harvest is beneficial.

The practice of date regulation—or waterbody-specific open harvest dates that correspond with annual manoomin abundance and vitality—was formally adopted by the state of Wisconsin in 1964, when the first list of date-regulated waters appeared in the Wisconsin administration code.

Prior to the *LCO/Voigt* decision in 1983, Wisconsin opened wild rice waters for harvesting and modified the date-regulated list regularly. Opening authority for date-regulated waters became a joint responsibility between the state and

(see Changes to date-regulated Wisconsin waters, page 15)

Sharing the gifts of the sugar bush season

Red Cliff loaner program surges, students tour tribal farm

By Jenny Van Sickle, Staff Writer

Mino Bimaadiziiwin Gitigaanin (The Good Life Farm) greeted 50 students last March who explored, collected, and learned all about harvesting maple sap. The farm spans 35 acres which includes garden space, open pasture, forest, medicine beds, and apple orchards. The farm is owned and operated by the Red Cliff Band of Lake Superior Ojibwe and helps protect the long-term health of traditional hunting, fishing, and gathering activities.

Mark Duffy, (Loon Clan) chief conservation officer at Red Cliff and a Voigt Intertribal Task Force member, was on hand to talk with the visiting 2nd and 4th graders. Duffy gave educational presentations about the methods of tapping and described the farm's historic sugarbush which has been generous in its production of sap for 150 years. Bright blue bags, buckets, and tubing were visible in every direction where 200 sugar maple trees were tapped to collect "nature's kool-aid," he said.

Red Cliff's Mark Duffy gives a demonstration on the evaporation process from sap to syrup.

Second grader Credence, age 7 offers asemaa to the sugar bush before she heads out to check the taps. (J. Van Sickle photos)

Farm Manager, Allissa Stutte serves up fresh maple sap to a class of 4th graders. (J. Van Sickle photo)

Shea Schachameyer, food sovereignty coordinator said 1-2 classes visited the farm each day during the spring season, largely K-6 students from the Bayfield School District. Students participated in a scavenger hunt where they identify rabbit tracks and other fun missions, sample fresh sap, and offer tobacco.

Another way the farm encourages traditional syruping is by making sugaring equipment kits accessible. Farm Manager Allissa Stutte said this is the second year their sugaring loan program has been active. This year they distributed 300 taps to families, which is up three-fold from last year. Equipment provided by the program includes buckets, taps, and evaporators.

(see Sugar bush season, page 20)

"Shine bright like a diamond"

Maple candy & sugar star in LCOOCC class

By Laura White, GLIFWC Traditional Food Grant Project Manager/Grant Writer II

Over two Friday afternoons in April, the Lac Courte Oreilles Ojibwe College (LCOOC) sponsored Maple Sugaring and Candy Making Classes at Bad River's new Wake House in Odanah and the Mino Bimaadiziiwin Gitigaanin (The Good Life Farm) near Bayfield. Around a dozen tribal members from the Chequamegon Bay area attended each class

Class Instructor and Bad River Band member Daniel Wiggins Jr. first learned his way around the sugar bush from his aunts and uncles. About ten years ago, Wiggins said he began harvesting from ozhiga'igan (a tapped tree), and started making ziinzibaakwadoons (maple candy) and ziinzibaakwad (granulated maple sugar). Candy and sugar products are made from further reducing zhiishiigwaansag into more concentrated forms.

During introductions at Red Cliff, Wiggins discovered that tribal member George Newago, who dropped in to see what was going on, believed he shared the tradition of turning zhiishiigwaansag into ziinzibaakwad with one of Wiggins' teachers, Maria Nevela, Bad River tribal member. Respectfully, this revelation made for some good conversations and nice anecdotes about the ancient techniques in the traditional Anishinaabe way of processing zhiishiigwaansag into ziinzibaakwad.

As the smell of zhiishiigwaansag wafted through the kitchen, and the fun continued, Wiggins explained the traditional way to determine when the boiling syrup was ready to pour into the candy molds. He said:" a long time ago, you did not have a thermometer, so you can tell it is time to take off the heat by the size of the bubbles and by how thick the syrup is at the bottom of the pan." Terri Bearhart, a Red Cliff Band member, added that she was "glad to stir the syrup and feel the hands-on experience," Terri said was thankful she decided to come to the class.

While the group waited for the candies to cool, Wiggins said each batch might result in a different yield (such as color, quality, and consistency) depending on the temperature of the syrup when you take it off the heat. Gloria Wiggins, Bad River Band member, stated she sometimes adds pecans or walnuts to her batches and likes it when the candies "shine bright like a diamond." Jokingly, someone asked, "isn't that a song?" the laughter resumed, and the smiles remained.

Fun and treats abounded at LCO Ojibwe Community College's maple candy making classes. Class instructor Daniel Wiggins fills candy molds at Red Cliff in April. (L. White photo)

Treasures of wisdom and community filled the kitchen that afternoon. Wiggins' final words for his students were to have fun with it, experiment, and don't be afraid. If you overheat the batch, at the very least, you could end up with sugar. Just be prepared to get a workout.

Mino Bimaadiziiwin Gitigaanin (Red Cliff Tribal Farm) has printed copies Iskigamizigan (Sugar Camp) Guide available at the farm for anyone interested in harvesting wiishkobaaboo (maple sap).

Core feature of the Woodland Indian lifeway for centuries, gardens a summer staple

Ag specialists from tribes, states, and federal agencies support revival

Interrupted by US government commodities, native food systems making a comeback

By Charlie Otto Rasmussen, Editor

On assignment to determine the boundary between Wisconsin and Upper Michigan in 1840, US Army Officer Thomas Cram and his crew hacked their way through the deep Anishinaabe forest, slapping mosquitos and slashing blaze marks into trees. Upon their arrival at the Ojibwe community Gete-gitigaaning, Cram noted small gardens on cleared land in the village where vegetables, including small potatoes "not larger than a man's thumb," were cultivated.

Nearly two centuries earlier French explorers had named this site Lac Vieux Desert—or Lake of the Old Garden—a place long-recognized as a hub of the traditional Anishinaabe lifeway: a summer home for gardening situated in proximity to sugar bushes, wild rice beds, and other destinations suitable for seasonal harvest camps.

European settlement and colonization disrupted native food systems. But today, gardening and agriculture are again prospering and increasingly vital to upper Great Lakes communities, including the Anishinaabe bands of the Three Fires—Ojibwe, Odawa, and Potawatomi—and the Oneida and Menominee nations. Tribal farms, neighborhood gardens, and food sovereignty programs are engaging an ever-growing number of native people, helping to improve community health and counter the inapt diet of government-issued food that included commodity cheese, cornmeal, dehydrated milk, canned meat, and fruit suspended in heavy syrup—20th Century household staples for Great Lakes natives.

"With tribal governments supporting community agriculture, we're seeing a lot more than backyard gardens," said Steve Yanni, PhD, a longtime researcher and agricultural educator at Bay Mills Community College. "I think community agriculture is here to stay, but we're coming to a point where the economics of it is going to be a challenge for some tribes. Producing food while looking out for the welfare of the environment gets expensive."

Tribal leaders look to homegrown food as means to alleviate some of the conditions that shadow native people like diabetes, obesity, and heart disease. While wild-caught fish and deer meat top the protein list, tribes are developing rotational grazing pastures for bison and grass-fed beef.

Situated on tillable acreage or right in the family yard, tribes are supporting sewing crops from heirloom seeds and through springtime plant giveaways. A whole network of seed-sharing connects tribal farms as program managers experiment with different varieties of corn and other crops, learning what grows best in local soils. As warm summer weather settles into the north country, community-wide giveaways are getting underway, offering tomatoes, cucumbers and other vegetable plants ready for the garden.

While increased plant varieties and innovations are notable features of modern native agriculture, much remains the same at the community level where small-scale agriculture is part of a larger food web. US Army Officer Cram might struggle to identify all the elements of a modern Ojibwe village today, but the gardens sprouting up next to family lodging would surely strike a familiar chord.

Waishkey Bay Farm and other tribal agricultural operations participate in a seed exchange every year. (COR)

The Three Sisters Garden is staple for tribes across native North America. Seeded together, corn, beans, and squash help each other survive and thrive like this planting from a Mille Lacs Band of Ojibwe seed distribution. (COR)

Gitigaanan vegetables

Ojibwe	English
Aniibiishens	Lettuce
Anijiimin	Peas
Bezhigogaawanzh	Asparagus
Eshkandaming	Cucumber
Gaa-wiisagang	Pepper
Gichi-aniibiish	Cabbage
Gichi-ogin	Tomato
Jiis	Rutabaga, Turnip
Mandaamin	Corn
Mashkodesiimin	Beans
Mitigoonsag	Broccoli, Cauliflower
Okaadaak	Carrot, Parsnip
Okosimaan	Squash, Pumpkin, Watermelon, Cantaloupe
Opiniig	Potatoes
Otaagabi-aniibiish	Spinach
Wazhashkwedoons	Mushroom
Wiishkobipiniig	Sweet Potatoes
Zhigaagawanzh	Onions, Garlic

Clean hands, safe food with a homemade handwashing station

By Charlie Otto Rasmussen, Editor

From cleaning fish out by the garage, to butchering a deer, to gardening—household food producers are always in need of clean hands. One easy outdoors solution: a homemade handwashing station.

"It's the easiest way to reduce contamination risk," said Shawn Bartholomew, Wisconsin Farmers Union. "Just keep your hands washed."

In collaboration with the Wisconsin Farmers Union, Bad River Band Food Sovereignty hosted an event that generated 17 handwashing stations for area residents, including four destined for Bad River community gardens. Bartholomew said the WFU's mission is a good fit with tribal agriculture goals—to enhance rural people's ability to develop and maintain small-scale food systems. A member-driven organization, WFU is all about helping small producers succeed in an agricultural climate that increasingly favors mega-farms.

"We want to see more farms on the landscape, not more big farms," Bartholomew said.

Bartholomew and an all-ages group of area residents, including mothers and kids, gathered April 30 in Odanah, Wis. to share a light meal prepared by Loretta Livingston and get work on their handwashing stations. Chatting over egg-salad sandwiches, greens, and tea, Livingston, food sovereignty director for the band, said that fresh food and skills classes projects bring people together. It's an approach she called "dine and learn."

"I've been looking forward to starting up classes again," said Livingston, expressing a sentiment shared by many who've grown weary of coronavirus pandemic restrictions after two full years.

With support from Wisconsin Farmers Union community members made 17 outdoor hand washing stations on the Bad River Food Sovereignty grounds. Four stations are being installed at each one of the tribe's community garden. (CO Rasmussen photo)

Families worked together to frame-up hand washing stations on April 30. (CO Rasmussen photo)

After lunch, the group moved to a nearby pole barn where Bartholomew presented a handwashing station template developed by University of Minnesota-Extension. At the time it was created, a station with all-new materials cost no more than $20. Today, Bartholomew said, it's closer to an $100 investment. The good news: the station's straightforward 10-step design lends itself to significant cost savings by using salvaged materials, or a combination of new and used parts.

"You can custom design a station anyway you like," Bartholomew said. "A lot of the material you might already have on hand."

For this event, he brought in all new materials, plus a half dozen power drills to assemble the wooden frame. With people working in pairs, the frames came together smoothly, each one completed with a water tank, wash basin (that functions as a drawer), and five gallon pail to collect grey water. It's a great afternoon project for any family producing healthy food right at home.

Find instructions to make your own handwashing station here: https://extension.umn.edu/growing-safe-food/handwashing-station

Contact Livingston for upcoming dine-and-learn programs conducted in partnership with UW-Extension's Joy Schelbe (715) 682-7118.

Loretta Livingston, Bad River Food Sovereignty Director, prepares lunch for patrons at a dine-and-learn event in Odanah, Wis. (CO Rasmussen photo)

Connecting Ojibwe ecological knowledge & climate change in Wenaboozhoo Minisan

Cathy "Cat" Techtmann
UW Extension Environmental Outreach Specialist

Climate change is affecting the Wenaboozhoo Minisan (Apostle Islands), but whose science and values should be considered when evaluating its impacts and taking action?

The new Minisan website (*minisan.org*) shares Indigenous perspectives on how climate change is affecting the Wenaboozhoo Minisan, to promote environmental stewardship for people of all cultures. It is a collaboration between the GLIFWC Climate Change Program, Ojibwe knowledge keepers, and the University of Wisconsin-Division of Extension.

The project began in response to the 2020 Apostle Islands National Lakeshore's "Climate Vulnerability Assessment," which ranked eleven land-based ecosystems on their vulnerability to climate change. Rankings were based on scientific projections of environmental conditions, like temperature and precipitation, that are projected to change due to the impact of climate change. The Assessment concluded: "overall, most of the terrestrial ecosystems were expected to have low to moderate vulnerability to climate change over the next century." However, it's important to know that some Ojibwe knowledge keepers disagreed.

The Minisan team believed Ojibwe ecological knowledge could bring more culturally relevant perspectives on how climate change is affecting the Wenaboozhoo Minisan and how to respond. The project was developed during two workshops utilizing *Dibaginjigaadeg Anishinaabe Ezhitwaad: A Tribal Climate Adaptation Menu*. A website was chosen as the format to share these perspectives, just as Covid added an extra challenge to consulting with tribal knowledge keepers.

Prayers, dreams, and guidance from tribal partners produced a website design that incorporates Ojibwe cultural elements. The website's content is organized using the same ecosystems featured in the "Vulnerability Assessment" but adds Gichigami (Lake Superior), which is integral to Anishinaabe culture. The Gichigami ecosystem is being impacted by global climate change at the same time it is impacting local climate conditions in the ecosystems it surrounds.

Opening the Minisan website reveals an aerial view of Gichigami and a map of Wenaboozhoo Minisan. The subtle floral pattern surrounding the map reminds us that everything is connected. When clicked on, the red "hotspot" dots on the map open to beautiful 360-panaoramas of each ecosystem. The location where the ecosystem is found is spoken in Ojibwemowin (Ojibwe language).

(see Minisan website, page 22)

minisan.org

CT science

(continued from page 6)

Lac du Flambeau Tribe (LDF), GLIFWC, and Wisconsin Department of Natural Resources (WDNR) identified two objectives in the rehabilitation plan for these lakes. The first objective was to increase adult ogaa densities to greater than 1.2 ogaa per hectare (~three ogaa per acre) or to the observed historic range when natural reproduction was occurring. The second objective was to increase production and/or survival of young ogaawag to historic levels, catch rates above 24 age-0 ogaa/km (~15 age-0 ogaa /mile), or catch rates above eight age-1 ogaa/km (~five age-1/mile).

To accomplish these objectives, the collaborators (LDF, GLIFWC, and WDNR) agreed to reduce harvest of adult ogaawag and stock young ogaawag into these lakes (i.e., rehabilitative aquaculture). Prior to implementation of the rehabilitation plan, LDF recognized the need for harvest reductions on these lakes, and reduced their harvest in 2021, taking less than 50% of the 698 walleye available for spearing on these four lakes. LDF will maintain a low harvest on these lakes for the duration of the 10-year plan.

In 2022, an experimental 18-inch minimum length, with a no-harvest-slot between 22-28 inches and one walleye daily bag limit regulation will be implemented for recreational anglers by the WDNR. Concurrently, young ogaawag will be stocked in all four lakes by WDNR in alternating years and LDF may also stock young ogaawag. If these fish survive, then adult densities would eventually increase in 3-5 years and there would be a greater chance of reestablishing natural reproduction.

The collaborators also recognized the need to identify projects that may benefit fish habitat, particularly habitat for cool water fish. GLIFWC will evaluate habitat in the lake, along the shoreline, and in the watershed of each lake. Key habitat components for evaluation will include potential walleye and yellow perch spawning habitat, riparian zone buffers, coarse woody habitat, water levels, aquatic vegetation, sediment cores, water temperature, and clarity (some of these components will be monitored over time). If areas for habitat improvement are identified during this assessment, cooperative efforts to make the necessary habitat improvements will be considered.

Lastly, the rehabilitation plan includes regular evaluations, monitoring requirements, measures of success, public outreach, reporting, historical and alternative management strategies, and historical data for context.

For more information or to obtain a copy of the rehabilitation plan please contact *aaronshultz@glifwc.org*.

Late ice-out

(continued from page 1)

steady cadence as GLIFWC Clerk Leslie Ramczyk recorded the information into a log book.

While male walleye spend a considerable amount of time in the springtime shallows after nightfall, females arrive late and leave early after depositing their eggs.

As the calendar reached mid-May Ojibwe fishing activity dropped off. Tribal fishers brought home 29,796 ogaawag and 127 muskies according to preliminary figures.

Minnesota

On the super-sized Lake Mille Lacs, open water fishing finally got underway April 26 when local Ojibwe fishers took advantage of near-shore open water to spear walleyes.

"For the Mille Lacs community, it's been a pretty quick season. And it's been a safe season," said Kelly Applegate, Mille Lacs Band Commissioner of Natural Resources.

After a few weeks of fishing and nearing its walleye harvest quota, Mille Lacs Band officials set aside fishing returns for tribal elders. Many senior members of the Mille Lacs community rely on nutrition programs to receive a consistent, healthy diet. Additional bands including St. Croix and Lac Courte Oreilles organized fishing trips for tribal elders. St. Croix elders collected walleye, perch and other species in waters off of the Lake Mille Lacs east shore. On a spearing-only venture, LCO elders fished the waters off Cedar Landing as the spring season wound down.

Preliminary harvest figures from Lake Mille Lacs include 24,458 ogaawag (@47,498 lbs); 815 northern pike (@3,200.2 lbs), and 591 asaawe (@461.4 lbs). Additional fish from the southern end of the Minnesota 1837 Ceded Territory creeled in at 199 walleyes and 44 northern pike. Those totals were generated on a trio of Chisago County waters: Green, Rush, and North Center Lakes

Michigan

Upper Michigan lakes held their ice into the first week of May. Iron County's Emily Lake yielded the first handful of fish for Lac Vieux Desert Band members on May 6 with a bag of four walleyes and one muskie. Fishing picked up from there as additional small Michigan 1842 Ceded Territory lakes opened up.

"The season went fast. We went from iced-up lakes right into 80-degree [air] temperatures," said Matt Kniskern, GLIFWC conservation officer. Ten days after starting, LVD fishing neared an end in mid-May as the last harvesters turned their attention to muskies. By May 16, Lac Vieux Desert spearers had registered 1,169 walleyes and 11 muskies.

In the region's northernmost waters, Keweenaw Bay Indian Community spearfishers filled walleye harvest quotas on a number of inland lakes including Parent and Sudden Lakes. A GLIFWC creel team counted and measured fish at both locations, Kniskern reported.

"Our Relations...The Mixed Bloods"

Indigenous Transformation and Dispossession in the Western Great Lakes

By Al Gedicks, For Mazina'igan

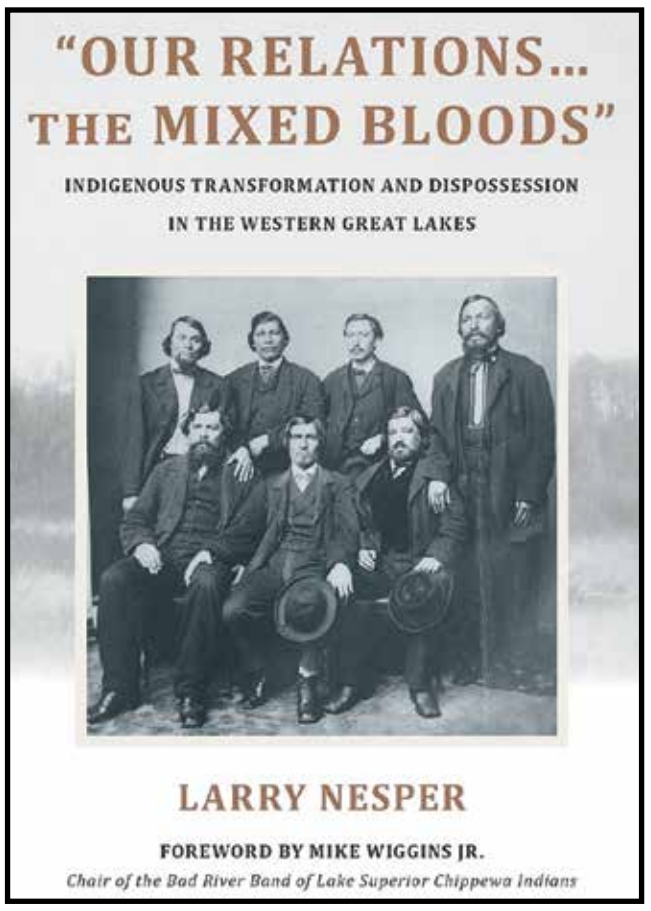
When Scott Walker was elected governor in November 2010, he proclaimed that Wisconsin was "Open for Business." Shortly thereafter Gogebic Taconite announced plans to develop a large open pit iron mine at the headwaters of the Bad River, upstream from the extensive wild rice beds of the Bad River Chippewa Reservation. "Telling this story," says Bad River Tribal Chairman Mike Wiggins, Jr., in his foreword to the book, "will undo the darkness of amnesia that has shadowed Penokee mineral rights and, in turn, heighten Wisconsin's tribes' connectivity to our watershed home." The key question Nesper seeks to answer is this: how did the lands that had been allotted to mixed bloods south of the border of the Bad River Reservation get transferred to mining interests?

Nesper's argument is that the inclusion of allotments, or land titles, for the mixed bloods in the 1854 treaty was motivated by the racist idea that "Indians could be detribalized and assimilated to the dominant society" by demonstrating that individual landownership was superior to holding land collectively. Federal officials believed that if the mixed bloods owned land suitable for agricultural purposes, it would promote the goal of assimilation to the settler cultural order and "make them models for their full-blooded kin nearby."

This was the same thinking that led to the passage of the General Allotment Act in 1887, also known as the Dawes Act. This act changed common tribal lands into individual allotments. The ultimate objective of the Dawes Act was to abolish Indian reservations and force Indians to assimilate into white society. Nearly 90 million acres of tribal land were appropriated or sold privately before the act was repealed in 1932.

The treaty provided eighty acres of land for each head of a family, or single person over twenty-one years of age, belonging to the Chippewas of Lake Superior "to be selected by them under the direction of the President, and which shall be secured to them by patent in the usual form." A patent was simply a legal title to a parcel of land. However, the mixed bloods "never received nor lived on those eighty-acre parcels because the right to those parcels was appropriated by would-be mining and lumbering interests almost immediately." How did this happen?

While mixed bloods were Indians for purposes of inclusion in the treaty proceedings, they were non-Indians, or ordinary citizens, for purposes of the right to hold a land title. As mixed bloods, they were wards of the federal government and that included a trust responsibility to prevent the transfer of Indian allotments to non-Indians. To avoid this abuse, the 1854 treaty created "scrip" or certificates that could only be used by eligible mixed bloods for allotted lands. However, two powers of attorney were attached to each certificate. "The first power of attorney authorized the attorney to enter or locate the lands on behalf of the mixed blood and a second authorized conveyance upon patenting." The land theft occurred during the "conveyance" of the land title to a government registry. This is the way that the prohibition on the transfer of scrip was evaded and the mixed blood people dispossessed.



Well before the mixed bloods selected the allotted lands, it was well known that the land in the Penokees were useless for farming but had vast deposits of iron ore in the Penokee Hills south of the Bad River Reservation. The acquisition of mixed blood land titles "under power of attorney in the 'Iron Range near Ashland' was arguably a violation of the treaty as the relevant provision of the treaty required that the lands be selected by them under the direction of the President."

However, there was no "direction" by a federal authority, according to the requirement of the treaty; instead, the patents were purchased by private interests that included the La Pointe Iron Company. One of the directors of the La Pointe Iron Company was Julius Austrian a well-known local business owner who had just purchased much of the town of La Pointe. Austrian paid $100 (its minimum value) to each mixed blood scrip holder for their eighty-acre parcel.

After the mixed bloods transferred power of attorney to Austrian, their eighty-acre parcels were entered into the Government Land Office Tract books in Superior, Wisconsin. A subsequent Congressional investigation found that when the mixed bloods signed powers of attorney "no explanation was made to them which for a moment would lead them to believe that they were doing anything that would prevent them from obtaining the possession of their scrip." In 2015, the mineral rights owned by the La Pointe Iron Company were optioned by Gogebic Taconite when they proposed the controversial open pit iron mine just south of the Bad River Chippewa Reservation.

The failure of federal officials to uphold the mixed blood provision of the Treaty of 1854 resulted in the loss of tens of thousands of acres of land and the impoverishment of most tribal members, regardless of blood quantum. "As a result, most mixed bloods, now dispossessed, would strengthen their ties with their so-called 'full-blood' Indian relatives and become tribal members over time."

Following this dispossession, the state of Wisconsin criminalized tribal members who sought to exercise their right to hunt, fish and gather on those lands for more than a century, further impoverishing the Lake Superior Chippewa. Nesper's previous book, *The Walleye War: The Struggle for Ojibwe Spearfishing and Treaty Rights* (2002), traces the successful campaign to reassert these suppressed off-reservation harvest rights of the Lake Superior Chippewa in the 1980s and 1990s.

Nesper's analysis of the mixed bloods reveals the importance of racial distinctions in a treaty process that led to the dispossession of the mixed bloods, the domination of settler colonialism and the transformation of northern Wisconsin into an extractive resource landscape.

The extensive documentation of this little-known history of Indian land theft should warrant serious discussion of reparations for the lands stolen from the Bad River Chippewa.

Al Gedicks is emeritus professor of sociology UW-La Crosse.

Changes to date-regulated Wisconsin waters

(continued from page 10)

Ojibwe tribes post-*LCO/Voigt* decision, which made it more challenging to make changes.

Recently approved amendments to this list are the first since 1985. The State/Tribal Wild Rice Management Committee agree that manoomin stewardship is vastly improved by regularly updating the list of date-regulated waters. Updated recommendations are intended to improve manoomin stewardship and address inconsistencies with the current list.

Amendments mostly involved removing waterbodies from the date-regulated list. Twenty-seven waters were removed and four waters with heavy harvesting pressure were added. Most waterbodies that were removed no longer contain wild rice beds viable for harvest due to limited stand abundance or limited access to stands.

GLIFWC member tribes are assigning opening authority for the four new Wisconsin waters—Island Lake, Pacwawong Lake, Chippewa Lake, and Minong Flowage. These changes more accurately reflect off-reservation harvest from date-regulated waters and limit the diversion of resources used to assess waters with minimal or nonexistent harvestable beds. Opening authorities will now be able to streamline their efforts more appropriately.

Manoomin harvest typically takes place mid-August through September. Date-regulated lakes open 24-hours after posted notice at boat ramps by tribal rice chiefs. Harvest will remain open on date-regulated lakes between 10:00 a.m.—sunset for 60 days after opening.

Further information on harvest regulations, including the 2022 date-regulated waterbody list, can be found at *glifwc.org*.

Environmental surveys uncover rare & endangered species

(continued from page 1)

to realize just how under-documented rare species are in the watershed. State of Wisconsin recorded surveys document 34 occurrences of 24 rare plants and animals along the path of the pipeline proposal. But tribal surveys by Bad River and GLIFWC biologists suggest that there are many more.

For example, while previous State recorded surveys had found only four occurrences of the Braun's holly fern along the entire proposed 41 mile pipeline route, in 2021 tribal biologists found 10 occurrences of that fern along just one mile of the proposed route.

In 2021 tribal biologists were able to document 18 new occurrences of State listed rare plants and animals in Iron County portions of the proposed pipeline and in just one 15-acre area found 236 plants, many of them state listed or of particular importance to the tribes.

This year biologists are focusing on further documenting rare plants and animals along the proposed pipeline route in the Bad River watershed, particularly in Ashland County. Trail cameras, set up in 2021, continue to document the wolf packs that live in the watershed and will be on the lookout for the endangered American Martin.

Our particular focus will be documenting aquatic species in the streams and rivers. GLIFWC biologists will conduct fish and aquatic invertebrate surveys and be on the lookout for mussel beds. Wood turtles are another species of interest. Listed by the State as threatened, we have asked volunteers to report all wood turtles they see in Ashland or Iron Counties. Bald eagles nest in the area, northern long eared bats live and breed here, and loggerhead shrikes have been seen. Plans for bird, bat, and frog surveys are being considered pending availability of tribal staff and volunteers.

Zaasijiwan
•It Ripples•

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

Aaniin, Niibin! Indayaa omaa zaaga'iganing. Nimitab besho mitaawangaang. Hay'! Apane bezhig mizizaak ayaa!
Awas! Gaye aabawaate. Aw giizis bagakaasige noongom. Waabishkaanakwad. Inashke!
I'iw aanakwad izhinaagwad dibishkoo animosh gezhiibaatood. Niwii-naadin i'iw waabooyaan odaabaaning.
Niwii-kawishim omaa. Giwii-kanawaabandaamin iniw aanakwadoon. Ingigiwiiwakwaane mii ezhi gashkaasosiwaan.
Madweyaashkwaa omaa agwaayaashkaag. Odaminowag, ingiw abinoojiinyag.
Mino-niibino-giizigad mii azhigwa niibing. Mii'iw.

(Hello, it is summer! I am here at the lake. I am sitting on the bare ground by a sandy beach. Dang!
There's always one horsefly here! Go away! Also, it's warm in the sunshine. The sun shines brightly today.
There are white clouds. Look! That cloud looks like a dog who's running fast. I want to go get that blanket in the car.
I want to lie down here. We all will watch those clouds. I'm wearing a hat so I don't get a sunburn.
Waves are heard here as they come onto the shore. Those kids are playing. It is a nice summer day. That's all.)

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.

Niibing.—As it is Summer.
Ode'imini-giizis wa'aw giizis.—It is the Strawberry moon (June) month.
Endaso-niibin…—Every summer…
Mawinzo.—S/he picks berries.
Gabeshi.—S/he camps.
Giigoonyike.—S/he fishes.
Bagizo.—S/he goes swimming.
Jiime.—S/he canoes.
Atoono/Jiimaanike.—S/he builds a canoe.
Babaamishkaa.—S/he goes about in a boat.
Niibinishi.—S/he spends the summer somewhere.
Aabita-niibin.—It's midsummer/the 4th of July.
Gitige.—S/he farms, gardens.
Ingitige. Gigitige.—I farm. You farm.

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

A. Biboonong, <u>gisinaa</u>. <u>Oshki</u>-niibing niminwendam.

B. Bagizowag ina noongom? Gii-ikidowag, "<u>Bagizodaa</u>!"

C. <u>Naadin</u> giziingwe'on! Bagakaasige. Zigajibii'owag.

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

D. Gaaskanazodiwag. Noongom wii-<u>naawakwe</u>-wiisiniwag.

E. Nawajiidaa agwajiing! Zaagizitoon! <u>Nimbakade</u> <u>gaye</u>.

F. Endaso-<u>niibing</u>, niminwendam babaamoseyaan.

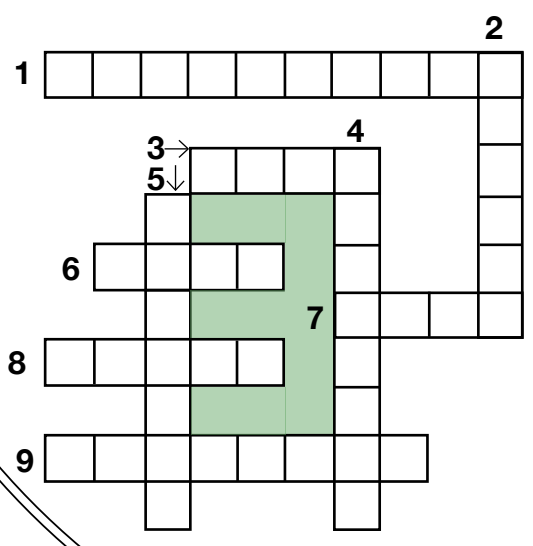
G. Gibabaamose na?

H. <u>Ambe!</u> <u>Babaamosen!</u> Babaamosedaa!

ode-imin(an)
strawberry(ies)

Niswi—3

IKIDOWIN
ODAMINOWIN
(word play



Across:
1. They play.
3. here
6. Dang!
7. Go away!
8. S/he canoes.
9. horsefly

Down:
2. moon/sun/month
4. cloud
5. S/he picks berries.

mitigomizh(iig)—oak(s)

<u>Online Resources</u>
ojibwe.lib.umn.edu
ojibwe.net
glifwc.org
glifwc-inwe.com

Niiwin—4

Verbs, Animate, Intransitive: VAI's
Babaamaadizi.—S/he travels about.

<u>**Ni**</u>babaamaadiz.—***I travel about…***
(to the) lake—zaaga'igan(ing)
(to the) town—oodena(ang)

<u>**Gi**</u>babaamaadiz ina?—***Do you travel about?***
(to the) farm—gitigaan(ing)?
(to the) store—adaawewigamig(ong)?

***Obviation: 2 beings in statement:**
*Jake **o**gii-waabam**aan** makwa**n**.—*
Jake **he** did see **him/her** a bear.
2 ***living** being(s) in statement–>*
2nd being(s)—to whom action goes, is obviated.
Him/her or them are spoken as an obviates or the 2nd 3rd person (aka the 4th person).

-ong
-ing
nin
gid-
-an

1. Nimaamaa ogii-kanawenimaan nindaanis_____.
2. Zaaga'igan_____, ingii-waabamaag niizh maangwag.
3. Noomaya niibing, Hank gii-chiimanike giiwedin____.
4. Bijiinaago ziibing, ____gii-chiime. Gii-minwendaagwad.
5. _____oodamin ina agwaajiing endaso-niibin? Geget!
6. Ani-niibing, apegish minoseyeg zaaga'igan**ing**.

Translations:

<u>Niizh—2</u> **A.** When it is winter it is cold. When it is early summer, I am happy. **B.** Are they going swimming today? They said, "Let's all go swimming!" **C.** Fetch a towel! The sun shines brightly. They are tired of waiting. **D.** They are whispering to each other. Now they want to eat lunch. **E.** Let's all take a lunch break! Take it outside! I'm hungry too. **F.** Every summer, I'm happy when I walk around. **G.** Do you walk around? H. Come on! Walk around! Let's all walk around!
<u>Niswi—3</u> ***Across:*** **1.** odaminowag **3.** omaa **6.** hay' **7.** awas **8.** jiime **9.** mizizaak ***Down:*** **2.** giizis **4.** anaakwad **5.** mawinzo
<u>Niiwin-4</u> **1. My mother, she** cared for my **daughter.** (-an *obviation ending) **2. At** the lake, I saw two loons. (-ing). **3.** In a recent summer, Hank built a canoe **in the** north. (-ong) **4.** Yesterday on the river, **I** canoed. It was fun. (nin) **5.** Do **you** play outside every summer? For sure! (Gid-). **6.** As summer begins, I hope you all have good luck **at** the lake.

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 questons 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 *lynn@glifwc.org*.

FUN in the MUD: TRACKS & TRAILS

Animal Signs

Sometimes it's easier to find animal signs than the animals themselves! Luckily, animals leave behind plenty of clues for us to (***carefully***) track.

Nests:

You've probably seen a wadiswan (bird nest) before, but if you're lucky there may even be eggs inside! Ever noticed piles of leaves nestled up high in the forks of trees? Those are nests made by ajidamoog (squirrels)!

Bones or antlers:

Waawaashkeshi (deer), mooz (moose) and omashkooz (elk) shed their antlers every year if you keep any eye out, you might be able to find them in the woods!

Fur or feathers:

If you find a pile of fur or feathers this might mean that a gekek (hawk) or migizi (eagle) had its meal in this spot!

Can you identify these common tracks? The one on the left is waawaashkeshi (white-tailed deer), and the one on the right is a zhiishiib (duck). See how many you can find with the activity below. (K. Plucinski photos)

What about missing bark, scratches or holes in trees? What could these clues mean?

What are some other animal clues that you have seen or always look for while outdoors?

ANIMAL TRACKS
(draw here)

Be a detective

Materials:
notebook, ruler, clipboard, pencil

Instructions:
Go outside to search for animal tracks! But first, get permission from an adult, and make sure they know where you are headed. Better yet, ask someone to go with you. Try to find a nice, muddy spot. Sketch what you find and write down your observations.

Size of the track: _____

Location: _____

How many toes? _____

Hooves? (circle) Yes No

Claws? (circle) Yes No

What animal do you think it is? _____

Do you recognize these feathers? They belong to migizi.

These beautiful bright blue feathers belong to ininishib (mallard).

These activities and much more at *ourdaysoutside.com*

Do humans leave clues behind that they were in the woods? (circle) YES NO

What kind of traces do we leave at campsites, beaches & trails that you've noticed before? Write them down:

_____

_____

Harvesting in a good way

(continued from page 10)

We must be mindful and do not over harvest. Harvesting must be done in a sustainable way so this plant relative will be available for future generations. First, asemaa (tobacco) is offered as this beautiful gift from creation, our plant relative, gives its life to sustain ours. I often introduce myself and sing to the mashkiki and ask permission. I never go for the primary plant but harvest the second choice. That first one is usually the parent plant of all the other ones around it, and it is left to continue its life cycle.

Zhigaagawenzh, is a medicine that takes a long time to grow. It takes approximately two years from seed, or it also rhizomes out. It's very hard to propagate in a controlled environment as it requires the teaching of patience. In the fall time I'll visit the same patch and harvest the seed and spread it out even more so and express much gratitude.

When harvesting wild leeks be mindful where you are stepping. They are very easily comprised and bruise easily. Try to make it as if you weren't there and wait until it matures, as there are many plant babies. Picking at this early stage provides very little to sustain a meal. I usually like to pick just before they turn yellow and before the scapes develop. We are to take just one leaf from one plant. Most will have only two leaves; some will have three and rarely, I see four.

If you need to take the whole plant, there is a way to leave the root system behind and still be a good steward of the resource. If you feel below the bulb the root system will snap off. I give a part of the bulb back just above the root. With my experience they do come back. If you are choosing to harvest the entire plant, only take what you need, usually a handful. When harvesting be mindful and know who owns the land. Whether it be tribal, on or off reservation, state, federal or private lands. Get permission first and foremost.

Even on state public lands, Wisconsin Department of Natural Resources put out an article and have rules for foraging. They offer a page for spring forage, and have a list of property ownerships as to where you can forage or who to contact. Do the research and homework beforehand.

Use of the whole plant. The leaves and bulb and can be used in recipes. If you harvest it, process it the same day if you can. You can dry, freeze, or pickle them. I usually dry and make leek salt. With the fresh I make wild leek butter or cook them with scrambled eggs, venison or wild rice. This is just used as a guide. Make the way you harvest your way and do it in a suitable way. This is just what I had used in my lessons and working with many years of plant restoration.

Let's do our part for future generations and only harvest what you need.

Zhigaagawanzh is a perennial that grows from a bulb. They are strongly rooted in the soil. Harvesting must be done in a sustainable way so this plant relative will be available for future generations. Only take what you need. (K. Smith photo)

Start your ammo hunt early

While some rifle ammunition vendors are managing to keep their shelves stocked, many outlets—from big box stores to gun shops—still struggle to maintain a consistent supply of rounds. It's a stubborn trend affecting Ojibwe Country and beyond for the past two hunting seasons. Manufacturers seem to be regularly producing common hunting rifle calibers like .243, 30.06, .308, and .270. But that old .35 Remington passed down from a family elder might be tough to shop for this summer.

For hunters transitioning to copper rounds, the sourcing challenge increases. After more than a decade of studies revealed significant lead contamination in hunter-harvested deer, shooters are switching to copper rounds. Hard-hitting copper slugs are more expensive but do not have the undesirable fragmentation issues associated with lead.

Lead-shot animals like elk, moose, and whitetails pose consumption issues for humans; lead-infused gut-piles can be lethal for miigiziwag (bald eagles) that commonly scavenge on remains. Hunters making the switch to copper will most likely find better ammunition availability in the most popular calibers.

No matter what size or style of ammunition you need for the upcoming hunting season, begin your search early. Online shoppers often pay a premium price and may also contend with hefty shipping fees. **—CO Rasmussen**

Of big birds, ma'iinganag, & the natural world

(continued from page 8)

eagles would only be able to make it in the wildest, most unspoiled parts of the state, but they have clearly surprised us, just as all these species have. And that makes me think about another great recovery that has occurred, this one not among the feathered, but among the four-leggeds—notably ma'iinganag (wolves).

This recovery holds the greatest significance for the Ojibwe, who understand that their fate is interwoven with that of the wolf. Remarkably, in Wisconsin, ma'iigan recovery began the same year that the arrest of the Tribble brothers from Lac Courte Oreilles started the long legal process that would eventually lead to the reaffirmation of the tribes' off-reservation inland treaty rights. Those first wolves would struggle, just as the tribes did when first fighting to regain their rights. Folks who spent the first 20 years watching the wolf population grow to just 50 animals must still hold a bit of disbelief that over the next 20 years the population would reach 800, and not much later top 1100.

In many ways, the recovery of ma'iingan is markedly different from the recovery of swans or eagles or cranes. For those species, the biggest hurdles were biological, and the cultural challenges were minimal. For wolves, it is the opposite. Cultural attitudes (among many) needed to change to make Ceded Territory states again welcoming to wolves; most of the biological work the wolves did themselves. Still, this recovery was, and remains, the most tenuous, as some still cling to historical biases towards a mythical wolf that is foreign to the Ojibwe worldview. These biases have, and often continue to be, lethal for ma'iingan.

Some holdouts today even cling to the idea that wolves need big tracks of wilderness to survive, and suggest states like Wisconsin and Michigan are no longer "wild enough" for wolves. Curiously, some of the proponents of this idea are hound hunters who still find the Wisconsin landscape plenty wild enough to run packs of dogs across. But it is more curious that many humans seem to think we know more about what is suitable wolf habitat than wolves do. It's the same error we made with bald eagles and wild turkeys and many other species.

Here in the Midwest, we took to calling ma'iingan "timber wolf" only after we wiped them out from all the other habitat types they occupied. Perhaps it is time to step back, and let wolves teach us a thing or two. And embrace the traditional Ojibwe teaching about the common fates of people and ma'iingan.

—After more than 35 years, Peter David retired from GLIFWC in April 2022

PLACE STAMP HERE

Tape and stamp this form and return to GLIFWC by December 31, 2022. Make sure to include the information below:

Name:_____

Address:_____

_____

Tribal affiliation (if any):_____

_____

Phone number or email:_____

To submit observations via our online submission form, go to:

https://data.glifwc.org/phenology.calendar/

GLIFWC — Climate Change
72682 Maple Street
P.O. Box 9
Odanah, WI 54861

Please print return address clearly:

Aaniin ezhiwebak Anishinaabe-akiing?

Please Help GLIFWC Observe Seasonal Events in the Ceded Territories

GLIFWC is trying to understand how environmental changes could be affecting treaty resources.

Help us study phenological and seasonal changes by writing down your observations on this form. Keep it on your bulletin board or refrigerator. Share your knowledge by mailing it back to GLIFWC by December 31, 2022.

Great Lakes Indian Fish & Wildlife Commission

Earth Day clean-up across Ceded Territory brings out community spirit

Earth Day at Wisconsin Point: Chief Osaugie descendant Mark McConnell and his wife Mary (photo) joined the group to pick up debris, cigarette butts, and plastics along the beach. Fond du Lac Chair Kevin DuPuis and his daughter, Faryn, his grandson, Nash, 2 and approximately 20 volunteers also participated. The group started their clean up efforts in front of the 12.47 acres that was returned to the Fond du Lac Band from the Army Corp. of Engineers in 2017. The Band will apply for this parcel to be placed into federal trust in their upcoming Fee Status to Trust application that will also include two additional parcels: the burial ground also on Wisconsin Point and the mass grave near the Nemadji River in East End, Superior, Wisc. (see "Disturbed earth doesn't settle, a new chapter for Indigenous people and Wisconsin Point" Mazina'igan Biboon (Winter) 2021-2022). (JVS photo)

Students from the SPARK! after-school program in Ashland, Wis traveled to the nearby Bad River Reservation to help collect garbage from roadsides. (COR photo)

What are you observing in the Ceded Territories? Ozhibii'an ezhiwebak noopiming.

*****Please record the date, location, and species (if applicable) for each observation. Return to GLIFWC by December 31, 2022. Miigwech!**

Niibin / Summer **Date/Location**

Dates/amounts of heavy rain events (>1" in 24 hrs)

_____

First monarch butterfly_____

First firefly _____

Deer seen with summer coat _____

First birch bark harvested _____

Flowers on berry plants (species)_____

Berries ripe (species)_____

Loons nesting_____

Loon chicks_____

Wild rice in floating leaf stage _____

First wild rice ripe _____

First wild rice harvested _____

Other niibin observations:

_____

_____

_____

_____

_____

_____

Dagwaagin / Fall **Date/Location**

First grouse harvested_____

First duck harvested_____

Last ducks on the lake/river _____

Last loons on lake _____

Bucks in rut _____

First polished deer antlers _____

Deer have winter (gray) coat _____

First deer harvested _____

First princess pine harvested_____

First apples harvested _____

First cranberries harvested _____

First leaves changing color (species) _____

Peak fall color _____

First leaves falling (specify tree species)

_____

Nighthawks migrating _____

First fire in the woodstove _____

Sandhill cranes flying south _____

First frost _____

First day temperature stays below freezing (32°F)

_____

First snowfall _____

First snow that sticks _____

Lake frozen solid (specify lake) _____

Other dagwaagin observations:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

GLIFWC Executive Administrator Mic Isham met with US Department of the Interior Secretary Deb Haaland and others at a climate change event in St Paul, Minnesota May 6.

Trapping & tracking

(continued from page 7)

Practices" (BMPs). These BMPs were developed by multiple fish and wildlife agencies to evaluate ethical, effective, and humane trapping tools and techniques to be applied and followed within multiple tribal, state, and federal wildlife management programs. Trapping BMPs are continually researched and updated by agencies to improve techniques used by both harvesters and biologists/researchers. Further information on specific trapping BMPs on multiple species can be found at the National Trappers Association Website *nationaltrappers.com/bmp.html*.

After the trapping workshop concluded, several GLIFWC staff explored various areas of the Bad River reservation for wildlife tracks. The best time of year for tracking wildlife is usually done in the winter months, although it can be conducted any time of year on muddy roads and trails as well.

Tracking wildlife species requires knowing where to look for tracks, which is dependent upon the species you are interested in tracking. It's a good idea to have a ruler and camera along so you can document the track next to a ruler—a helpful size reference. With training and practice, wildlife tracking can provide information on an animal's travel routes, food habits, dens/bedding areas, rubs/digging spots, and even scat (fecal droppings) within its' home range—all important information for successful trapping.

Sugar bush season

(continued from page 11)

For the more patient sugarers, Duffy described birch sap as a "cherished flavor" although it doubles the sap-to-syrup ratio. Birch trees require approximately 80 gallons of sap that will boil down to one gallon of syrup. Traditional sugar or red maple trees typically require about 40 gallons of sap or so to equal one gallon of syrup.

Duffy reminded the students that collecting from the sugar bush doesn't have to be as large an operation as the farm: "you can always work your way up, or scale it back; if you live in the city, it's ok to tap one, two or six trees, but when you have a limited supply of trees, be sure to alternate where you insert your taps. Let the trees rest and heal from year to year," he said.

As Duffy watched another group of students head back to the bus he said: "as long as you have this knowledge and experience, you'll always be spiritually and emotionally rich."

For anyone looking to schedule a field trip to the farm or inquire about their equipment loan program contact *TNR@redcliff-nsn.gov* or 715-779-3782.

Emerald ash borer

(continued from page 9)

Things look bleak for the ash beings in the short-term, but their long-term future looks much brighter than it once did.

Thanks to Bad River basketmaker April Stone and Wisconsin DNR Plant Pest & Disease Specialist Andrea Diss-Torrance for background information for this article.

For more information:

An interactive map of biocontrol release sites is available at: *msugis.maps.arcgis.com/apps/webappviewer/index.html?id=255045037dbb455a8f836a19e9d4a172*. (For this map, sites where one or more biocontrol insects have been released are shown as dark blue dots; the yellow dots are suitable release sites where biocontrol releases have not yet occurred.)

As is frequently the case, the Menominee Tribe has been leading the way when it comes to innovative, nature-centered forestry practices, including preserving ash for the future. See their "Emerald Ash Borer IPM Plan" at *mtewood.com/SustainableForestry/EABPlan*.

Miigwech for your service

Rondo pulls his traps

A skilled live-trapper, animal track expert, and mentor to aspiring natural resources professionals, Ron Parisien's career kept him immersed in the outdoors for more than three decades.

Best known by friends and colleagues as "Rondo," Parisien enters retirement after serving as the longest tenured wildlife technician at Great Lakes Indian Fish & Wildlife Commission.

Beginning in the mid-1980s, Parisien worked to control exotic aquatic purple loosestrife—a wetland plant that was well on its way to crowding out native species in the Wisconsin Ceded Territory.

Through trial-and-error, he helped determine that labor-intensive mechanical removal of purple loosestrife was ineffective at curbing loosestrife populations, leading to today's two-pronged control strategy of herbicide applications and biological agents like Galerucella beetles.

Across the Chequamegon National Forest, he was a key member of research teams studying fur-bearing animals, notably the state-endangered waabizheshi, or American marten—a culturally important species and clan animal for Ojibwe people.

In a 2005 Wisconsin Public Television program on martens, the host called Parisien a Picasso for his artful live traps adorned with balsam boughs and yellow birch bark.

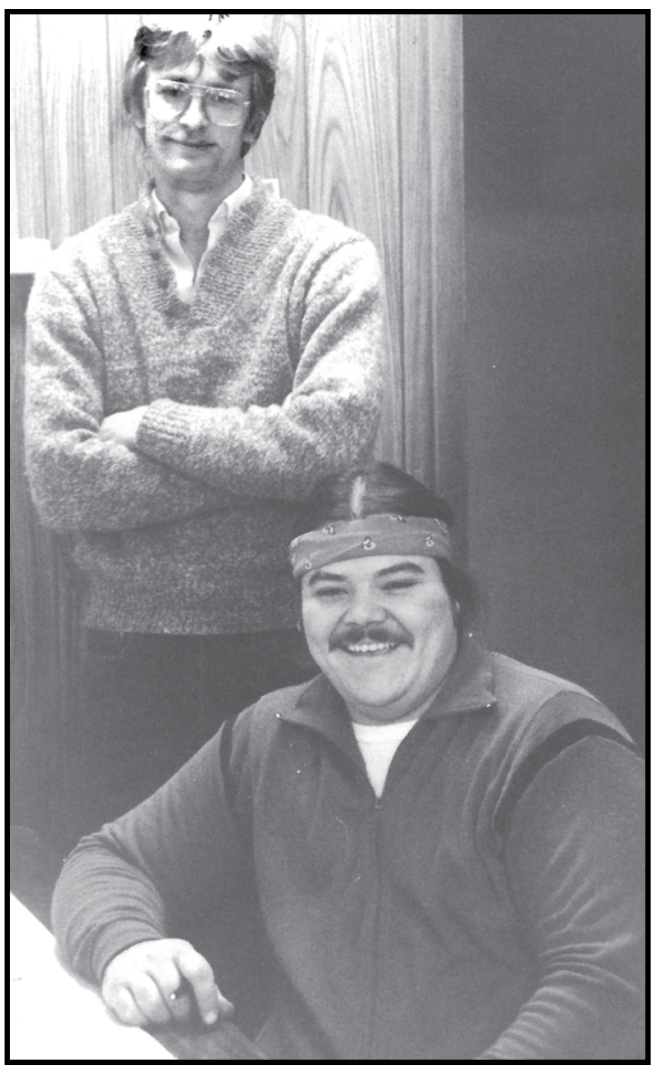
For Jonathan Gilbert, Biological Services Division director, those formative years working alongside Parisien provided a road map on how to research fur-bearers like martens, fishers, and bobcats.

"He taught me a lot about capturing animals and handling them the right way," Gilbert said.

While a Northland College student, GLIFWC Executive Administrator Michael J. Isham worked with Parisien on a number of projects. They also made time to fish and harvest wild rice together.

"I learned Western science from Northland but I got my TEK (traditional ecological knowledge) from Rondo," said Isham, recalling catching a turtle that was later made into a soup dinner by Parisien's mother Sylvia Cloud.

After 36 years with GLIFWC, Parisien's outdoors time is now his own with the woods and water of the Bad River Reservation right out the back door. Miigwech, Rondo! **—CO Rasmussen**



GLIFWC wildlife staff, Peter David (standing) and Ron Parisien at GLIFWC's main office in 1986. (S. Erickson photo)

Airplanes to airwaves, biologist & educator glides into retirement

When Ojibwe tribes created Great Lakes Indian Fish & Wildlife Commission in 1984, a modest budget meant getting the most for your money. In those first few years, the first few hires in the Biological Services Division, wildlife biologists needed to do a little bit of everything. If it flew, walked, crawled or grew—it became part of your aptitude.

Since his start in 1986, GLIFWC Wildlife Biologist Peter David's career touched many Ceded Territory resources—including a significant investment in migratory waterfowl—all the while developing an authentic expertise in wild rice. Elders and rice chiefs from Sokaogon Mole Lake, Bad River, St. Croix, and additional bands shared their indigenous manoomin knowledge with David across the decades. He conducted field research that included yearly aerial surveys from a single-engine Cessna as well as long days in a canoe, paddling Ceded Territory waters to examine wild rice up close. With ever-expanding knowledge, he helped guide wild rice restoration efforts in both historic waters and 20th Century flowages. That experience, melding science and traditional ecological knowledge, is emblematic of GLIFWC's core approach to natural resource stewardship on behalf of its member tribes.

"Our working relationship has been outstanding," Conrad St John, St. Croix Band representative told David in April. "Everything you've done with wild rice, your fight for our brother the ma'iingan, all that hard work pays off."

With the resurgence of ma'iingan, or wolf, migrating west-to-east across the Ojibwe Ceded Territory, David's education continued, learning about the relationship between Anishinaabe people and wolves. An articulate advocate for wolves, he engaged state and federal agencies as well as the public, making the case for allowing wolves to complete their recovery in the Great Lakes region. The future of wolves and wild rice is not settled, but both are in a better place with David's help.

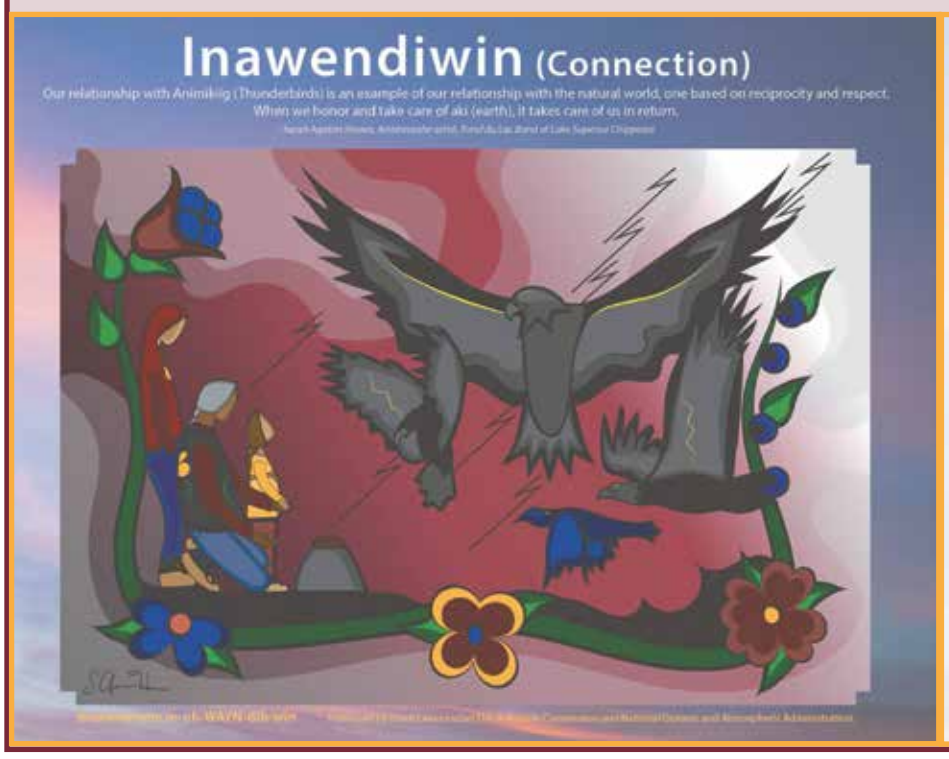
While some long-awaited travel is in David's near future, all who know him fully expect his interest in natural resources stewardship to keep him involved in improving human relationships with the environment for a long time to come.

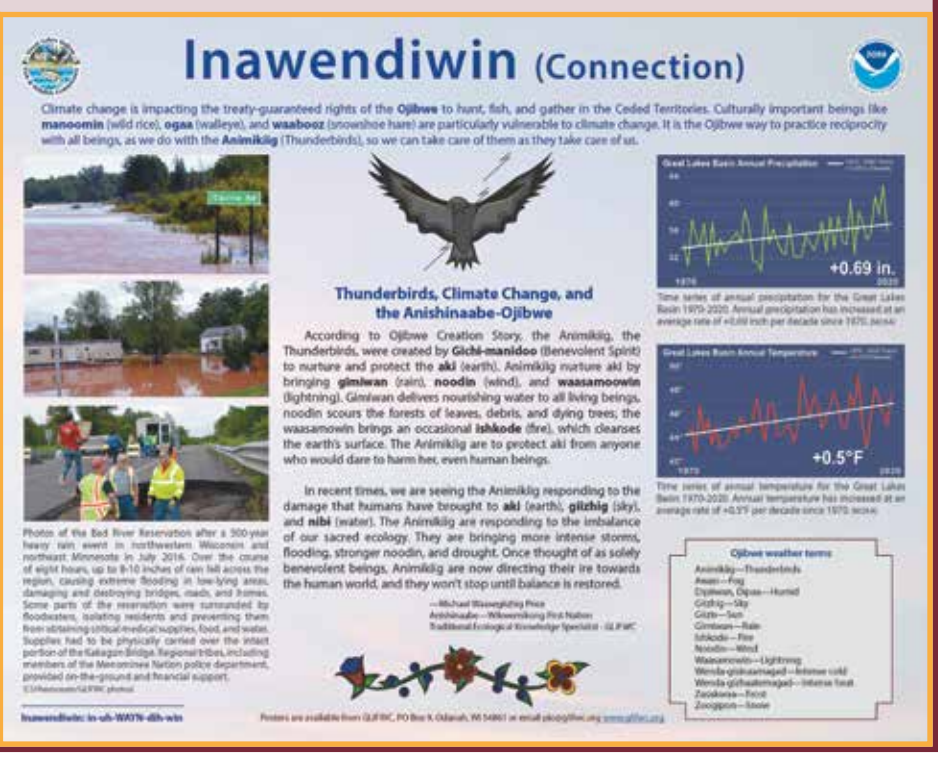
—CO Rasmussen

Inawendiwin (Connection)

Through an innovative partnership with the National Oceanic and Atmospheric Administration, GLIFWC is pleased to offer this double-sided poster ***Inawendiwin (Connection)*** by Sarah Agaton Howes, Fond du Lac Band Ojibwe. This poster explores climate change through a cultural, scientific, and practicable lens as native communities increasingly experience extreme weather events.

Copies of the poster are available free of charge by emailing *pio@glifwc.org* or calling 715-685-2108.





Healing Circle Run/Walk

July 9–July 15, 2022

The healing circle run/walk is intended to embody the healing prayers carried by participating runners and walkers. Prayers are offered for individuals, families, communities, nations, and aki. These include petitions for healing from addiction, historical trauma, racism, and environmental degradation. Each day will start and end with prayers and asemaa and include a community meal at the end of each day.

The 2022 healing circle run/walk will take place in-person, connecting 10 Ojibwe communities across Minnesota, Wisconsin, and Michigan:

July 9 ~ Lac Courte Oreilles to Lac du Flambeau
July 10 ~ Lac du Flambeau to Sokaogon
July 11 ~ Sokaogon to Lac Vieux Desert
July 11 ~ Keweenaw Bay to Lac Vieux Desert
July 12 ~ Lac Vieux Desert to Bad River to Red Cliff
July 13 ~ Red Cliff to Fond du Lac
July 14 ~ Fond du Lac to St. Croix
July 14 ~ Mille Lacs to St. Croix
July 15 ~ St. Croix to Lac Courte Oreilles

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

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

Jenny Krueger-Bear and daughter Savannah Krueger put in miles during the 2018 Healing Circle Run/Walk. (M. Falck photo)

Camp Onji-Akiing (From the Earth)

Natural Resource Cultural Summer Camp

August 8-12, 2022

Camp Nesbit, Sidnaw, Mich.

Camp Onji-Akiing is a cooperative effort between GLIFWC and the US Forest Service, Ottawa National Forest to explore opportunities for connecting youth with their natural world.

Hosted at the Lake Nesbit Environmental Center near Sidnaw, Michigan, the camp centers around the Medicine Wheel, addressing not only the physical but also the emotional, mental and spiritual aspects of adventure-based learning. Youth will explore natural resource careers, Native American treaty rights, build leadership skills, and environmental stewardship.

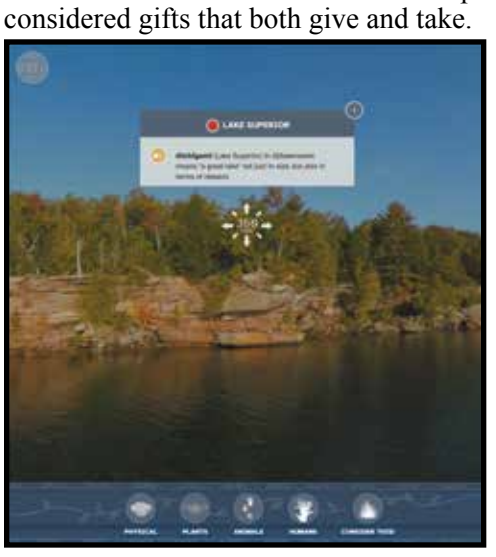
Onji-Akiing is open to youth entering grades 5th–8th in the 2022-2023 school year. Registration will open in June, watch GLIFWC's Facebook page (*facebook.com/GLIFWC)* or our website (*glifwc.org*).

For more information contact GLIFWC Conservation Warden Christina Dzwonkowski at *cdzwonkowski@glifwc.org* or call 715.892.0874.

Minisan website

(continued from page 14)

Five symbols are embedded in the beadwork banner at the bottom of each ecosystem panorama. Four represent the Ojibwe orders of creation: the physical, plant, animal, and human orders and the spirit world is acknowledged within each of these four orders. The beadwork pattern reinforces how each order is connected to the others. There is reciprocity among them because each are considered gifts that both give and take.



Clicking on these symbols opens stories of how climate change is affecting the ecosystem based on Indigenous ecological knowledge researched by GLIFWC's Climate Change Team which was also contributed to by tribal knowledge keepers. Each story integrates Ojibwemowin because it is the language of the land. "Academic" ecological knowledge from the Wisconsin Initiative on Climate Change Impacts provides a cross-cultural viewpoint of how climate change is projected to affect the ecosystem. Images and videos help to reinforce each story.

Within each ecosystem the "human order" story carries strategies for adapting to climate change based on *Dibaginjigaadeg Anishinaabe Ezhitwaad: A Tribal Climate Adaptation Menu*. These approaches offer alternatives based on cultural values that differ from "Western" perspectives of controlling the environment to control climate change.

A fifth symbol embedded in each ecosystem is called "Consider This." It opens to challenge our thinking about whose science informs our climate knowledge and actions. For example, some of ecosystems ranked by academic science as only moderately vulnerable to climate change, are considered highly vulnerable by some Ojibwe.

The Minisan website reinforces the importance of respecting Indigenous knowledge, built on the Ojibwe people's relationship with this land and its beings, as an equally important way of knowing and responding to climate change. It offers a culturally relevant framework for expanding outreach of Indigenous culture, science, and culturally relevant climate adaptation strategies.

Chi Miigwech to everyone who has helped develop the Minisan website including Melonee Montano, Edith Leoso, Damon Gezhiibideg Panek, Dylan Jennings, Paula Maday, Rob Croll, Hannah Panci, GLIFWC's Public Information Office, the Tribal Climate Adaptation Menu Team, Choua Xiong, Balance Studios, and the many individuals and organizations who contributed photos and videos.

For more information contact *cathy.techtmann@wisc.edu* or phone 715.561.2695.

Ziigwan brings new GLIFWC staff

It's "game on" for Internship Program Coordinator, Lemieux


M. Rasmussen photo

Pauline (PJ) Lemieux grew up in Odanah, Wis. and is a member of the Bad River Band of Lake Superior Ojibwe. Lemieux lives with her fiancé, Rick, and their son, Dylen who just finished his first year of college, where he plays Division III football, for the Ripon Redhawks. Lemieux and Rick enjoy traveling nearly every weekend to football games during the fall season to cheer on #82!

Lemieux earned her Administrative Assistant degree from WITC (now known as Northwood Technical College) in 2007. She most recently worked for the Ashland (Wis.) School District in the Athletic Department. "In our house, sports are a big part of our lives, so the opportunity to work in the athletic department during my son's last couple of years of high school just made sense," she said.

Her current role includes specialized outreach to fill and administer summer internships, helping ensure GLIFWC's work is able to carry on for years to come. Additional duties include supporting the Administration for Native Americans (ANA) Language grant project within the Planning & Development Division.

"Being able to work in a new role that helps people in our community, especially tribal members, was something I couldn't pass up," she said.

—J.Van Sickle

Happy to be in the Northland, Traditional Foods Manager gets to work


M. Rasmussen photo

GLIFWC's Planning and Development Division welcomes new staff member Laura White as the Traditional Foods Grant Project Manager. Her experiences are in agency regulation, safety standards, and rigorous operations thanks in-part to her role as an Adjunct Faculty and Laboratory Specialist.

White's post-secondary education began at Ball State University where she spent three years studying Natural Resources, later receiving her Associates of Science from the College of Lake County. White went on to obtain a Bachelor of Arts in General Studies with a Minor in Sociology from Eastern Illinois University. White also is a certified PBT technician from the American Society for Clinical Pathology.

White has always dreamed of moving to the Northland and enjoys exploring, hiking local trails, canoeing, watercolor painting, and spending time with her kids. Northern Illinois is where she raised her oldest son, Luke is 25 and her 18-year-old twins Tess & Jay who currently attend the Universities of Utah & Arizona.

White will be responsible for promoting the use of traditional food that develops and sustains tribal community food systems as well as providing technical assistance to GLIFWC member tribes by establishing traditional food marketing, regulation, and processing capacity. Finally, she will implement off-reservation Model Food Code training to create and expand opportunities while preparing grant applications. Developed by GLIFWC legal and nutrition specialists, the Model Food Code Guide provides a platform for tribes to take sovereign control of community food systems.

At GLIFWC, White is looking forward to developing connections with member tribes, their communities, and learning more about the history and science behind traditional foods harvested across Ceded Territory.

—J Van Sickle

Environmental health, clean water a priority for Ackley

From the Great Lakes region to the wilds of northwest Canada, Caren Ackley has lived, worked, and conducted research across the upper third of Turtle Island. A Lac du Flambeau tribal citizen, Ackley now brings her skills and knowledge to the Ojibwe Ceded Territory as an environmental biologist.

With a focus on both the environment and human health, Ackley takes charge of GLIFWC's fish consumption advisories, tracking mercury contamination in important Ojibwe treaty resources including walleye and muskellunge. Fish tissue samples from dozens of Ceded Territory lakes provide the input into GLIFWC "Mercury Maps," used by tribal members and others to make choices on which waters to catch and eat fish. Beyond the mercury program, Ackley is also working with agency partners on toxin issues in the Great Lakes basin, focusing on Lake Superior, through ongoing initiatives implemented under the Great Lakes Water Quality Agreement and the Great Lakes Restoration Initiative.

Studies at University of Wisconsin (Parkside & Madison), University of Saskatchewan, and Wilfrid Laurier University earned Ackley advanced degrees in Geosciences, Hydrology, and Geography. Her field research includes studying nutrient and contaminant loads present in water runoff, notably the movement of mercury and methylmercury following snowmelt and precipitation events. She has a special interest in educating youth in natural resource science, helping the next generation better understand the evolving environmental challenges unfolding with climate change.

On the water and in the woods, Ackley is at home in the outdoors. She has one daughter, who is completing her sophomore year of college. After a formative Northwest Territories research trip with her mom, Clara Ackley is pursuing her own studies at Wilfrid Laurier University. **—CO Rasmusen**

Attorney brings international perspective to DIA

James Rasmussen joins GLIFWC as a Policy Analyst II in the Division of Intergovernmental Affairs (DIA). Rasmussen's work will focus on the protection and enforcement of treaty rights as well as administrative policies.

Rasmussen majored in Life Sciences Communication & Environmental Studies at UW-Madison. He has a Certificate in Scandinavian Studies and spent seven months living in Copenhagen studying environmental policy and Nordic mythology at Kjoebenhavns Universität.

Rasmussen grew up in Merrill, Wisconsin bow hunting and fishing for trout at his grandparent's farm where he developed his appreciation for nature, wildlife, and ecology. From an early age, he especially enjoyed participating in Earth Day activities and reading Aldo Leopold. Rasmussen's mom, an artist, also inspired his curiosity and appreciation for ma'iingan with her art.

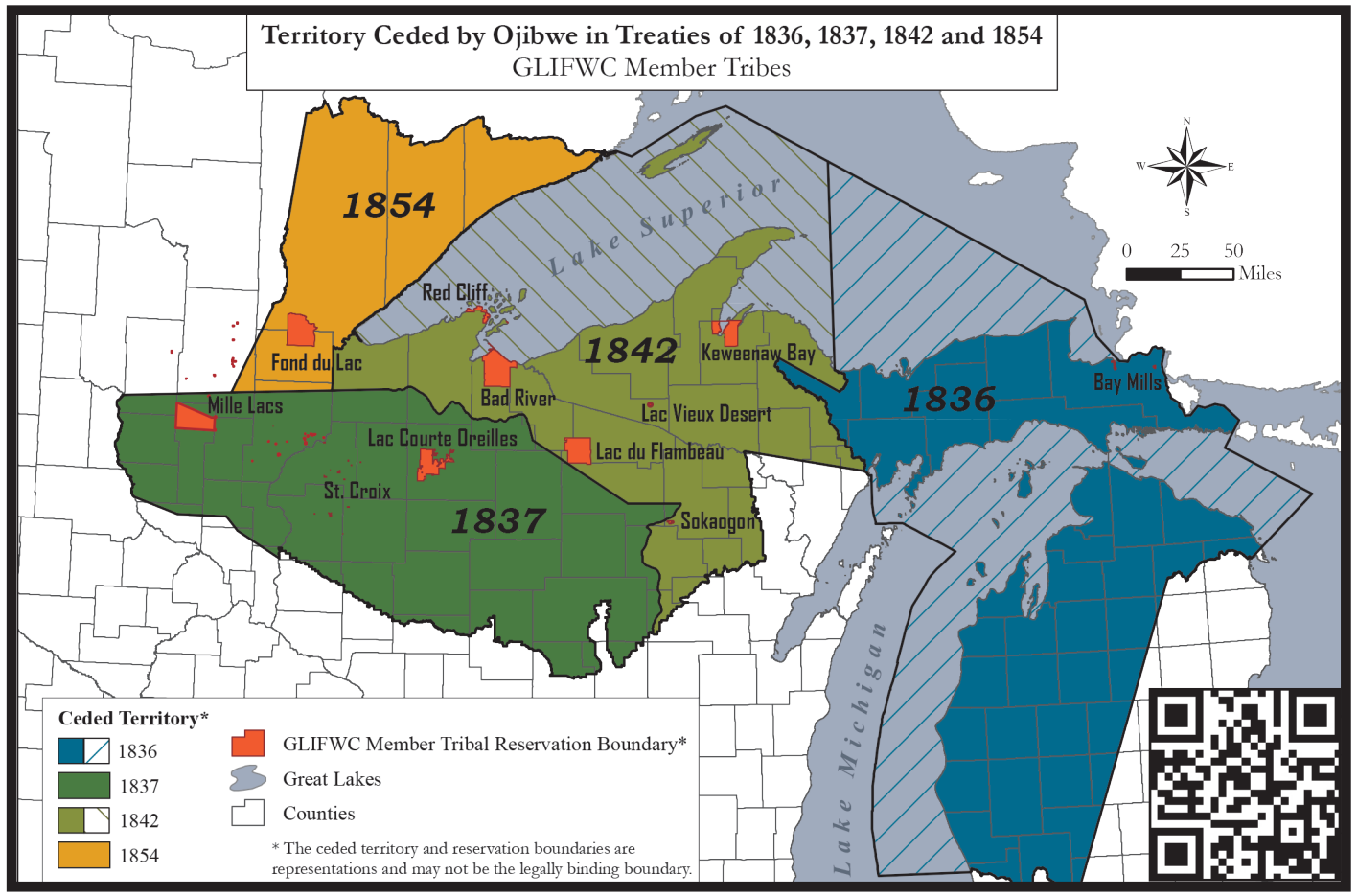
Rasmussen graduated from St. Thomas School of Law in 2020. In law school, Rasmussen volunteered with legal aid in Mankato, Minn. He also has experience in rural practice as a justice fellow with the Immigrant Law Center of Minnesota where he worked to secure status of immigrants from Venezuela, Mexico, Burma, and Haiti.

Compelled to continue his work in public service, Rasmussen was determined to get back to northern Wisconsin and is excited to learn more about traditional ecological knowledge principles. He is thrilled about living, working, and exploring the Chequamegon Bay area. **—J. Van Sickle**

RETURN ADDRESS:
GLIFWC
P.O. BOX 9
ODANAH, WI 54861

CHANGE SERVICE REQUESTED

Niibin 2022



Unique species call Ceded Territory riparian corridors home

The watersheds that ring Gichigami (Lake Superior) contain a treasure of wildlife resources. Wood turtles are one of the many rare species found in the region. Development projects, however, like new oil pipeline construction threatens fragile habitat, the quality of nibi (water) and the animals that live there.

Do you have an eye for nature? Like to bird-watch? or Simply want to canoe the Brunsweiler River with an eye out for turtles? Join us in locating rare species in the Bad River watershed along the Gichigami south shore.

To volunteer and receive an instruction packet contact John Coleman (*jcoleman@glifwc.org*) or Dawn White (*dwhite@glifwc.org*).

Tribal biologists recording the location and character of ferns, including the State listed Braun's Holly Fern in the path of the Enbridge pipeline re-route. This fern likes the cool stream channels in the Penokee Hills. (J. Coleman photo)

Mazina'igan

A Chronicle of the Lake Superior Ojibwe

NIIBIN 2022

INSIDE:
What's in a name?
Tribal ag program growth
An upriver swim for ogaawag