

**See awesiinh
bimikawaan kid's
activity on page 20**



Ojibwemowin on the road

By Charlie Otto Rasmussen, Editor

Odanah, Wis—Joining a growing cadre of indigenous communities with dual-language road signs sponsored by the Wisconsin Department of Transportation (DOT), the Bad River Band welcomed Governor Tony Evers September 17 to usher in Mashkiziibii Reservation border markers on US Highway 2. The roadside upgrades include two additional locations at river crossings featuring the Kakagon and Mashkiziibii Ziibiwan. The familiar DOT signage with reflective white letters on a green field features a banner in Ojibwemowin with an English spelling underneath.

“Located at the [East and West] entrances to our tribal lands, the signs will better inform the traveling public of our language and heritage,” said Bad River Chairman Robert Blanchard. “It also shows that collaboration between the state and tribes can work for the betterment of all involved.”

In far northern Wisconsin, US Highway 2 serves as the primary traffic corridor for Bad River residents and businesses. The route is heavily used by all sorts of travelers and forms a section of the popular road tripping motorway: Lake Superior Circle Tour.

Bad River Band first collaborated with the local government unit—Town of Sanborn—in October 2020, installing dual language signs on township roads that overlapped reservation lands. Many of the Ojibwemowin additions emulated the existing road names—like Bear Trap Road being paired with Makoons (Bear Cub).

As all Wisconsin First Nations continue multi-pronged language revitalization programs, dual language signage reinforces ongoing community learning and helps visitors better understand how indigenous place names are part of the fabric of the Great Lakes region. The town of Odanah literally means “village” in Ojibwemowin and the busy tourist city of Minocqua in Lac du Flambeau Ojibwe homelands translates to “a nice a growth of trees” or minaaakwaa, educator Boycee Valliere shared with Mazina’igan.



A crew from the Ashland County Highway Department installed dual language signs October 28 on US Highway 2, alerting motorists they were crossing the Kakagon River. Bad River Tribes’s Ben Connors monitored the installation to ensure proper handling of any potential cultural items uncovered in the work. (CO Rasmussen photo)

Rivers run through it

While the Mashkiziibii reservation is adorned with dozens of streams, highway placards were reserved for a pair of navigable waterways that intersect US 2. A crew from the Ashland County Highway Department met with Ben Connors October 28 at the Kakagon River bridge to complete signage installation. A manager for the tribe’s roads department, Connors also served as a monitor in the event that cultural items surfaced while the county power auger created post holes to mount the signs.

“When you introduce yourself, it’s your name and ‘Mashkiziibing, nin-donjibaa.’ Everytime you do that, you tell people where you’re from,” Connors said. “That’s part of who you are—where you’re from, right? And putting that onto a sign, I think it’s a big deal. It’s part of who you are.”

In recent years, the Wisconsin DOT has also collaborated with the Sokaogon Mole Lake Band on dual language signs in addition to Lac du Flambeau, St. Croix, Menominee, and Oneida Nations. The first installation in Wisconsin occurred in 2021 at Red Cliff with Gaa-Miskwaabikaang signage. Minnesota transportation officials have also planted Ojibwe-English road signs, including a dozen off-reservation highway markers that trace the boundary of the 1854 Treaty area in the state’s Arrowhead region.

“The effort, the bridging of gaps on the state side, it’s appreciated by tribes,” Connors said.



During a visit to celebrate the creation of dual language signs on the Bad River Ojibwe Reservation, Wisconsin Governor Tony Evers (center) and his staff met with members of the tribal council. (Gov. Evers Office photo)

Changing worlds: GLIFWC honors Gichigamiwinini

On January 25, 1983, Wisconsin Ojibwe tribes won an important federal court victory, reaffirming their ceded territory treaty-reserved rights to hunt, fish, and gather off the reservation. Shortly thereafter the Voigt Inter-Tribal Task Force was formed, and soon after that Jonathan Gilbert was hired.

Beginning as the first wildlife biologist hired by the Voigt Intertribal Task Force, Jonathan dedicated his career to safeguarding Ojibwe treaty Rights, tribal sovereignty, and traditional ecological knowledge through the lens of managing resources in a biologically sound manner and developing the interagency relationships that are needed to co-steward lands across the Ceded Territories.

Establishing himself as a respected wildlife biologist and earning his PhD in the process, “Dr. Jon” developed the programming necessary to implement various court decisions and agreements but was also able to bring Traditional Ecological Knowledge to the forefront of the conversation as a comparable and widely accepted science. In a rare milestone for a non-Anishinaabe individual, tribal leaders bestowed the Ojibwe name Gichigamiwinini: Lake Superior Man, to Gilbert.

In 2016, Jonathan was promoted from his position as the Wildlife Section Leader to Director of GLIFWC’s Biological Services Division. He used his role to support a team of dedicated biologists—nurturing the division into an era of shared leadership. Throughout his career he pursued his passion for marten research and the management of Ceded Territory forests, becoming globally renowned for his efforts.

Jonathan worked to ensure the tribes’ rights were recognized and protected, and that future generations of tribal members have access to the treaty resources that are part of the Ojibwe lifeway. He demonstrated his commitment to the tribes and the Commission by finding value in the people he worked for and with. His leadership and friendship will be sorely missed by the GLIFWC community.

In lieu of flowers, the Gilbert Family has requested donations be sent to the Great Lakes Indian Fish & Wildlife Commission in honor of Jon. Your contributions will provide scholarships for career advancement in natural resources stewardship. Please contact Deputy Administrator Julianna Saari to learn how to make your donation at: jsaari@glifwc.org or tinyurl.com/36fv5xs9

—Alex Bohman & Ann McCammon Soltis





Ceded Territory news briefs

Alaska Native homelands already degraded by climate, battered by typhoon

The remnants of Typhoon Halong slammed into Alaska’s West Coast October 11 with hurricane force winds followed by a record-breaking storm surge that left community members grieving, displaced, and wondering what’s next. When the storm took a sudden turn towards the Yukon-Kuskokwim Delta, residents only had about a day to prepare.

Coastal communities, like the hard-hit Kupik, (Q-pick) largely live off the land as they have for thousands of years; they embrace and rely on living a traditional, subsistence lifestyle. Situated in proximity to cultural foods puts their homes at sea-level and without quick access to high ground.

According to the Environmental Protection Agency, research shows that the State of Alaska is warming faster than the global average and faster than the contiguous United States. But Alaska’s Arctic Coast is warming the fastest.

Tribal villages established across the Delta region face more than the increasing threat of storm damage. The very ground on which their entire lives have been built is called “Alaskan quicksand” due to the deterioration of permafrost. Weakening permafrost has led to widespread instability of critical infrastructure including homes and airports. The repair from hurricane force winds and catastrophic damage to vulnerable villages is further delayed by geographic isolation, increased costs, access to materials, and unstable grounds to even rebuild on. Additionally, incremental warming over recent decades has reduced sea ice and protective snow cover.

Typhoon Halong left thousands of people evacuated while others are still missing. Learn more about the climate challenges indigenous peoples are facing on Turtle Island at akcasc.org. —J. Van Sickle

Forestland management strategies key to supporting waabizheshiwag

In conjunction with partners from US Forest Service and University of Wisconsin-Madison, GLIFWC has been awarded nearly \$690,000 for waabizheshiwag, or American marten, stewardship in Wisconsin and the surrounding Ceded Territories. The National Fish and Wildlife Federation apportioned the funds through the America Ecosystem Restoration Initiative (formerly known as America the Beautiful Challenge Grant).

While waabizheshiwag are present in Wisconsin, their population numbers are low enough that they are both a tribally and state endangered species. Martens rely on complex, ecologically mature, or “messy” forests, and deep snow cover. Habitat fragmentation and climate change (decreases in annual snow volume) pose threats to the Wisconsin waabizheshi population. Since wildlife biologists cannot increase the amount of snow cover, it is important to focus on providing the right habitat to establish stable marten populations.

The recent award will provide funding for project partners to conduct additional research to better understand marten habitat preferences and where that habitat exists on the landscape. By incorporating both new and existing information researchers will develop detailed stewardship actions or practices that can be used to enhance and connect existing marten habitat. These actions or practices will be descriptive and easy to follow for any land manager but particularly those who steward lands for diverse uses including timber harvest. These practices will not only benefit marten populations but other beings that rely on large tracts of complex old forests. —A. Carl

Early deer registrations edge higher, bear harvest down from 2024

With another early dagwaagin waawaashkeshi hunting season marked by warm temperatures in the 1837 and 1842 Ceded Territories, the deer harvest has gotten off to a relatively slow start in 2025. From the season opener on September 2 through October 29, Ojibwe off-reservation hunters registered 161 whitetails. Over the same period, 29 black bears, or makwag, were harvested.

Tribal hunters have the option of registering their deer and bear in-person at tribal registration stations, with a GLIFWC conservation warden, or remotely using the online registration system. GLIFWC’s phone registration system is no longer available. Having an accurate measure of off-reservation tribal harvest helps to identify and prioritize important places for protection. Harvest registration is required by tribal conservation codes for many species.

Of the 161 deer that were registered as of October 29, approximately 70% were recorded remotely using the online registration system. The remaining 30% of deer were registered in person at tribal registration stations or with GLIFWC wardens. Approximately 48% of the waawaashkeshi total were bucks and 52% were antlerless deer. The peak of off-reservation tribal deer registrations typically falls over the second, third, and fourth weeks of November.

Of the 29 bears tallied, 28 were registered remotely using the online system. Fourteen (48%) makwag were males (boars) and 15 (52%) were females (sows). This year’s bear kill of 29 is down from the 48 bears registered at this time in 2024. —T. Bartnick

Bineshiinh hunts a touchstone on expanding opportunities in Ojibwe Country

By Allison Carl, Wildlife Biologist

Fall and early winter provide many different harvest opportunities. While most people think of this time as the deer and elk seasons, there are some newer (relatively speaking) tribal harvest opportunities of the feathered variety in the Ceded Territories. The first tribal ajijjaak (sandhill crane) season was established 13 years ago in 2012. While only two cranes were harvested that inaugural year, sandhill crane harvest has slowly become more popular with 55 harvested in 2024. Miziseg (wild turkeys) were not always present in the Ceded Territories. The wild turkey’s native range was originally limited to southern portions of Minnesota, Wisconsin, and Michigan before they were extirpated or removed from all three states by the early 1900s.

Many wild turkey reintroductions and several successful modern translocation efforts occurred including near Ino (2004) and Saxon (2006), Wisconsin. Birds were brought in from north-central Wisconsin including Langlade County and established a population after a few harsh winters. Wild turkeys are now present and thriving throughout the Ceded Territories in all three states. The newest hunting opportunity was a special sharp-tailed grouse season this fall. This special season ran for three weeks and opened a restricted area in northeast Wisconsin that is typically closed to sharp-tailed grouse hunting.

Ajijjaak

Tribal members can still pursue sandhill cranes until December 31. A migratory bird hunting permit is required along with a sandhill crane stamp. Harvesters can self-issue both of these license requirements online through our NAGFA system or head to the nearest registration station to get them in person. Any harvested crane must be registered within 48 hours online or in person with a registration clerk or a GLIFWC warden.

Mizise

While not as popular as the spring season, the fall can be a great time to harvest wild turkey. Many harvesters often come across wild turkey when they are pursuing deer or sitting in the deer stand. If you plan on deer hunting this fall, consider getting your wild turkey license as well. The turkey season is open (see Bineshiinh hunts, page 21)



Aim high. Shotgun pellet strikes at the base of a wild turkey’s skull will quickly dispatch a gobbler. Remember it’s unlawful to harvest miziseg with a rifle. Choose 3-inch magnum 12-gauge loads in #4, #5, or #6 for solid results. (NWTF image)



Deer, elk herd susceptible to CWD

Testing services available through GLIFWC, tribes

By Travis Bartnick, GLIFWC Wildlife Biologist

After more than two decades since its discovery in the region, chronic wasting disease continues its spread in the Ceded Territories. Chronic wasting disease (CWD) is a neurodegenerative disease that is neither a virus nor bacteria, but rather a misfolded protein known as a prion (pronounced “pree-on”). Once the disease becomes established in a deer or elk herd, the disease can be extremely difficult to contain. CWD prions can spread in many ways, both directly or indirectly, including from deer-to-deer via saliva, nose-to-nose contact, urine, feces, and other bodily fluids. The species of wildlife that are most susceptible to CWD are members of the deer family (Cervidae), such as white-tailed deer, mule deer, elk, and moose.

CWD has been detected in wild (and captive) deer populations in Wisconsin for over 20 years and has continued to spread throughout the state ever since. The disease was first detected in wild deer in the far southwestern part of the state, and the vast majority of CWD-positive deer come from that area, which is sometimes referred to as the CWD endemic area. At the end of the 2024 deer season, several new CWD-positive detections in wild deer within the Ceded Territory in Wisconsin were reported in multiple counties, including Chippewa, Dunn, Eau Claire, Marathon, Oneida, Polk, Shawano, and Vilas Counties. In the early portion of the 2025 deer hunting season, as of the end of October, additional CWD-positive wild deer have been reported in Dunn, Oneida, and Polk Counties.

CWD has been detected in many other states and Canadian provinces across North America, including both Minnesota and Michigan. No CWD-positive wild deer have been reported within the 1837 and 1854 Ceded Territories in Minnesota. No CWD-positive wild deer have been reported in the 1842 Ceded Territory in northern Michigan. Several CWD-positive deer have been reported in the 1836 Ceded Territory in lower Michigan. Many of the detections have been found thanks in part to the efforts of concerned hunters who have submitted samples from their harvested deer for testing each deer season.

One of the biggest concerns that deer hunters have is whether it is safe to eat meat from a CWD-infected deer. So far, there is no evidence supporting the idea that CWD can be transmitted to humans. However, the risk is not zero. In fact, the Centers for Disease Control and Prevention (CDC) recommends that people should avoid eating meat from any deer or elk that looks sick or that tests positive for CWD.

Keep hunting! Despite the long-term threat that CWD poses to the health of deer and elk populations, one of the most effective things hunters can do is continue hunting deer! The disease can spread more rapidly in densely populated, overabundant deer herds. Hunting is one of the most effective tools that hunters can use to keep deer herds at healthy densities on the landscape.

Test your deer for CWD: Hunters are encouraged to get their deer tested for CWD, especially if the deer is taken from an area where CWD has previously been detected, either in the wild or near a CWD-positive captive cervid facility. Contact your local tribal registration clerk, GLIFWC biologist, or local state biologist for more information. Tribal hunters can drop off deer heads and



fill out a simple data form to participate in CWD testing efforts. The results generally take about 10-14 days to get back to the hunter. Most tribal registration stations should have sampling stations available for testing deer for CWD. State agencies also offer CWD testing and often have self-service sampling stations where deer heads can be dropped off for testing.

Do not transport your deer carcass long distances: Transporting deer carcasses across long distances means potentially transporting wildlife diseases like CWD long distances—especially if CWD has already been detected in the area where the deer was harvested. Some hunters have started changing the ways in which they process deer by field dressing the deer, deboning, and wrapping the meat as close to the point of kill as possible.

Properly dispose of your deer carcass: One of the most effective ways to prevent the further spread of CWD is to leave the carcass remains as close to the point of kill as possible. If this is not feasible, then the next best step is to locate a local landfill, transfer station, or waste management company to dispose of the carcass. Many waste management companies will accept carcass waste that has been double-bagged in plastic garbage bags in such a way that no parts of the deer are visible. State agencies have also been offering deer carcass waste dumpsters.

Register your deer remotely: GLIFWC currently offers remote online registration methods in addition to the more traditional in-person registration at tribal registration stations. By registering remotely, you can reduce the distance you travel with a deer carcass, thereby potentially reducing the spread of CWD. The online registration portal can be accessed at glifwc.nagfa.net/online. Even if hunters register their deer remotely they can still **drop off the deer head at a tribal registration station**, CWD sampling site, or at a state agency CWD sampling station if they would like to have their deer tested.

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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 write **MAZINA'IGAN**, P.O. Box 9, Odanah, WI 54861; phone (715) 682-6619; or e-mail: pjo@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 above address.

For more information see GLIFWC’s website glifwc.org and our Facebook page.

Register your harvest

Off-reservation hunters are reminded that harvest registration is required by tribal conservation codes for many species. Hunters have multiple registration options for deer, bear, turkey, and cranes: in-person, at a tribal registration stations (see data.glifwc.org/registration for a map of locations), online (glifwc.nagfa.net/online). All swans must be registered in-person at a tribal registration station or with a GLIFWC warden by presenting a fully feathered carcass within 48 hours of harvest.

The benefits of harvest registration are substantial, extending well beyond an exercise in indigenous sovereignty and self-regulation. As co-stewards, tribes work with state and federal counterparts to determine population abundance and coordinate management for a variety of fish and wildlife species. This requires an accounting of both tribal and non-tribal harvest. Having an accurate measure of off-reservation tribal harvest also helps to identify and prioritize important places for protection.

For hunters seeking chronic wasting disease (CWD) testing for their whitetail harvest, in-person registration is the first choice. Clerks will register the deer and most tribal registration stations are set up to take possession of the head for CWD testing—lymph nodes are typically removed to complete a CWD test. Hunters will also need to fill out a brief CWD sampling data form.

Good luck to hunters of all ages. It’s a great year to take a kid hunting and pass on your knowledge.

2025-2026 Season

NAGFA ID #: 6366 **Tribe:** BRV
Name: JON DOE
Address: 777 Traditional Way, Odanah, WI 54861
Phone: 000-000-0000 **Hunter Safety #:** 12345657
Remote Registration (deer, bear, turkey, crane): glifwc.nagfa.net/online
More Information: glifwc.org/exercising-treaty-rights/treaty-seasonal-harvest-regulations

SMALL GAME Turkey Spring—MI/WI Stamp # 246845	CAMPING National Forest Camping Stamp # 223744	GATHERING Firewood Stamp # 223745
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Sample license with NAGFA ID highlighted.



On the cover

Sean Meshigaud III, age 2, holds up two asaawe (perch) he caught using a fishing pole during Lac du Flambeau’s two-part ice fishing workshop at Squirrel Lake in early 2025. Ice fishing is a great way to get outside with the entire family during biboon, for fun in the snow and fresh fish on the dinner table. (JVS photo)



Tag-in-hand: proper registration helps to protect, manage furbearers



Trapping season is underway for many furbearers across Minnesota, Wisconsin, and Michigan. Now's a good time to remind Ojibwe harvesters that some species in the Ceded Territory have specific license and registration rules.

Bobcat, otter, fisher, and marten all require harvesters to have physical carcass tags in hand before pursuing these species; tags must be affixed to the animal after harvest. All four species must be registered in person at a tribal registration station or with a GLIFWC warden.

During registration a second tag is attached to the harvested pelt. And for bobcat and otters, a third tag is available called a CITES tag.

CITES, which stands for Convention on International Trade in Endangered Species, is essentially an international treaty that has been signed by over 180 countries including the United States. This agreement helps prevent the illegal trade of endangered species. In the United States, the USFWS has implemented a physical tagging system to help the agency oversee the CITES program. CITES tags are used to verify that furs are legally harvested and are required for internationally exporting river otter and bobcat furs.

While neither of these two species are federally threatened or endangered, there are two reasons why species can be CITES-protected. The first is because they could become threatened without trade controls; and the second is that they may look like another species that is threatened or endangered. For example, bobcat furs look very similar to those of the Iberian lynx, which is classified as a vulnerable species with around 2500 of them in the wild. By including both the endangered and look-alike species to be listed under CITES, Iberian lynx fur cannot be passed off as bobcat fur.

The USFWS does not issue CITES tags directly to harvesters. CITES tags are distributed to state and tribal wildlife agencies that have approved furbearer management programs consistent with CITES requirements. GLIFWC is one of the approved tribal wildlife agencies that receive CITES tags. If harvesters plan on selling bobcat or otter furs outside of the country, they will need a CITES tag. Many taxidermists and local fur buyers may also require a CITES tag, so it may be necessary to obtain one if harvesters would like their fur processed or to sell locally. To obtain a CITES tag for a bobcat or otter, contact your local GLIFWC community warden.

—A. Carl



Some furbearers including *gidagaa-bizhiw* can require up to three tags after harvest. A CITES tag is necessary for pelts that may be sold on the international marketplace. A special protection enacted through treaty by more than 180 countries globally, CITES tags help prevent unlawful harvest that may threaten populations of bobcats and river otters. (CO Rasmussen photo)

Food Security Support



At a *waawaashkeshi* processing training organized by Biological Services Director Jon Gilbert in December 2023, GLIFWC staff learned how to knuckle skin and butcher a whitetail. These skills can help increase food security for families and communities. (COR)

Many of GLIFWC's member tribes were notified that the benefits of their SNAP programs are set to be delayed or cut significantly. The federal Supplemental Nutrition Assistance Program, or SNAP, is a potential casualty of the government shutdown that is impacting all citizens across the country and especially in tribal communities. GLIFWC encourages all tribal harvesters to consider donating to tribal programs and entities to offset any impact to elders and vulnerable families.

Currently some tribes are coordinating group hunts focused on elders and tribal youth. The time is right to harvest deer, setting nets is another viable option on many productive Ceded Territory waters, and sharing harvested manoomin as well.

We're encouraging those who can help their communities prepare for gaps in food security by harvesting traditional foods.

We're actively working to update our list of contacts to get harvesters connected with processors who can help get your harvest prepared for distribution and storage. We're actively updating our list of available coolers, freezers and places where food can be donated and safely stored. For more information visit glifwc.org/node1/food-resources-ceded-territory

Additional food support in Wisconsin may be available through the Department of Natural Resources deer donation program. Venison from donated deer is processed and distributed to food pantries across the state. Since the program began in 2000, hunters have donated over 100,000 deer, which were processed into over four million pounds of ground venison. Learn more at: dnr.wisconsin.gov/topic/hunt/donation

—JVS

Food Security Resources

Bad River	Wendy Corbine	715-682-7127
Bay Mills	Connie Watson	906-248-8363
Fond du Lac	Maria Defoe Reggie Defoe Tom Howes	218-878-8006 218-878-7100 218-591-2687
Keweenaw Bay	Sue Ellen Elmblad	906-353-6096
Lac Courte Oreilles	Mary Wolf	715-957-0027
Lac du Flambeau	Anna Borchard	715-588-4384
Lac Vieux Desert	Alan Shively	906-250-8139
Mille Lacs	Jeffrey Aubele	320-532-7880
Red Cliff	Butch Bresette	715-779-3740
St. Croix	Chris Staples	715-791-4322
Sokaogon Mole Lake	James Polar	715-478-7546



Namewag released into northwest Wisconsin’s Clam System

By Charlie Otto Rasmussen, Editor

Siren, Wis—The lake sturgeon comeback is underway in northwest Wisconsin. Hatched and raised by St Croix Tribe fishery program specialists, the 2025 year class of namewag are now swimming the waters of Clam Lake. At a shoreline release ceremony October 14, the first batch of approximately 400 sturgeons were transferred into the lake by a group community members and volunteers. It’s the beginning of a 20-year project to repopulate the Clam Lake and Clam River systems with the venerable fish after dams, degradation, and other impacts of settlement reduced their numbers to a small remnant population.

“This is a resource important to the tribe, our culture, for harvesting opportunities in the springtime,” said Conrad St John, St Croix Band chairman. “We’d like to restore them, keep them plentiful for many generations to come.”

For area Ojibwe citizens, fishing is largely restricted to Yellow Lake and the connected riverway. Bringing back fishable numbers to the Clam system not only restores an Ojibwe clan figure and a native species, but it expands harvest opportunities across the landscape.

Bruce Sonnenberg is a member of the sturgeon clan. He offered a prayer and blessing prior to the name release and reflected on the work of St. Croix fish hatchery staff.

“When you think about everything that’s used to help grow these sturgeon and other fisheries, any work that’s done in that capacity has all of my respect and all of my love. It’s loving people, caring people, who want to keep all this alive.”

The public earlier enjoyed a first-person look at St. Croix’s expanded

state-of-the-art fish hatchery, where the sturgeon first came into the world. Visi-

tors were required to decontaminate their shoes in a foot bath before viewing the namewag as they cruised through large recirculation tanks. Tribal fishery staff were indeed protective and caring towards their hatchlings.

Sturgeon project leader Jeremy Bloomquist calculated stocking rates at one fingerling for every two acres of lake surface water. The Clam River system also contains nearly 60 miles of suitable sturgeon habitat, offering additional stocking locations. Bloomquist estimated St Croix Band’s minimum stocking commitment at 20 years.

“The idea with sturgeon stocking is you stock every year,” he said. “The females become sexually mature around 20 years. If it all works out with all the different year classes, you hope you have fish coming back to spawn any year going forward.”

The infusion of thousands of namewag may one day recruit spawning participation from the few remnant sturgeon. Bloomquist said biologists conducted electrofishing surveys in recent years but have yet identify any sturgeon spawning with the few fish they’ve handled.

“It might be that there’s not enough fish in the system for spawning,” Bloomquist said. “We’ve seen just a few juveniles in the Clam River Flowage, but otherwise all the fish observed have been mature adults.”

—Jenny Van Sickle contributed to this story



Bucket Brigade: St Croix Tribe Chairman Conrad St John encouraged tribal citizens and members of the broader community to help release juvenile lake sturgeon into Clam Lake near the Narrows. Organized into a human-chain, participants released namewag bucket-by-bucket, spreading out distribution of the 6-8” fish along the shoreline. Fish hatchery releases are oftentimes accomplished by sending fish through a flexible pipe from the water truck into the lake. Left: St Croix Fishery Specialist Don Taylor transfers juvenile namewag from the hatchery truck into a five-gallon pail. Right: Bruce Sonnenberg shared a blessing October 14 for all the young sturgeons entering the Clam Lake System near Siren, Wis. Sonnenberg also eased a bucket-full of fish into lake from a dock, joining more than a dozen others that helped move the fish. (CO Rasmussen photos)

Stewardship actions have a greater influence on giigoonyag (fishes) than climate change

A recent scientific article finds that fishing had a greater influence on fish populations than climate change in the Upper Midwest. Stewards and managers in the Ceded Territories (Department of Natural Resources, tribes, and GLIFWC) should examine the rules and regulations they have put in place to protect fish populations and determine if changes are needed, especially for cool-/cold-water species. In addition, stewards should take steps to reduce or eliminate other environmental stressors (e.g., shoreline development, herbicides, pesticides, non-local beings) giigoonyag are facing in zaaga’igan (lakes).

Please see the abstract, and the full article can be accessed at [science.org/doi/full/10.1126/sciadv.adx5138](https://doi.org/10.1126/sciadv.adx5138)

—A. Shultz

Paper: Disentangling the historical impacts of warming and fishing on exploited freshwater fish populations

Abstract

Worldwide, exploited fish populations are increasingly affected by the combined effects of warming and fishing. Disentangling the relative effects of these factors is challenging yet crucial for designing management strategies. We used a temperature-dependent population dynamics model to assess the impacts of lake warming and fishing on 521 freshwater fish populations in the Midwestern United States—a transitional zone between cold- and warmwater species.

Overall, most warmwater species (65% of populations) exhibited increases in productivity from warming, while slightly more than half of the cool-/cold-water species (53% of populations) experienced reduced productivity. Populations closer to their carrying capacity showed greater resilience to warming. For the majority of populations (92%), fishing had a more pronounced effect on population dynamics than warming during the time period examined. Therefore, while warming is likely to increasingly threaten many fish populations, effective local fishery management remains a key lever to mitigate these impacts.



A mindful approach to non-local plants



Wildlife technician Jose Estrada spot-treats leafy spurge along Engoe Road near Washburn, Wis. to protect nearby habitat from the spread of this non-local plant. INSET: Sprayed leafy spurge (B. Paulsen photos)



GLIFWC’s biologists and technicians spend a lot of time researching, surveying, and getting hands-on to help stop the spread of non-local plants. Throughout Niibin and Dagwaagin, leafy spurge control is one such focus. Leafy spurge is a perennial plant with a particularly potent, skin-blistering toxin. Originally native to Europe and Asia, this plant is now spreading throughout Turtle Island, particularly in disturbed areas such as pastures and roadsides, and in open woods and prairies, where it outcompetes native plants.

In the Dagwaagin (fall) 2025 issue of Mazina’igan, readers learned about flea beetles and their effectiveness in safely predating upon large populations of leafy spurge in areas where this non-local plant persists in such numbers. But in places where the flea beetle would not be effective, other measures must be taken.

In accordance with the great deal of planning and consideration accompanying this work, manual and mechanical methods, such as flea beetle introduction and hand-pulling, are prioritized, but in highly

disturbed areas such as roadsides, chemical methods may be used.

Roadsides are of particular concern because they act as direct paths in which the plant can spread from one natural area to another. And it is in these regularly disturbed, ecologically degraded pathways along Ceded Territory roadsides where GLIFWC’s biologists found that spot-treating individual leafy spurge plants with a low-toxicity and non-carcinogen herbicide is the most effective means of protecting vulnerable natural areas.

Following guidance from elders and cultural advisors, GLIFWC conducts a ceremony at the beginning of each growing season in preparation for the control work the biologists and technicians conduct upon priority non-local beings. This ceremony recognizes the life of the plant and acknowledges the fact that it does not shoulder any of the blame for existing outside of its original home.

—B. Paulsen

The active ingredient (Imazapic) in the herbicide used for leafy spurge has been classified by the US EPA as category IV (low toxicity) and no evidence of carcinogenicity has been documented in research. Imazapic is not a neonicotinoid and is considered practically non-toxic (the lowest risk category) to aquatic invertebrates, fish, birds, and mammals by the EPA.

Wardens, hunter ed at the forefront of gun safety

In the 1970s, November hunting accidents in Michigan, Wisconsin, and Minnesota were as common as dialing up disco on the radio. Records maintained by state departments of natural resources reveal hunting-related injuries in the hundreds with gun deaths ranging from the single digits to several dozen every year. The totals account for self-inflicted wounds, mistaken identity, and casualties from firing at running deer during drives.

Since states and tribes implemented mandatory hunter safety education beginning in the latter half of the 1980s, injuries and deaths have been on a long decline. Apart from several tragic upticks in shootings, the trend line toward safer experiences afield is clear.



GLIFWC Sgt. James Stone explains how a pump action shotgun works to a Bad River youth during an October 11 hunter safety class in New Odanah, Wis. (COR photo)

“Mandatory hunter safety has had a real impact on safety in the woods,” said Sgt. Jim Stone, GLIFWC conservation warden. “The course sticks with people—the kids, the adults, who have taken the class—they’ll come and talk to me 20 years later, remembering those things we really stress, which is being able to handle a firearm safely.”

Stone and GLIFWC wardens in the Wisconsin and Michigan Ceded Territory certify new generations of hunters each autumn. A pair of classes from Bad River and Red Cliff reservations completed safety coursework last October, producing a combined crew of 20 new graduates.

While most of the students were youth aged 10 years and up, a few adults received their safety credentials as well. Stone said both groups of community members were outstanding.

“Their level participation in class really tells you you’ve got a good class,” he said. “Throw out a question and almost every hand goes up. They were very engaged.”

A blend of home study, classroom, and hands-on experiences reinforces key safety rules. For Stone and other GLIFWC wardens,

internalizing TABK guidelines is an essential part of hunting deer, partridge, squirrels, and other wildlife in woodlands of Ojibwe Country.

The foundation for many gun safety programs nationwide, TABK translates to: **T**reat every firearm as if it’s loaded; **A**lways point the gun in a safe direction; **B**e sure of your target and what is beyond your target; **K**ee your finger out of the trigger guard and off the trigger until ready to shoot.

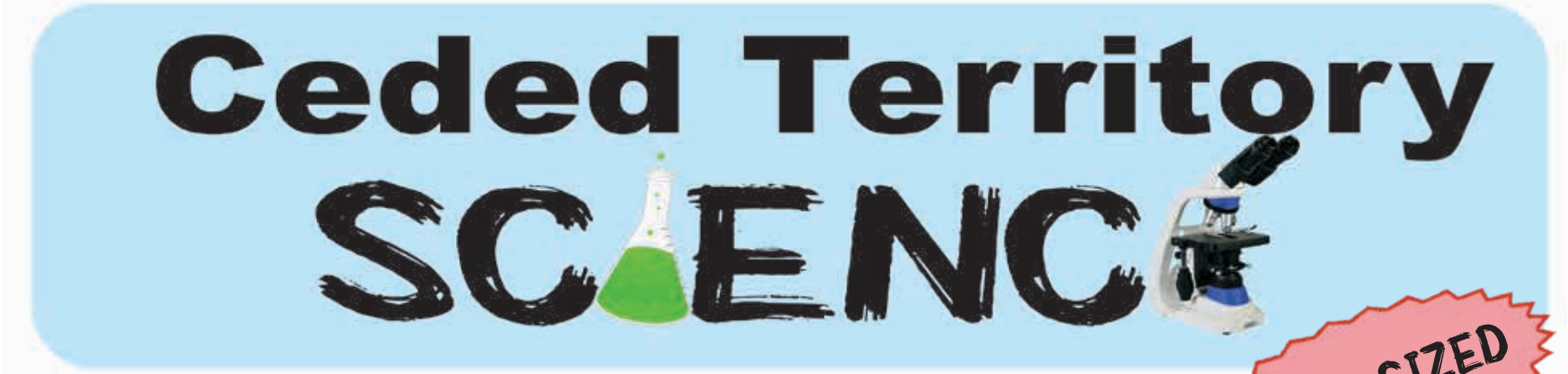
“TABK is one of the biggest things I stress. If you can remember that, those rules, you’ll do well,” Stone said. “We mainly want them to be able handle firearms safety. The how to hunt is secondary.”

Many Ojibwe tribes sponsor opportunities for new hunters to go afield with experienced mentors after graduation. Through spending time with family and community volunteers, practicing gun safety, up-and-coming hunters of any age can enjoy a lifetime of experiences in the Ceded Territory woods and become providers of healthy, natural food.

—CO Rasmussen



The Bad River Hunter Safety graduating class of 2025. Back Row: Bad River Chief Warden Brad Bigboy, Aurora Conley, Miskogizhik Conley-Thunder, Wyatt Wilmer, LeAllen Corbine, GLIFWC Sgt. James Stone, and Red Cliff Warden Zachary Peterson. Front Row: Hiram Standstraight, Walter Nevala, Nalin Downey, and Jackson Lemieux. (CO Rasmussen photo)



SUPER SIZED

When it comes to bioaccumulation, it all adds up

By Joshua Salley, GLIFWC Environmental Toxicologist

Think about what you put into your body. Every. Single. Day. Have you ever wondered why some people who overindulge in carrots, winter squash, or pumpkins turn an orange-hue and develop a skin condition called ‘Carotenosis’? There are also a few people who are forever-blue with a skin condition called ‘Argyria’ from chronic oral exposure to silver. (Unfortunately, argyria usually occurs in those who were duped into believing in the false magical healing powers of colloidal silver and chronically ingest it.) Have you ever eaten a bunch of garlic or curry, and noticed that other people seem to want to politely get away in a hurry? Perhaps you’d rather smell sweet, just like maple syrup, and you’re willing to eat too much fenugreek?

Finally, how come if your cow or goat consumes too many wild onions, the milk will get spat out before it hits the back of your throat? Unless one is keen on onion-flavored milk, (and I apologize if I gave someone’s cheese-making secret away;) these undesirable and somewhat benign phenomena occur through a natural process called bioaccumulation giving truth to the simple idiom, “You are what you eat.”

What is bioaccumulation? Or how much air does a seed need to eat to grow into a tree?

There are three concepts to the accumulation of toxins and toxicants from our environment, and they are: bioconcentration, bioaccumulation, and biomagnification. These concepts stem from more complex sciences of thermodynamics involving fugacity, the ebb and flow of chemicals in an environment with the soil, water, air, and living organisms partitioned into “living” coefficients, which quickly turn into intimidating differential equations.

However, for our simplified purposes, we will think of water as the polar solvent, and fat (thinking of the fish’s fat here, but one could also consider our own) as the nonpolar solvent. When a chemical has a preference for dissolving in water over fat, or vice versa, a partition coefficient can be derived from a known of said chemical amount found in each layer (the polar vs. nonpolar layer)—this, in the world of chemistry, is called a “Kow” which is a partition coefficient for amount found within the two immiscible solvents: octanol ÷ water.

Bioconcentration is the active uptake of a water—or fat-soluble solute (or chemical) into a living organism that results in a higher concentration of said chemical than what could be found in its surrounding habitat. Sometimes this may cause an anomaly, as the chemical concentration found within the tissue/fat of the organism may exceed levels that are known to be acutely toxic. This is possible thanks to Bioaccumulation, the active uptake slowly over time from all considerable sources until an equilibrium is established, which depending on the chemical, could take days or years to accumulate to a steady concentration.

Occasionally, secondary poisonings occur, such as robin birds dying from eating DDT-laden earthworms back when the insecticide DDT was heavily used in the pre-1960’s. This phenomenon is due to biomagnification, which occurs when larger animals eat smaller ones causing some chemicals to increase exponentially up trophic levels. (A trophic level categorizes where an organism sits on the food chain along food web, i.e., Producers and Primary, Secondary, Tertiary, and Quaternary Consumers.) When considering the principle of fugacity, how readily something will ebb-or-flow from phases, bioconcentration is seen in all living things in the universe.

Dophins: “puff, puff, pass the pufferfish”

Humans have been known to utilize the natural process of bioaccumulation to their advantage, for example ‘Batrachotoxin’ from the Poison Dart Frogs has been used in laced hunting darts by the Indigenous people of Central & South America. However, whenever the Poison Dart Frogs are kept in captivity, they do not produce this toxin as the toxin is thought to be bioaccumulated from insects of the frogs’ diet.

Another example are pufferfish, a marine fish that’s laden with ‘Tetrodotoxin’ (TTX), known to be a risky cuisine delicacy of Japan and a recreational one to dolphins—pufferfish also lose their endogenous toxin when raised in captivity. Tetrodotoxin is produced via marine bacteria and bioconcentrates in flesh-tissue up the food chain and also occurs in other marine species besides the well-known puffer fish and its variations. In fact, some marine species concentrate TTX in their glands and may use it defensively or offensively as venom. TTX is not the



In a fish-eat-fish world, bioaccumulation occurs when beings consume smaller organisms. (C. Ackley photo)

only aquatic toxin capable of bioaccumulating in marine organisms—during harmful algal blooms (known as HABs) the cyanobacteria (known as blue-green algae) produce their own chemical peptides called cyanotoxins: Saxitoxin or Domoic acid, for example.

In waters where these blooms may occur, shellfish such as mussels, clams, oysters, scallops, and other filter feeders are able to bioconcentrate these cyanotoxins into their tissues from HAB exposure. When these cyanotoxin-laden shellfish are eaten by unsuspecting consumers they may experience neurological toxicity such as Paralytic Shellfish Poisoning (PSP) if exposed to Saxitoxin, or Amnesic Shellfish Poisoning (ASP) if exposed to Domoic acid. However, when it comes to a compound that turns bioaccumulation into a natural disaster, there is nothing more mercurial than mercury and its more sinister form: methylmercury.

Mercury: pollution, poisoning, and cultural touchstones

Named after the Roman messenger planetary god, Mercury, with its Latin name Hydrogyrum meaning “liquid silver” is where the periodic symbol of ‘Hg’ is derived from. Mercury exists in several forms, all of which are toxic, and for our purposes we will think of mercury in 3 general forms: elemental, inorganic, and organic.

Elemental mercury (Hg) is the only metal that exists as a liquid at room temperature, and when spread over a large surface area (i.e., spilled) or heated, mercury can vaporize and subsequently be inhaled and absorbed. Elemental Hg was present as life evolved, it is found in all living things even though it is poison to us all; and as humans evolved, ancient civilizations found many, many uses for the liquid metal and its many forms.

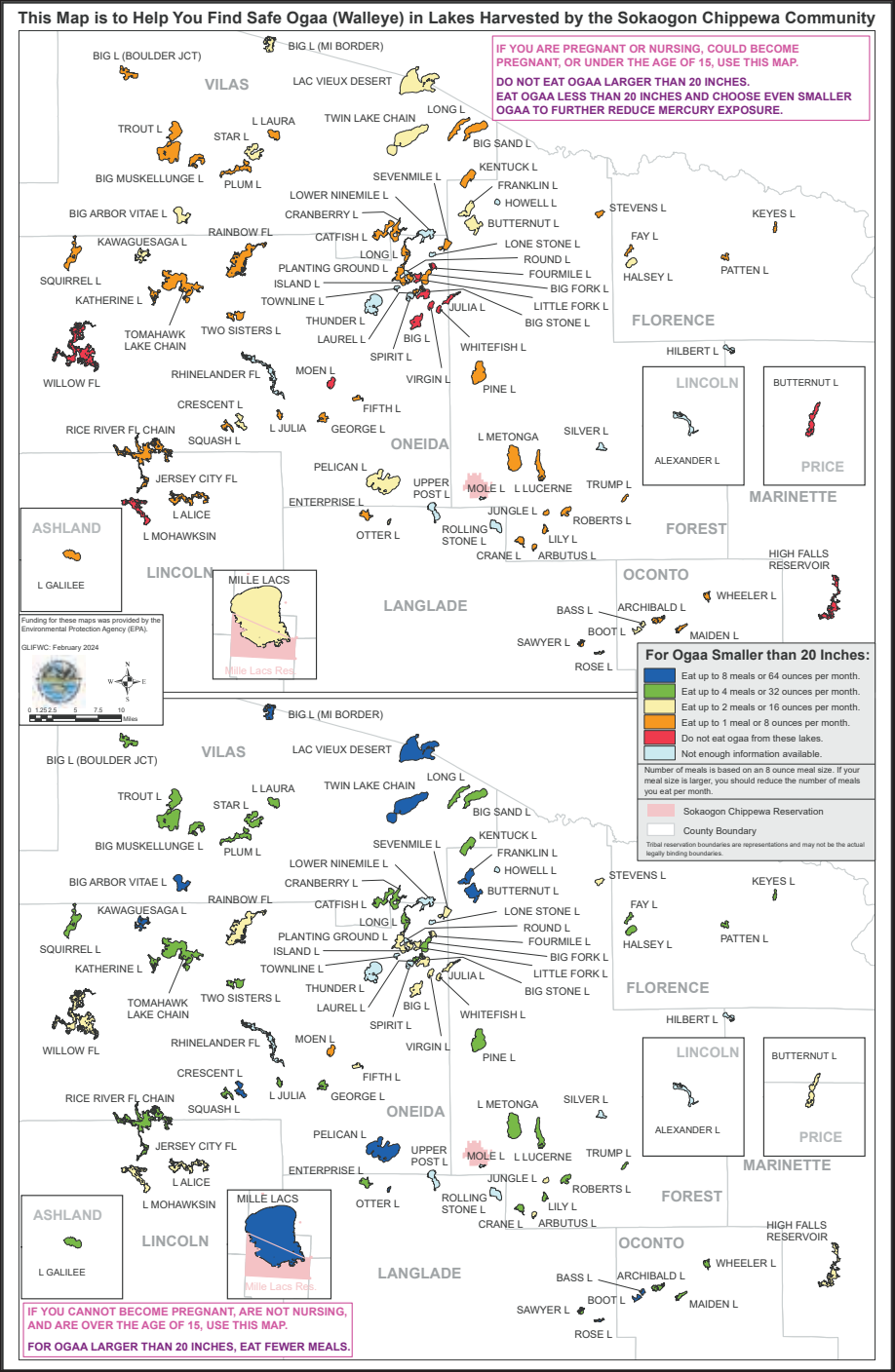
Mercury used to be much more ubiquitous in our everyday living society, and it was not until 2001 that mercury was phased out in common glass thermometers. Nowadays, you must go out of your way to find it in household goods ever since the CFL ‘Hg-vapor’ lightbulb was replaced by the more efficient and ‘Hg-free’ LED variant. When mercury exists as a vapor it is a monatomic gas that is nonpolar and soluble in lipids (aka fat), thus meaning it can cross cellular membranes with ease.

When absorbed via the lungs, vaporized liquid mercury metal is capable of finding its major target organ: the brain, and exerting its toxicity once exposed to a neuron cell. This is where the stereotype of ‘Mad Scientist’ arose from, as scientists from the days of alchemy occasionally and unexpectedly exposed themselves to acute toxic levels of vaporized mercury that carried neurological consequences (e.g., Sir Isaac Newton’s “Year of Madness”). Like the Mad Scientists, Mad Hatters also obtained a similar nickname from suffering the (see [Consequences of toxic exposure](#), page 9)



Consequences of toxic exposure

(continued from page 8)



GLIFWC’s Mercury Maps provide fish consumption guidance for over 350 lakes across the Ceded Territories of Minnesota, Wisconsin, and Michigan. These maps detail the safe number of meals you can eat per month from each lake. To reduce mercury exposure, choose lakes with lower levels of mercury. Ogaa less than 20 inches and other species of fish lower on the food chain tend to have lower mercury levels. Mercury Maps are available online at tinyurl.com/yc6m4444 at tribal registrations stations and other GLIFWC outreach events throughout the year.

same toxic exposures to mercury: always irritable, paranoid of being watched, deteriorated handwriting, non-stop rambling, and extreme mood swings.

The felt hats were comprised of furs from beavers, hares, or muskrats since these pelts consisted of smooth, straight, and durable fibers. By happenstance, these smooth straight fibers were problematic in felting and in order to get the fur to mat together, an acidic solution of mercury nitrate was used and heated which caused mercury vapor to fill the workspace as the craftsman shaped hats.

When inside of the neuron cell, mercury is oxidized to divalent mercury (Hg0->Hg2+) via a cellular enzyme called ‘catalase’ and becomes trapped within the cell and binds tightly to sulfur-atoms of amino-acids (e.g., cysteine [This is even more important later with Methyl-Hg as it mimics methionine whenever it binds with cysteine]). This can lead to neuronal cell death.

Our bodies have endogenous defensive mechanisms when dealing with divalent mercury. In the brain, cells can utilize an essential trace mineral: selenium to form insoluble complexes with ionic mercury, and other enzymes such as superoxide dismutase (located in the liver) are capable of reducing divalent mercury (Hg2+ -> Hg0).

Oxidation of mercury via catalase is a necessary evil when detoxifying mercury from the body, the reactive divalent state of mercury also allows it to react with and become reduced by an endogenous antioxidant called glutathione which consists of 3 amino acids working together as one: glutamate, cysteine, and glycine. This glutathione-mercury complex allows the body to safely handle and incorporate mercury into the bile for elimination via the feces.

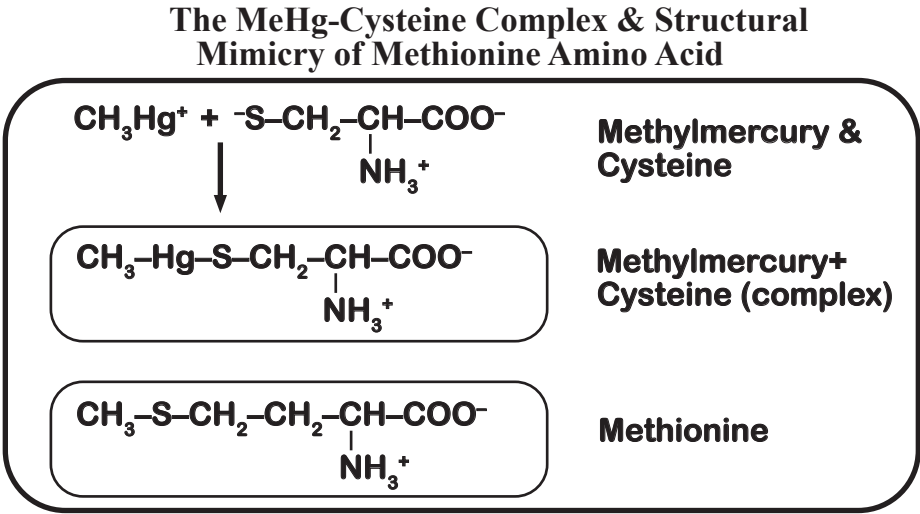
Inorganic salts of mercury exist in many forms: Mercury(I) chloride [Hg2Cl2], Mercury(II) chloride [HgCl2], Mercury(II) oxide [HgO], Mercury cyanide [Hg(CN)2], Mercuric(II) nitrate [Hg(NO3)2], and Mercury(II) iodide [HgI2]. This list doesn’t even scratch all the possibilities of mercurial salts, however, all of the listed salts above were once medications that were approved for specific treatments until safer modern replacements arose. When inorganic salts of mercury are ingested, they are capable of being absorbed in the gut and tend to exert their toxicity upon the kidneys as the major target organ instead of

the brain, as when one is exposed to vaporized elemental mercury or organo-mercury. This of course does not imply that the kidneys, nervous system and brain are the only organs afflicted from mercury exposure, however they are the most affected.

The most toxic form of mercury (and of many other metals) is its methylated form. Organic mercury which is commonly known as methylmercury (MeHg). This form of existence introduces a “Methyl-” (-CH3) or “Ethyl-” (-CH2CH3) carbon-group to the Hg-metal atom causing it to become an organometallic compound (+Hg-CH3) which modifies its typical molecular properties allowing it to become more pervasive in living organisms.

Not only is MeHg more lipophilic than the rest of its mercurial forms, it can easily bypass phospholipid layers, and it is also capable of being mistaken for an endogenous amino acid, methionine, and actively absorbed into the body like a trojan horse. It does this by binding unto another amino acid mentioned earlier called cysteine which forms a complex that mimics methionine in structure.

The MeHg form of organomercury is its most common type but can exist



Structural similarities of the amino acid cysteine and methyl mercury complex in comparison to methionine (Figure modified and adapted from pmc.ncbi.nlm.nih.gov/articles/instance/1519577/pdf/envhper00370-0035.pdf)

as dimethylmercury or other formations of organomercury. The most remarkable property of MeHg is its high selectivity to the central nervous system and the brain and specifically the cerebrum cortical areas, visual areas of the occipital cortex, the granular layer of the cerebellum, and significant alterations to brain white matter. These neurotoxic effects manifest themselves as a loss of sensory in extremities (paresthesia), a loss of coordination in movement (ataxia), slurred speech (dysarthria), deafness, restricted vision or blindness, and finally coma or death.

Microorganisms responsible for methylation of mercury are among some of the oldest recorded life forms and are thought to have evolved the methylation of mercury as their own defense mechanism to Hg2+ exposure. Though we have developed our own oxygen-based cellular defense mechanisms to protect us from Hg2+ exposure, those protective operations fall short in the face of MeHg.

Our endogenous physical barriers such as the blood-brain barrier and the protective placental barrier that provide protection from divalent mercury fail to impede MeHg. Of the MeHg that is ingested and absorbed by the body 90-95% is associated with red blood cells, and 5-10% is with the plasma; the MeHg that is associated with the plasma enters the brain or crosses the placental barrier. Pregnant women, unborn children, and growing children are the most sensitive (see Bioaccumulation, page 10)



GLIFWC Fishery Aide Marcus Carasco worked in the GLIFWC laboratory processing walleye for contaminant testing, including mercury. GLIFWC contracts the Lake Superior Research Institute in Superior, Wis to analyze ogaa fillets to determine potential health implications from consuming fish from Ceded Territory lakes. (CO Rasmussen photo)



Bioaccumulation of methylmercury: the sum of three parts

(continued from page 9)
populations to MeHg toxicity due to the vulnerable developing brain system.
Mothers with high intakes of MeHg gave birth to infants with severe neurological damage including mental and physical retardation, with a loss of neuronal density and greatly reduced brain mass.
Finally, depending on the severity of MeHg exposure, there can be a latency period from weeks to months (observed in Iraq’s cases) to 1 to 3 years (observed in Japan’s cases) between the intake of MeHg and the development of adverse neurological symptoms.

The mercury cycle

Elemental mercury is a global pollutant that enters the environment from natural and anthropogenic sources. It can be naturally released via weathering of mercury containing ore, but the vast majority of mercury contamination comes from the burning of coal, fossil fuels, or waste incineration.
The bio-geochemical cycling of Hg is described as degassing of the element from soil or surface waters, into the air, back down to the land and waters, and volatilize to repeat the cycle again. This life cycle of Hg makes it difficult to trace the movement back to its contributing source(s).
For a waterbody, some variables will determine its proneness for converting Hg into MeHg which may include: the surrounding environment’s concentration of Hg, the waterbody’s pH, levels of dissolved organic carbon and nitrogen, water concentration of sulfate, dissolved oxygen, and the flow of the water.
MeHg formation prefers anoxic (low oxygen), with low pH (acidic), and high in dissolved organic carbon and nitrogen (to assist in the methylation cycling), and if sulfate is present—that’ll help the anaerobic bacteria present in the soil speed things up. If those waterbody characteristics remind you of a bog or peatland, then you’re as quick as quicksilver, as those are ideal areas for MeHg formation.
It is important to monitor the deposition of mercury in our surrounding environment due to its devastating toxic capabilities. GLIFWC and other responsible agencies carry out this work in the Ceded Territories in order to protect and inform communities of the potential dangers of MeHg poisoning from consuming piscivorous wildlife.

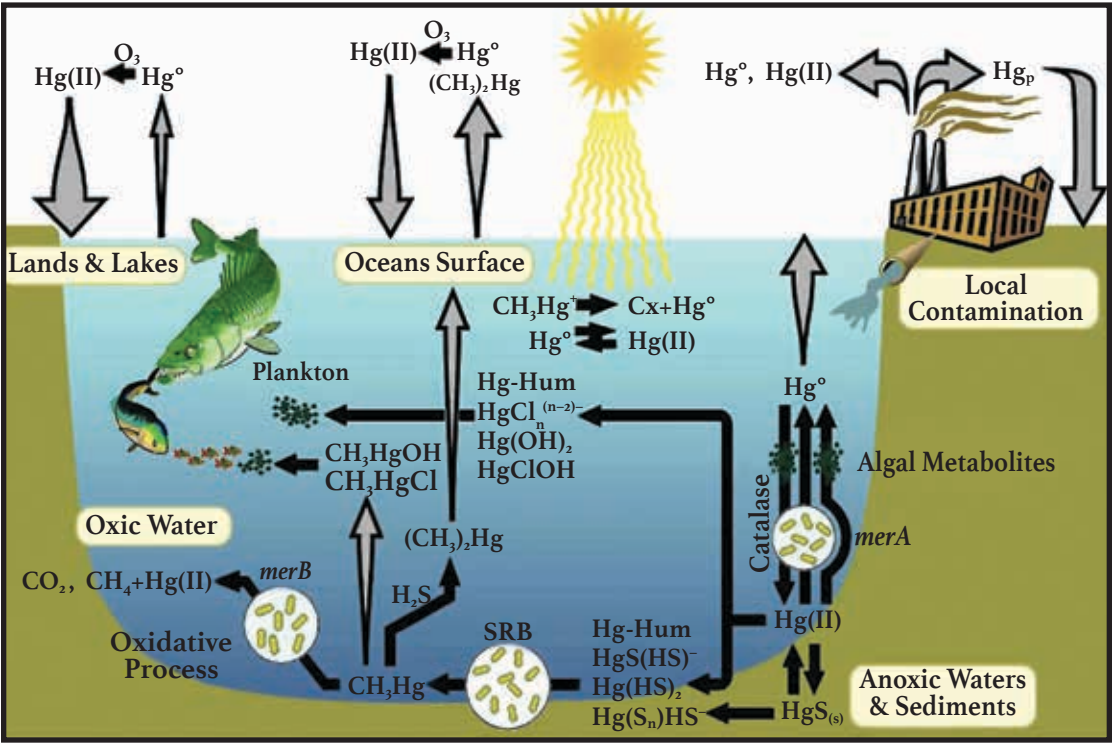


Diagram of Hg Bio-geochemical Cycling. (Figure source: morel.princeton.edu/research/mercury-cycling-and-methylation)

Japan isn’t the only country to be affected by an environmental MeHg disaster. Historically, from the 1950s to the early 1980s, seeds of grain were once treated with MeHg to protect them from spoilage. This method of seed preservation proved to be tragically disastrous when communities in the countries of Iraq, Guatemala, Ghana, and Pakistan unknowingly used the treated seed for flour to make bread. Again, thousands suffered from irreversible neurological damage.
Finally, near our own area in the 1970’s, a chlor-alkali plant in Dryden, Ontario released approximately 10,000 kilograms (22,000 lbs) of mercury into the Wabigoon-English River system that led to one of Canada’s worst environmental disasters. This tragedy directly affected the people and communities of the Grassy Narrow and Whitedog First Nations, and many people suffered with symptoms of Minamata disease and mercury poisoning. Today, the Wabigoon-English River system is still highly contaminated with mercury and continues to affect the local environment and communities.

From alchemy to hatters to natural disasters

There are well-documented historical records of outbreaks of methylmercury poisonings, the original and most famous outbreak occurred in the 1950’s in Minamata, Japan. This outbreak occurred when a local plastics factory that made vinyl chloride and acetaldehyde discharged its mercury catalyst directly into waterways that led to Minamata Bay. There, overtime, the mercury settled into the sediments, was converted into MeHg by the residing anaerobic bacteria, and slowly bioaccumulated up the food chain.
In 1953, the first child was reported showing symptoms of brain damage, and by 1956, 78 cases were reported—seven of which were fatal. By the end, thousands of people would become affected neurologically in some way. This environmental disaster continued until the 1960’s as the cause of the disease wasn’t properly determined until 1959. The source of the MeHg was from the fish and shellfish that people had obtained from the bay and incidentally followed a seasonal trend that coincided with fishing seasons.

Living with mercury as we always have

These kinds of environmental disasters show us the fragility of our precious ecosystems that sustain and provide for all living beings. Today, the public’s attention to mercury as an environmental pollutant has waned for other modern pollutants. It is unknown if this is due to the vigilant monitoring of natural Hg presence in waterbodies by health agencies or caution towards the environmental disasters that can occur when mercury is carelessly released.
Luckily, Hg contamination trends in the environment continue to decrease as we, as a society, have restructured our lives to utilize less Hg in our day-to-day activities and enacted strict regulations to curb Hg contamination. To many cultures and people, sustenance fishing is a way of life, and Hg and MeHg poisonings are capable of carrying devastating consequences that span across, stunt, and occasionally end generations. Therefore, it is important to stay informed to protect yourself, your loved ones, and your environment.
With proper knowledge, environmental stewardship, and fish consumption precautions, the risk of poisoning from [Me]Hg-exposure can be safely mitigated.

Sea lamprey trapping supports fisheries, economies



Mike Fish, GLIFWC Fisheries Technician, inspects an elver net for lamprey transformers on Fish Creek, a tributary to Lake Superior located in northern Wisconsin. (B. Michaels photo)

As winter closes in, GLIFWC’s Great Lakes Section staff are completing sea lamprey assessment and control efforts in several Lake Superior tributaries in northern Wisconsin. In cooperation with US Fish & Wildlife Sea Lamprey Control and the Great Lakes Fishery Commission (GLFC), staff are using nets to trap non-native “transforming” sea lamprey that are migrating downstream to the lake. The term “transformers” refers to the lamprey’s metamorphic stage where they transition from a filter-feeding larva (ammocoete) that live burrowed in the sediment for a few years to a parasitic free-swimming juvenile. This is when they develop their functional eyes and the characteristic suction-cup mouth and teeth before they leave the stream for the lake.
Stream trapping is a supplemental control—not a replacement for the more effective lampicide treatments that target larvae—and is focused on removing juvenile lamprey before they can begin their parasitic feeding phase in the Great Lakes. Every lamprey removed is a win, as a single adult can kill up to 40 pounds of fish including the com-

mercially and ecologically important lake trout, over its 12-18-month parasitic feeding period.
This work is not only about ecological health but also helps protect the entire Great Lakes region’s economy. Successful control programs around the Great Lakes Basin are the reason commercial and recreational fisheries are collectively valued at billions of dollars annually, supporting tens of thousands of jobs. Before effective control techniques were implemented, sea lampreys were estimated to be killing over 100 million pounds of Great Lakes fish annually at their peak in the late 1950s, devastating the fishery and the communities that depended on it.
Thanks to these intensive control efforts, lamprey-induced mortality rates on native fish populations have been reduced to just a fraction of what it once was, supporting the health and profitability of Great Lakes fisheries. This basin-wide success is the result of decades of control efforts involving federal, state, provincial, and tribal agencies that collaborate through the GLFC.
—B. Michaels



Manoomin Bagaan Porridge

Ingredients:

- 4 Cups Pre-cooked Manoomin
 - 1/2 Cup Dried Mashkiigimin (Cranberries)
 - 1/2 Cup Crushed Bagaanag (Pecans)
 - 1/2 Cup Zhiiwaagamizigan (Maple Syrup)
 - 3 1/2 Cups Doodooshaaboo (Milk) or Substitute
 - 1 Tbsp Bimide (Tallow)
 - Zhiiwitaagan (Salt)—to taste
 - Spices (any combinaiton such as Cardimom, Nutmeg, Cinnamon, Clove, Allspice, Ginger, Sweet Fern, Sumac Powder, Vanilla)—to taste
- Using a saucepan over medium heat, whisk together Doodooshaaboo, Zhiiwaagamizigan, Zhiiwitaagan, Bimide, and spices together (except sumac powder, which can be added after cooking is completed.)
 - Bring the mixture to a boil, then add Manoomin to simmer while continuously stirring for 4–5 minutes until the mixture is at a thick enough consistency.
 - Stir in dried Mashkiigimin, and crushed Bagaanag.
*Note: avoid Sumac if you are allergic to cashews.



Mazina’igan is pleased to share a new feature with readers, *Gimino-Mijiminaan*. “Our Good Food” showcases dishes created in indigenous kitchens utilizing traditional ingredients from Ojibwe Country. Drawing from the wiyaas of the big four-leggeds to the plants rising from Aki, native culinary patrons offer innovative preparations in these pages for staple Anishinaabe foods. Look for familiar favorites as well, featuring giigoohn, the flyers, and all manner of seasonings that can draw out unique flavors, even new experiences, with beings that support all life in the Ojibwe Ceded Territory.

Derek Niigaanibines Nicholas explores the intimate connection between food and Anishinaabe identity in his new cookbook *Through Food We Know Ourselves*. A Red Cliff Band Ojibwe, Nicholas draws from oral stories and elder teachings in a way that enriches each recipe spelled out in the 2025 release.

“Indigenous foods carry the stories of the land, the seasons, and the cycles of life,” Nicholas said.

Through Food We Know Ourselves is a storyteller’s exploration built around the familiar blueprint of ingredients and preparation instructions. Expect to learn as much about the cultural and ecological significance of the ingredients as how to make an outstanding meal. Color photographs and a well-organized table of beings help bring out the best in an impressive collection. For your consideration, enjoy one of Nicholas’ recommendations below for **Venison Manoomin Soup**.

From GLIFWC’s own Esiban Parent—a companion dish fit for spoon—**Manoomin Porridge** is an unexpected morning treat. His go-to seasonings include a combination of cardamom, vanilla, cinnamon, and sumac powder. Ultimately, Parent advises, feel free to use whatever you have in the cupboard and make it your own.

“It’s a wonderful breakfast for cold mornings in biboon,” he said. “Manoomin Porridge is great for warming the heart and, as food is medicine, is a great way to start your day in a healthy way.”

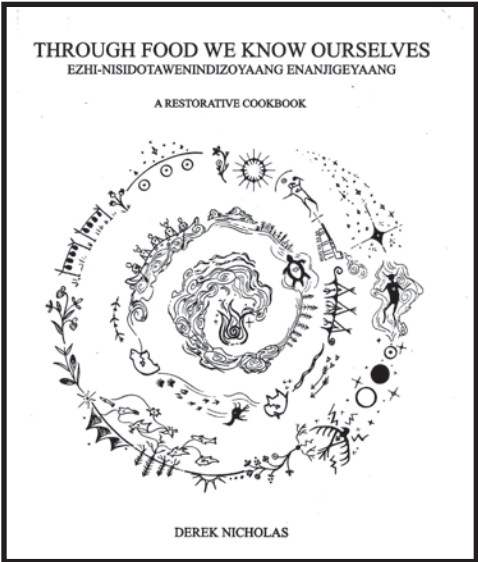
Parent’s primary role at GLIFWC centers on working with wild rice as Manoomin Wiidookaage, which includes significant field work across Ceded Territory lake country. He also draws from professional restaurant experience helping create modern cuisine with traditional ingredients.

Both Parent and Nicholas are clear about their passionate relationship with manoomin—at once a highly nutritious aquatic grain and a sacred food central to Anishinaabe prophecy. Make time this biboon to explore these manoomin recipes and others and expand your own connection to wild rice. —CO Rasmussen

Featured: *Through Food We Know Ourselves* by Derek Nicholas

Derek Nicholas, also known as Niigaanibines, is a member of the Red Cliff Band of Ojibwe. He has been working within the food systems in many critical ways, including but not limited to work around food security and sovereignty, sustainable food & water projects, cultural education, and youth engagement. Furthermore, Derek is the founder of Wiising LLC, an educational platform that focuses on revitalizing indigenous food systems amongst tribal communities. Additionally, he is the author of *Through Food We Know Ourselves* and *Eating with the Seasons, Anishinaabeg, Great Lakes Region*

To check out his work follow him on social media @wiisingllc or his website wiisingllc.com



Through Food We Know Ourselves is a restorative cookbook and cultural journey that explores the deep connection between food and identity for the Anishinaabeg people. Recipes within this book are inspired by legends, oral histories, and creative exploration—filled with indigenous knowledge and cultural insights.

To purchase the book:

Softcover copies available at blurb.com

E-Books available on Google Play Books

Venison Manoomin Soup

from: *Through Food We Know Ourselves*

Ingredients:

- 1 1/2 Pound Venison Straps, 1 inch cubes
- Douglas Fir Smoked Salt
- Prickly Ash Berries, ground
- 24 Milkweed Flower Buds
- 12 Milkweed Seed Pods, halved and seeded
- 24 Fiddleheads
- 12 Ramps
- 10 Cups Venison Stock
- 1 1/2 Cup “Soup Rice”, Wildrice
- 1 Tablespoon Animal Tallow
- Basswood Flowers



Serves 6

- Cook wild rice and set aside
- Season venison with salt and prickly ash
- Bring pan to high-heat, add animal tallow
- Sear both sides of venison meat and add ramps, fiddleheads, and milkweed seed pods
- Cook down and then add venison stock
- Simmer until meat is tender and add in milkweed flower buds
- Simmer for two more minutes and add in the cooked wild rice
- Bring it to a simmer again, shut off heat, and serve
- Garnish with basswood flowers





On the water, in the field, through the forest

Camp culture thrives at Onji-Akiing



Onji-Akiing: Outdoor Learning & Fun Come Together

By Jenny Van Sickle, Staff Writer

Over the past 14 years GLIFWC’s Enforcement Division has partnered with the US Forest Service to host campers in Michigan’s upper peninsula. Last August, more than 30 kids spent the week in the Ottawa National Forest at Camp Nesbit to enjoy 2025’s theme: Traditional Foods. Camp Onji-Akiing is filled with crafts, swimming, boat safety education, fireside storytelling, and games for kids entering 5th to 8th grade.

Last year due to unexpected staffing complications, camp was canceled which is the only time camp has ever been canceled except during the pandemic in 2020. “The kids didn’t miss a beat,” said Jill Miller, Camp Director. Miller, a Bad River tribal member, has served as the director since 2023.

New this year, the USFS built a fishing dock. Miller called the welcome additional a “game changer” for the kids and camp counselors to get some good fishing time in. “We used to try and share the swimming area but that didn’t work so well,” said Miller.

A few days into camp community partners, colleges, universities, and tribal natural resources departments set up booths for the day to talk about career opportunities in the outdoors.

Dr. Tommy Mackey, Asst. Professor of Outdoor Recreation at Lake Superior State University in Michigan’s upper peninsula was encouraged by two of his students (one of which is an alumnus of Camp Onji-Akiing) to table during Thursday’s Career Day. He described the experience as a tremendous joy.

“As environmental educators, we know learning thrives when we trade the classroom for the places we fish, hunt, play, eat and talk,” he said.

Mackey recalls that their group was impressed by the maturity and sense of responsibility by the junior counselors: “Our replica sturgeon and invertebrate specimens have never received so much delight; we’re really looking forward to next year.”

One of the more popular booths was a sawing demonstration. Up in the wilderness areas, manual crosscut saws are an important, well-designed tool still in use all the time because of their champion tooth style that is especially effective on extra hard or even frozen wood.

“Our crew is responsible for 25 miles of trail work, and no chainsaws are allowed,” explained USFS Onji-Akiing first timer, Aaron Woof, Recreation Technician who has been with the USFS for five years.

In addition to the fishing dock, the USFS also collaborated to bring special guest, artist Sam Zimmerman of the Grand Portage Band to camp this year.



Campers enjoyed fishing from the newly installed dock during their down time. (B. Paulsen photo)

“This idea to have the kids paint with an artist has been in the works for a while,” said Shanelle Saunders, USFS Public Information Officer. Zimmerman started by stenciling the tables with loons, bears, and florals designs. After that, each camp clan painted their own unique table with their imaginations leading the way.

“Everyone at the Forest Service has been so helpful, this camp gets better every year,” said Miller.

Bows and arrows

Across the campground, Conservation Warden Roger Weber introduced a good size group to Archery 101.

“Range is hot!” Weber called out to warn the campers the range is active.

Weber, a Mole Lake tribal member, didn’t receive formal archery training until 6-7 years ago when the Eastern district wardens built in a directive specific to archery. Then his uncle Roger McGeshick handed him down a spare bow and taught him the basics, “After that I really got into it,” said Weber.

Down at Mole Lake, where Weber is stationed, he had earlier sat down with folks from the Rec Center and helped pick out equipment and put together a youth program thanks to an ACE grant at the time. Weber typically holds a class each summer on Thursday evenings. Most of the equipment on site is borrowed from Mole Lake.

“Once kids are in about the 4th grade, their arms and grip are usually strong enough start practicing with youth compound bow,” explained Weber.

For young beginners, he recommends looking at a draw weight that is rated 14-22 lbs. For adults looking to get started he recommends starting with a 40-60 lb.



Campers learn how to use a manual crosscut saw from Aaron Woof, USFS. Crosscuts are used for trail building and maintenance where chainsaws are not allowed. (JVS photo)



Wardens stepped in to make sure no one went hungry at camp by preparing and serving food to campers and other staff. (JVS photo)

INSET: Campers learned how to make jam and pesto as part of their skills curriculum during camp. (B. Paulsen photo)



pull. GLIFWC’s regulation code requires harvesters use at least 45 lb. draw weight when hunting off-reservation.

“The best bow for any one person can vary based on things like arm length and what type of arrows they are building or using,” said Weber.

For educators or communities working with students 4-12th grade looking to start an archery program, Weber points to the National Archery in the Schools Program (NASP) as a helpful resource. According to their website, NASP is an “in-school program aimed at improving educational performance, focus, self-control, discipline, and patience.”

It takes skill and preparation to get good at bow hunting. “It’s a different challenge to hunt with a bow, everyone should at least give it a try. “Earlier the better,” said Weber.

With a bow, archers are looking for a target that is 30-40 yards away. It’s a different experience than using a rifle that might be aiming at a target more than 100 yards away, Weber explained. For folks wanting to get closer to deer and build up their skills, they could try using a traditional recurve bow.

Each year Camp Onji-Akiing is planned for the first part of August. Reflecting on the week, Miller says her favorite part of camp was watching the kids rush in on the first day, “They were so energized and happy to be there.”

Miller says camp is a place where kids can be kids and adults get to jump in and have some fun too and she can’t wait for next year. For more information on signing up for Camp Onji-Akiing please visit the Conservation Enforcement Division at glifwc.org.



Archery practice is one of the more popular activities for youth at Camp Onji-Akiing. Taught by GLIFWC conservation warden Roger Weber, students are taught safety first. (JVS photo)

“Warrior Games” a fan favorite among campers, staff, and wardens alike

As the sun dips below the trees after a long day of learning outdoor skills, swimming in Nesbit Lake, fishing from the new dock, partaking in cultural activities, and eating delicious miijim from the dining hall, campers find themselves with a new surge of energy as the waning day promises a favorite activity: Warrior Games.

Each day, beginning just after stomachs have settled from a large dinner, kids, counselors, and staff gather in a large field at the south end of camp. They divide into two teams. Team one receives yellow (or white) handkerchiefs to dangle from their belts or pockets; they are also given one flag, placed in a far corner of the field, to guard and protect. Team two receives red (or black) handkerchiefs to dangle loosely from themselves. Should anyone have their handkerchief pulled away from them, they are out and must exit the game. Team two also chooses one from their team to hold the coveted role, Ogimaa, marked with a brightly colored handkerchief and whose only mission is to take team one’s flag off its post. For many campers, Warrior Games takes the top spot as the best activity at Onji-Akiing.

“My favorite is Warrior Games,” said Ruby Derwin, 13. “It’s like capture the flag, tag, and hide and seek all in one. It’s really fun!”

In this game, staff and counselors join in, dividing themselves up evenly between the two teams and donning their respective handkerchiefs. At the squeal of the airhorn, it’s a scramble to grab handkerchiefs from any opposing team members within reach. A troop of Yellows backs up to their flag, protecting it from all sides including the surrounding woods to the north and west. The Ogimaa retreats into the eastern woods along with a small entourage of fellow Reds. They will lay low until the number of remaining Yellows has thinned out, as an Ogimaa losing their handkerchief to a Yellow would mean game-over.

In the open field, kids band together to capture staffs’ handkerchiefs, showing surprising knack against the adults. And the staff scramble against each other as well as the quick and agile kids. All are beaming with smiles and laughter, cheering with stolen handkerchiefs in clenched fists, and always immediately ready for the next game as each one comes to an end with another airhorn blast following a successfully captured flag or a fallen Ogimaa.

“Warrior Games is also my favorite,” chimed Nevaeh Beelen, 11, taking the time to illustrate her strategy of hiding in the woods until only a few players remain. Both Derwin and Beelen’s strategy of hiding amongst foliage or climbing trees to evade notice from the other team seemed a popular approach to the game amongst the campers.

It’s certainly the most enjoyable way to use up all remaining energy before winding down, telling stories around the campfire, then heading off to cabins to recharge for the day ahead.

—B. Paulsen



Warden Riley Brooks becomes surrounded by a group of campers trying to pull his handkerchief during Warrior Games. (B. Paulsen photo)



Building a healthy future for Ojibwe harvesters

By Jenny Van Sickle, Staff Writer

Hertel, Wis.—A 3,300 sq. foot harvester’s building near Big Sand Lake officially opened its doors in June and is up and running for the biboon harvest season. The facility is designed to energize tribal members to exercise their treaty rights, strengthen food sovereignty, and support small scale tribal business opportunities.

During a recent open house, visitors got to tour the brand-new wild game and fish processing building. The expansive facility is a one stop shop for the St. Croix community to borrow tools and equipment, process their harvests, and participate in youth-focused programming.

“Our community has been working hard on this for a long time,” said Conrad St. John, Chair of the St. Croix Band. He credited years of strategic planning, intention, and leveraging multiple grants by Bureau of Indian Affairs, US Department of Agriculture and National Oceanic and Atmospheric Agency, which made for a best-case scenario outcome. “We are listening and investing in our people,” continued St. John.

The building is organized by sequence: nearest the large garage doors multiple hoisters come down from above to hang and skin game. Just beyond the hoisters are stainless steel butchering tables, food grade sinks, a vacuum sealer, and a commercial kitchen.



Jack Holmes motions towards the commercial sinks, vacuum sealers, and meat grinders available for harvesters to use in processing. (JVS photo)

“We’ve got everything you need, just bring your heart,” said Jack Holmes, one of two full time employees onsite. “We only ask that you donate a small portion of your harvest to the elder food program if you can.”

Over in the cold storage area is an array of gear including canoes, lifejackets, spears, and paddles. “We’re holding tracking classes, helping people make rice knockers, after that we want them to get outside with their families so this equipment will fill that need,” said Fleet Manager Wayne Mosay.

GLIFWC’s Planning and Development Division can help provide safe food handling training, traditional foods programming, and guidance on tribal entrepreneurship goals. Longtime GLIFWC Planning Director Jim Thannum is proud of the work St. Croix has accomplished and is glad he could play a small part in making it happen.

“The Commission continues to support efforts by its member tribes to expand their capacity to harvest process treaty resources,” Thannum said. “The aim of these efforts is to expand access to healthy foods such as fish, manoomin, game and wild plants within tribal communities that are reasserting their role in meeting the cultural and nutritional needs of their members through the establishment of community food systems and increasing processing capacity,” said Thannum.”

The harvester’s building is typically open Monday-Friday during regular business hours although the schedule may vary due events and seasonal demands.

For more information on classes or checking out equipment, Holmes can be reached at (715) 416-4739 (call or text). For questions about licensing, tagging or other game-related questions please contact Gaynell LeMieux, deer registration clerk at (715) 349-2195 x 5185 or gaynell@stcroixojibwe-nsn.gov

—J. Van Sickle



Visitors tour the building’s cold storage area where the St. Croix Band has canoes, lifejackets, ricing and spearing equipment available for members to check out. (JVS photo)

PFAS testing in Oneida County, Wis spurs consumption advisories

Madison, Wis.—The Wisconsin Department of Natural Resources (DNR) and the Department of Health Services (DHS) announced new deer and fish consumption advisories September 4 for northeast Wisconsin’s Town of Stella and nearby waterbodies due to the contamination of per- and polyfluoroalkyl substances (PFAS).

Fish consumption advisory

The DNR and DHS have issued a “Do Not Eat” PFAS-based consumption advisory for all fish species from the Moen Chain of Lakes (including Moen Lake, Second Lake, Third Lake, Fourth Lake, Fifth Lake), Sunset Lake, Starks Creek (upstream to and including Starks Spring) and Snowden Lake in Oneida County, Wis.

Fish were collected from the Moen Lake Chain and Snowden Lake in a sampling effort for contaminant monitoring. Results from these sampling efforts showed elevated levels of perfluorooctane sulfonate (PFOS), a type of PFAS, in the tissue of all fish

sampled from these waterbodies. Based on this and new consumption guidelines developed to reflect emerging science on PFOS, the DNR and DHS are recommending an updated advisory for the Moen Lake Chain and new advisories for Snowden Lake, Sunset Lake, and Starks Creek upstream to Starks Spring.

Deer consumption advisory

The DNR and DHS have also issued new PFAS-based guidance for the consumption of deer harvested within a 5-mile radius of the Town of Stella’s town hall. The new guidance for consuming muscle tissue from harvested deer in this area is one meal per month, and “Do Not Eat” for liver.

Due to the community’s high interest in PFAS contamination near the Town of Stella, the DNR asked hunters within a 3-mile radius to donate muscle and liver samples from their harvests during the 2024 hunting season. A total of 11 deer were sampled, and the results were analyzed by the DNR and the DHS. Testing showed elevated PFAS levels in the muscle

(venison) of deer harvested from this area. Because of these findings, the DNR and DHS have issued a one-meal-per-month PFAS-based consumption advisory for deer muscle (venison) in a 5-mile radius around the Town of Stella’s town hall.

Sampling results also showed significant PFAS levels in deer liver tissues. The liver filters chemicals from the blood, and some chemicals, like PFAS, can accumulate in the liver over time. These findings suggest that eating liver from deer in this area is likely to result in significant PFAS exposure. DHS and DNR recommend people not eat liver harvested from deer within the advisory area.

Following fish and wildlife consumption advisories will help protect you from consuming PFAS-contaminated tissue, which can cause the chemicals to accumulate in the body. A complete list of up-to-date fish consumption advisories can be found in the Choose Wisely booklet. More information on safe deer consumption can be found on the DNR’s Safely Eating Venison webpage.

—Wis. Department of Natural Resources



Carrying the teachings forward



Brown fungus called “brown spot disease” on manoomin leaf (K. Smith photo)

Despite the challenges, many communities still witnessed healthy stands in key lakes, a reminder of manoomin’s resilience and the generations of care that have sustained it. These observations will guide future restoration, monitoring, and stewardship efforts in the Ojibwe Ceded Territory.

Community stewardship and shared work

This past autumn, tribal harvesters, youth programs, and community members came together for restoration, monitoring, and harvest activities at rice camps at dozens of lakes. These gatherings created opportunities to learn, teach, and strengthen relationships with manoomin. A highlight of the season was the Intertribal Manoomin Camp at Manitowish Waters, Wis where participants from multiple tribal nations gathered to share teachings, harvest manoomin, and build connections. Interns and students joined field crews to gain hands-on experience with the science and traditional teachings that guide manoomin stewardship, while elders shared stories and knowledge rooted in thousands of years vof relationship with the rice.

Collaborative restoration events reseeded priority lakes, ensuring that the seeds of this season will become the stands of tomorrow. Through coordination with rice chiefs from Lac Courte Oreilles (LCO), LCO Conservation Department, LCO Ojibwe School and Waadookodaading, GLIFWC staff, and Wisconsin Department of Natural Resources, a seeding event took place at Pacwawong, a date-regulated lake which was closed for the season. Students joined agency staff in the reseeded effort. As we prepared to feed the manoomin spirit first, students put asemaa in the water asking for permission and expressing much gratitude. They harvested seed, brought it back to the dock to be weighed and

(continued from page 1)
rice plants. Rice worms were abundant in several waterbodies, particularly in dense beds where they thrive. In more protected areas, including river systems, ghost husks (empty hulls) were observed, likely caused by heavy rainfall during pollination, which can disrupt seed development. These patterns reflect how manoomin responds to changing climate and weather dynamics, requiring close observation and reciprocal stewardship rooted in both cultural teachings and science.

delivered it to areas of Pacwawong Lake where rice was sparse—being good helpers of manoomin. Miigwech to all those made this event happen and to the students and staff that participated. Your effort is appreciated.

Maybe more of these seeding events need to happen. This season, I harvested manoomin at a restoration site near KBIC with my twin sons. It was a beautiful day on the water, but what stood out most wasn’t the rice itself, it was the overwhelming number of rice worms. I had never seen an infestation that abundant. When we brought the rice home and spread it out to dry, the worms moved across the tarp like army worms, a steady wave of motion marching off the tarp. Watching that, I couldn’t help but think about the impact on the seed that remained on the water. In reflection, some of that rice might have been better knocked back into the lake, giving it a chance to reseed before the worms compromised so much of it. As in generations past, caretaking for manoomin means responding to what the land and water is teaching us a reflection of both responsibility and hope.

Looking ahead

As winter sets in, the work does not end. It shifts. With reseeded done in priority areas, data is compiled to inform management, and conversations continue between tribes, partners, and agencies about protecting manoomin for the long term. We still have our work cut out for us, as we work with rice chiefs and tribal communities with the concern of the manoomin. Out of the twenty-four date regulated lakes, eighteen were closed for the season. As these beds rested for the season, the rice chiefs are thinking about the future and what can we do to wake up the beds that have been resting. What is manoomin telling us?

The annual manoomin harvester survey will be sent out soon. We are appreciative for all who continue to assist us by filling them out and sending them back. Your response matters. Manoomin is more than a plant, it is a relative, a teacher, and a living part of the culture and identity of the Ojibwe people. This season, like those before it, has carried that teaching forward.

Miigwech to the harvesters, monitors, rice chiefs, youth, elders, and partners who walked this path together. May the seeds of this year’s efforts take root and flourish in seasons to come. A wise elder that I keep crossing paths with, reminds me, “ricing season is only eleven months away.”



Kathy Smith discusses manoomin parching techniques with a youth at a Bad River wild rice camp.

How do contaminants in the St. Louis River estuary affect the health of restored manoomin and those who eat it?

Overview: In Chi-gami ziibi, the St. Louis River Estuary, climate change, non-local beings. dredging, water level fluctuation, and a long history of pollution from industrial activities caused significant losses to manoomin (wild rice) stands.

Restoration efforts over the last decade in the estuary have aimed to protect, steward, and restore the manoomin that was once plentiful to support

tribal health and food sovereignty. As manoomin returns to the estuary, tribal communities have voiced interest in understanding more about this restored rice and whether it can uptake pollutants from the estuary and impact the health of manoomin and those who eat it. This overview outlines our study plan built from the community input we’ve received as well as pilot study outcomes from 2024.

We’re screening for

Aluminum (Al), Silver (Ag), Arsenic (As), Cadmium (Cd), Cobalt (Co), Chromium (Cr), Copper (Cu), Magnesium (Mg), Manganese (Mn), Mercury (Hg), Methylmercury (MeHg), Nickel (Ni), Lead (Pb), Selenium (Se), and Zinc (Zn).



PFAS

Since there is little known about the relationship between PFAS and manoomin, we’ve heard a community need to determine if PFAS are present at restored and unrestored sites and if they can be taken up into seeds. In our 2024 pilot, we tested one site to test for any detectable PFAS in manoomin seeds. In 2025 we’re testing ten locations, including remnant stands and the reference site.



Project plan

We (1) conducted a pilot study in 2024 to determine the most common contaminants present in manoomin in a subset of restoration sites and a commonly harvested location, and (2) in 2025, we are screening manoomin across additional restored and non-restored sites. This will inform future restoration efforts, further protect manoomin waters from contamination, and help inform manoomin harvest from the estuary.

Heavy metals

Community members have expressed concerns about heavy metal contamination from past industrial activities or contemporary sources. To help address this concern, we propose comparing restored manoomin in the estuary with a commonly harvested manoomin site (Big Sandy Flowage) to determine what, if any, heavy metals are present and if they accumulate in manoomin seeds.

Contaminant	Location	Sampling
2024: Pilot Study		
Heavy metals	Walleye Alley, Allouez Bay, & Pokegama Bay Reference site: Big Sandy Flowage, MacGregor, MN	We sampled three locations within the estuary and a reference site for comparison. We tested for heavy metals in green, parched, and cooked manoomin seeds, as well as sediment and water. We compared results of parched manoomin from Allouez Bay to published heavy metal data for white rice. In most cases, the manoomin appears to have lower levels of heavy metals than what has been reported in white rice. Full interpretation of the results is in progress.
PFAS	Allouez Bay	We chose Allouez Bay for pilot testing, given its position as a convergence point of many water sources into Lake Superior; this may or may not result in direct PFAS inputs from the nearby landfill or Newton Creek (a small outflow downstream of a refinery in Superior). We tested for PFAS in the sediment, water, and green, parched and cooked manoomin seed. While some PFAS were detected in water and sediment, no detectable PFAS were found in manoomin seeds.

(continued on page 18)



Busy season for Line 5 reroute proceedings

By Anya Janssen & Robert Lundberg for Mazina’igan

The Bad River Band and its environmental allies wrapped up a six-week hearing challenging the Wisconsin Department of Natural Resources’ (WDNR) decision to permit Enbridge Energy’s 41-mile reroute of the Line 5 oil pipeline through Ceded Territory in northern Wisconsin. Importantly, the Band and allies convinced the judge to prevent Enbridge from starting construction of the project through wetlands and waterways before deciding the outcome of the hearing.

Expert witnesses testified to the significant, long-term harm that Enbridge’s project would cause to wetlands and waterways. Despite WDNR’s duty to protect these resources, it continues to overlook or underestimate the impacts as minimal and temporary. The band’s wetland expert, Alice Thompson, highlighted the Kakagon–Bad River Sloughs, recognized as a Wetland of International Importance, “with wild rice beds that no one else has. No other tribe, no other place, has these beds. This is a unique location and, in my opinion, this permit does not go far enough to protect what is at risk.” WDNR’s own wetland expert, Allison Willman, could not cite a single example of an exceptional wetland that would be restored to its exceptional condition.

Bad River Chairman Robert Blanchard delivered key testimony on treaty-protected resources that are endangered by Enbridge’s proposed reroute, including manoomin, cedar, sage, sweetgrass, and birch. Mashkiiziibii Natural Resources Director Naomi Tillison also testified to the band’s unique cultural and treaty-based interests in environmental stewardship and concerns related to the reroute. Tillison



Mashkiiziibii Natural Resources Director Naomi Tillison, testifies at the hearing. (D. Montgomery photo)

and other witnesses also raised concerns about the potential for the reroute to mobilize more mercury within the Bad River Watershed, further impairing fish and other aquatic life.

Enbridge has a track record of environmental destruction, as evidenced by its breaching of underground aquifers while constructing the Line 3 pipeline replacement in Minnesota. Enbridge plans to use those same harmful construction methods to build the Line 5 reroute.

In an unwavering effort to safeguard culturally and ecologically sensitive waters and resources, the band and environmental allies continue to fight the foreign oil giant. They demand WDNR fulfill its environmental protection duties and ask the judge to reverse the permits. A decision is expected from the judge this winter.

In addition to the challenged state permits, Enbridge also needs a federal permit to build its reroute. On October 29, 2025, the U.S. Army Corps of Engineers issued that permit despite the band communicating to the Corps that the reroute would violate band water quality standards. The band and environmental allies will review the Army Corps permit and consider legal action.

A third legal decision related to Line 5 is forthcoming. In 2019, the Band sued Enbridge for trespass for illegally operating the current Line 5 pipeline through the heart of the band’s reservation, and won. A federal judge ordered Enbridge to shut down that segment of Line 5 by June 2026. Enbridge appealed the shut-down order to the 7th Circuit Court of Appeals in Chicago, who has yet to decide the case.

—Janssen is staff attorney for Native Nations Partnerships, Midwest Environmental Advocates; Lundberg is senior associate attorney, Earthjustice

Ishkode stewardship on Wisconsin Point

(continued from page 1)

“Everything out here is fire dependent. All these plants. All these medicines,” said Northrup on November 5 during the inaugural burn. For native people, the regenerative power of ishkode is essential for fruitful blueberry harvests and much more. “It all starts with our most ancient spirit right there—the Fire. We as Anishinaabe have to humble ourselves before it if we’re going to use it as a tool.”

Now on the edge of new era, support for a long term ishkode stewardship strategy is refreshingly universal. The City of Superior, Fond du Lac Ojibwe, Lake Superior National Estuarine Research Reserve, The Nature Conservancy and university research partners are collaborating to bring proven traditional ecological knowledge into the mainstream. Northrup said a combination of modern practices and native know-how will further enhance the property, which

is adjacent to a recently fortified sandy beach that welcomes endangered piping plovers during their nesting season.

“Prescribed fire isn’t a one-and-done thing. It’s going to take years of progressive fire to manage this forest the way we want it,” Northrup said. “We’re looking at some mechanical means, maybe some goats, and also some hand-work too.”

This first phase of stewardship covers around 22-acres on the bay-side of the Point. The slow steady burn helped to clear out non-local plants, release nutrients into the soil, and reboot species that thrive with flame. It’s a natural response Northrup knows well.

His earliest experience managing a landscape with fire occurred as a boy in the lowlands of the Fond du Lac Reservation some 20 miles west of Superior. His uncles would send him out to light-up select tracts to reinvigorate blueberry plants.

“My one uncle gave me a coiled a rope, but one end was in a jar of kerosene. So instead of a drip torch, you’d light that one end and run through the woods,” he said with chuckle. An essential tool in prescribed burning, drip torches are small fuel-filled canisters tipped with a wick that maintains a steady flame used to light duff and vegetation.

Another key factor in ishkode stewardship leans deeper into science technology: confirming historic land use. Northrup said researchers Professor Evan Larson and Red Cliff Band Ojibwe Mel-onee Montano utilized dendrochronology at the Point to identify historic burn patterns from wood samples. With a team of undergraduate students, the pair collected and examined cross-sections from red pine stumps, which revealed fire scars among the growth rings. The findings validated what Ojibwe knowledge-keepers already knew: the ishkode spirit belongs on Wisconsin Point.

Follow ishkode stewardship on Wisconsin Point at superiorwi.gov/ishkode.



Ishkode on Wisconsin Point (City of Superior photo)



UW-Platteville Professor Evan Larson (foreground) and an interagency crew including members from Red Cliff and Fond du Lac Ojibwe, and Superior Fire Department, monitor the Nov 5 prescribed burn at Wisconsin Point. Inset: Drip torch. (COR)



Underneath a stretch of pine forest on Wisconsin Point, a prescribed fire works its way through the needle and duff layer on November 4. (CO Rasmussen photo)



Take part in 2026 phenology observations

GLIFWC is trying to understand how environmental changes could be affecting treaty rights. Recording seasonal observations from across the Ceded Territories, such as when the ice goes out on a lake, the date you put taps in your maple trees, the date of the first snowfall, or when the first Sandhill cranes return, gives us a better understanding of how these events are changing from year to year.



Wiisagi-ma'iingaans. (*Encyclopædia Britannica* photo)

Make a fun activity out of watching for the events that are listed, or by noting other phenological or seasonal events you observe throughout the year. This can be a fun activity for teachers, families, or anyone that enjoys spending time outdoors!

Help us study phenological and seasonal changes by writing down your observations on the form. Share your knowledge by mailing it back to GLIFWC by June 30, 2026.

You can also submit observations online at glifwc.org/phenology.calendar.
—GLIFWC Climate Change Team

Additional copies of the 2026 phenology calendar can be ordered at glifwc.org/store.

2026 phenology competition

Submit your observations to win prizes!
Submissions due June 30, 2026

This year the GLIFWC Climate Change Phenology Team is hosting another competition! Submit your observations for the opportunity to win prizes! Prize options include a notebook, shirt, reusable canvas bag, and/or a sticker set.

- The prize categories are:
- Most Observations from a **Youth** Observer (must submit for all 4 seasons—keep an eye out for the summer-fall form in upcoming issues)
 - Most Observations from an **Adult** Observer (must submit for all 4 seasons—keep an eye out for the summer-fall form in upcoming issues)
 - Most Interesting or Unique Observation (one winner per season)

The GLIFWC Climate Change Team will judge the entries and winners and their observations will be featured in a future Mazina'igan article!

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



PLACE
STAMP
HERE

Tape and stamp this form and return to GLIFWC by June 30, 2026. Make sure to include the information below:

Name: _____

Address: _____

Tribal affiliation (if any): _____

Phone number or email: _____

- Are you a:
- ☐ Youth observer
- ☐ Adult observer

To submit observations via our online submission form or for additional copies of this form, go to:

www.glifwc.org/phenology.calendar

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

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 June 30, 2026.



Please print return address :



St. Louis estuary contaminants and the health of restored manoomin

(continued from page 15)

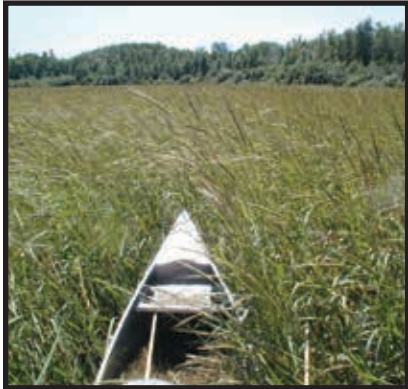
Contaminant	Location	Sampling
2025 Sampling		
Heavy metals	Allouez Bay, Pokegama Bay, Rask Bay, Walleye Alley, North Bay, Nemadji River, Landslide Bay, Duckhunter Bay North, Kingsbury Bay Reference site: Big Sandy Flowage, MacGregor, MN	Mercury was frequently cited by community members as a contaminant of concern in the estuary and as a possible barrier to ricing. Within the limits of funding and laboratory access, we'll test for mercury and other heavy metals in the 2025 samples. This way we can direct study resources to specific heavy metals of most community concern.
PFAS	All sites listed above, excluding sites where rice was too sparse.	With no PFAS detected in the seeds of Allouez Bay in the 2024 pilot, we'll test the sediment as well as cooked manoomin seeds from all 2025 locations to confirm a lack of PFAS in seeds across the estuary.

2025 Methods

Heavy Metals

Sediment: Sediment samples were collected with a sediment corer at various locations within the manoomin beds, just before time of harvest. The cores were taken within the root zone of manoomin and could contain potential contaminants available for uptake by the roots. Sediment will be machine-analyzed to determine any concentration of contaminants present.

Authors
Becca Honeyball, Ashla Ojibway, Gigi Diekelman, Eve Milusich, Gavin Dehnert, Deanna Erickson, & Jessica Hua



Heavy Metals continued

Manoomin: Manoomin seeds were harvested from each site to be tested as parched cooked rice. Green rice will also be tested at sites where enough seeds were collected. All manoomin samples will undergo digestions, where they will be added to various acids with intense heating to release any potential contaminants. These samples will then also be machine-analyzed to measure the concentrations of contaminants present.

PFAS

Whole-plant PFAS sampling was done in collaboration with members of Hua and Dehnert labs at UW-Madison and will be sent to the WI State Lab of Hygiene for analysis. At each sampling site, three manoomin plants were collected and split into roots, leaves, and seed for separate analysis. Near each manoomin plant that is harvested, a water sample and a surface soil sample were also collected for testing.

Acknowledgements

Miigwech to everyone who has taken the time to speak with us and share valuable input and knowledge about manoomin and this place, especially the elders, GLIFWC, the Fond du Lac Band, and the 1854 Treaty Authority. We will provide updates as the project progresses. Please reach out if you have additional feedback or questions.
honeyball@wisc.edu & deanna.erickson@wisc.edu

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 June 30, 2026. Miigwech!

Biboon / Winter	Date/Location	Ziigwan / Spring	Date/Location
First white coat seen (snowshoe hare, ermine) _____		First flowers on trees _____	First dragonfly _____
First snowfall _____		First leaf buds bursting on trees _____	First rain _____
First snow that sticks _____		First new needle growth on trees _____	First thunderstorm _____
First temperature below zero _____		First maple sap flowing _____	First crusty snow _____
Ice storms/unusual storms _____		End of maple sap season _____	Last snow before summer _____
Lake freezes (specify lake) _____		First plants (species) _____	Last frost before summer _____
First walleye caught through the ice _____		First leeks harvested _____	First night above freezing (32°F) _____
First musky speared through ice _____		First wildflowers blooming (species) _____	Ice out (specify lake) _____
First eagles at nests _____		First fiddleheads harvested _____	First canoe (lake/river) _____
First snow fleas _____		First deer fawns _____	First mushrooms harvested _____
First ski / snowshoe _____		First bear _____	Other ziigwan observations: _____
First deer antlers dropped _____		First frogs calling (species) _____	_____
Last deer with antlers seen _____		First walleye speared (lake) _____	_____
First day above freezing (32°F) _____		Walleye spawning (lake) _____	_____
Other biboon observations: _____		First fish caught (species) _____	_____
_____		First fish spawning (species) _____	_____
_____		First suckers running (river) _____	_____
_____		First arrivals of birds (species) _____	_____
_____		_____	_____
_____		First woodcock mating call _____	_____
_____		First grouse drumming _____	_____
_____		First turtle laying eggs (species) _____	_____
_____		First tick _____	_____
_____		First mosquito _____	_____
_____		First hummingbird _____	_____



Ojibwemotaadiwag Anishinaabewakiing.

They speak Ojibwe to each other in Indian Country.

Howah! Gidayaa omaa. Eya! Aaniin ezhi-ayaayeg? Niminwendam ezhi-ayaayan omaa! Giga-minwendam gaye wii-ojibwemoyeg bangii. Nitam, gidasiginaanan Ojibwemowin-ikidowinan. Giga-minwendam. Niiwin gemaa, ganabaj midaaso ikidowinan. Naabinootaagen! Gaawiin wendazinoon. Minwendaagwad, Biboon Ikidowinan: Waabooz, Goon, Zhakipon, Dawaagone'ige, Ozhaashikwaa, Minjikawanag, Miijim. Daga ojibwemodaa!

(Alright! You're in a place here. Yes! How thusly-are you all? I am happy you are here! And you will be happy also, when/if you all will-speak Ojibwe language a bit. First, you gather them Ojibwe words. You will be happy. Four perhaps, maybe ten words. Repeat what others say! No, it's not easy. It is fun, Winter Words: Snowshoe Hare, Snow, Wet snow. S/he shovels snow. Slippery ice. Mittens. Food. Please let's all speak Ojibwe Language!)

Bezbig—1

Double vowel system of writing Ojibwemowin.

—Long vowels: AA, E, II, OO

Waa**bo**oz—as in f**ath**er

Miig**w**ech—as in j**ay**

Aani**i**n—as in s**ee**n

Moo**o**z—as in m**oo**n

—Short Vowels: A, I, O

Dash—as in a**bo**ut

Ingi**w**—as in t**i**n

Niiz**h**o—as in o**n**ly

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

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

OJIBWEMOWIN

(Ojibwe Language)

Niizh—2

Circle the 8 underlined Ojibwe words in the letter maze. (Translations below)

A. Ninzaagitoon mashkawaakwading agwajii**ng**. Ambe!

B. Omaa, zhooshkwaada'e. Ninitaawaada'e noongom.

C. Ojibwemowin. Endaso-giizhik agindaasodaa!

D. Wayiiba, inga-akwa'waamin.

E. Gego ozhaashikoshiken! Maagizhaa wii-mikwamii-wadamon.

F. Gidaya**a**n ina boodawaanaabik?

G. Nindombendam.

H. Nawaj gisinaa.

W	A	S	H	N							
J	G	A	O	I	E	M					
G	I	S	I	N	A	A	E				
Z	N	E	P	Z	G	K	M	O			
A	D	W	A	A	B	E	I	I	J		
S	A	G	W	A	J	I	I	N	G		
A	A	B	B	G	O	'	I	O	E	W	
K	S	N	E	I	N	A	G	B	K	D	
W	O	Z	A	T	W	E	Z	O	O	E	A
A	D	I	'	O	G	S	H	A	B	O	N
A	A	G	O	O	M	A	A	M	J	W	N
B	A	O	W	N	A	W	A	J	K	I	G

Niswi—3

IKIDOWIN

ODAMINOWIN

(word play)

DOWN:

2. first

3. heavy wet snow

4. a little bit, a few

5. It is cold weather.

ACROSS:

1. It is winter.

6. You are in a place/a certain way.

7. food

8. four

Snow - Goon

It's slippery - Ozhaashaa

Ice - Mikwam

Online Resources

ojibwe.lib.umn.edu

ojibwe.net

glifwc.org

glifwc-inwe.com

Niiwin—4

Nimaamaa, Nindede! Aaniin ezhi-ayaayeg? Gizaagi'ininim.

My mother, my father! How are you all? Love you all.

Niniijaanisag, gizaagi'ininim. Zaagi'idiwin.

My children, I love you all. Mutual love.

Waaseyaa!—It is sunny!

Endaso-giizhik!: Anama'e-giizhigad. Ishkwaa-anama'e-giizhigad. Niizho-giizhigad. Aabitoose. Niiyo-giizhigad. Naano-giizhigad. Giziibiigisaginige-giizhigad.

Everyday!: Prayer day (Sun.), 1st work day (Mon.), 2nd-day (Tues.), Halfway Day (Wed.), 4th day (Thurs.), 5th day (Fri.), House cleaning day (Sat.).

Mii'iw!—That is all!

Let's all speak Ojibwe!

1. _____ wiidookaage.

2. _____ gichi-baapi omaa.

3. _____ wawiyadendaagozi.

4. _____ apane babaamose oodenaang.

5. _____ akwa'waa. Niibing, i'iw jiimaan.

6. Apegish menoseyeg.

Gidede

Gimaamaa

Nimise

Nisaye

Nishiime

Mooz

(Moose)

Translations:

Niizh—2 A. I love it when it is freezes outside. Come! B. Here, s/he ice skates! I know how to skate now. C. The Language. Everyday, let's all read/count! D. Soon, we will spear fish through the ice. E. Don't slip/fall! Perhaps icy trails. F. Do you have a fireplace/stove? G. I am hopeful/ excited. H. More cold weather.

Niswi—3 Down: 2. Nitam 3. Zhakipon 4. Bangii 5. Gisinaa Across: 1. Biboon 6. Gidayaa 7. Miijim 8. Niiwin

Niiwin—4 Pick a person for each: 1. _____ s/he is always helping people. 2. _____ s/he laughs a big laugh here. 3. s/he is thought to be funny/cute. 4. _____ s/he always walks around town. 5. _____ s/he goes spearing.ice fishing. In the summer, that canoe. 6. I hope you all have good luck/happenings. (Your dad (Gidede). Your mom (Gimaamaa). My older sister (Nimise). My older brother (Nisaye). My younger sibling (Nishiime).) There are various Ojibwe dialects; check for correct usage in your area. The grammar patterns may help a beginner voice inanimate and animate nouns and verbs correctly, as well as create questions and negate statements. Note that the English translation will lose its natural flow as in any world language translation. This may be reproduced for classroom use only. All other uses by author's written permission. Some spellings and translations from The Concise Dictionary of Minnesota Ojibwe by John D. Nichols and Earl Nyholm.

All inquiries can be made to **MAZINA'IGAN**, P.O. Box 9, Odanah, WI 54861 pio@glifwc.org. Edited by Michael Waasegiizhig Price



Awenen gii-piidaagone omaa?

Who came here through the snow?

Most awesiinyag (wild animals) who leave tracks in the snow can be placed in a few different categories:

Walkers

These awesiinyag tend to be the ones with long legs and heavy bodies such as Waawaashkeshi (deer), Wiisagi-ma'iingaans (coyote), Waagosh (fox), and Gidagaa-bizhiw (bobcat).

Their tracks are straight and regular, often forming one narrow line. You likely will not see four distinct prints because many walkers “register” or place their back feet directly (or nearly) where they stepped with their front feet.



Bounders

They tend to have long bodies and short legs, like Ojiig (fisher) and Nigig (otter).

Their tracks come side-by-side as they place both front feet down and both back feet down in one smooth motion, often placing their back feet directly in the prints their front feet just made.



This is a classic weasel pattern, such as Ojiig or Waabizheshi

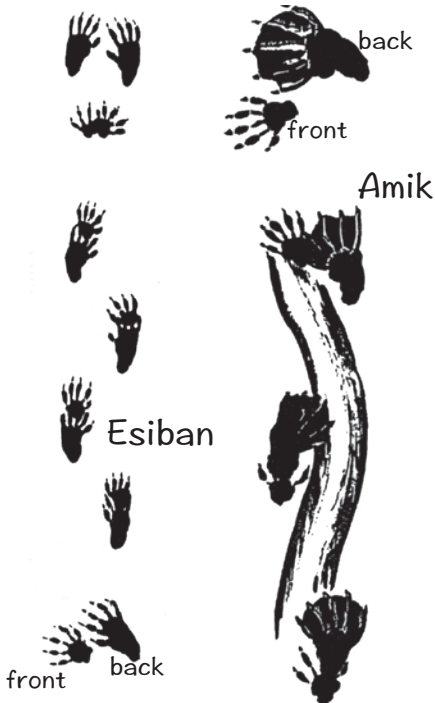
Ojibwemowin

bimikawaan—track, footprint
bimose—s/he is walking
bimibatoo—s/he is running

Waddlers

They tend to have short legs and heavy bodies such as Esiban (raccoon), Zhigaag (skunk), Makwa (bear), Wazhashk (muskrat), and Gaag (porcupine).

Their tracks tend to have four distinct prints that do not register. They walk with a side-to-side motion which can be clear in the trails they leave.



Hoppers

These awesiinyag are those whose back legs and front legs are different lengths like Waabooz (snowshoe hare), Ajidamoo (squirrel), and Waawaabinoojiinh (mouse).

Like bounders, their front feet and back feet appear side-by-side, but unlike bounders, their back feet go in front of their front feet, like they're backwards! They look like this because when they hop, their front feet land first and their back feet actually land in front of them.

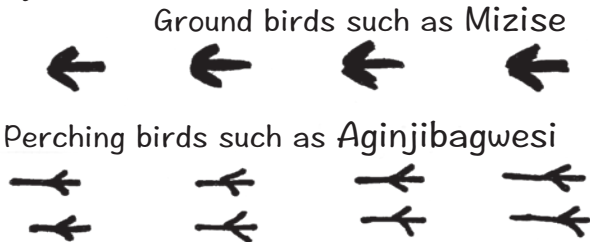


Waabooz tracks—see how the back feet land ahead of the front feet?

Birds

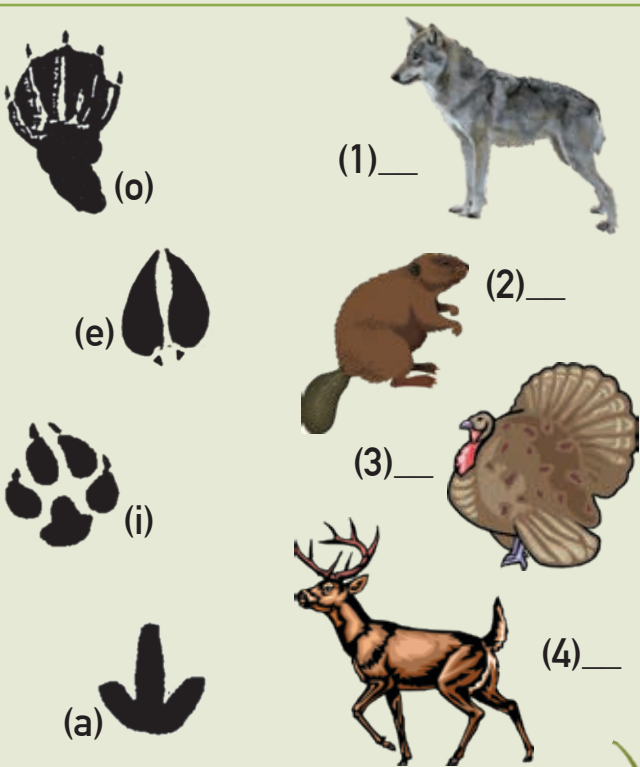
Binesi and Binesiinh (bird) tracks can be placed in two categories: ground birds and perching birds.

Ground birds' tracks have either a short back toe or none at all. Their footprints come one-at-a-time unlike perching birds. Their tracks do have a long back toe, and they like to hop, leaving two prints side-by-side.

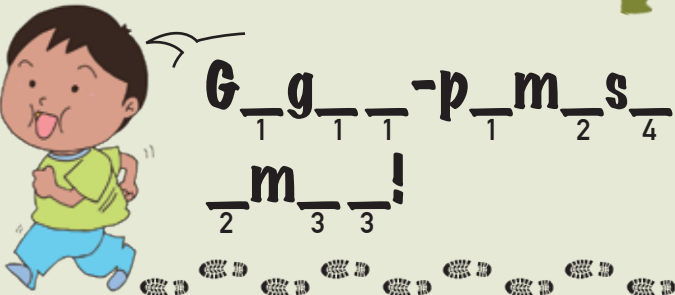


Awenen gii-ayaa omaa?

Match the track to the awesiinh to find out who was here!



Now fill in the answer!



Find activity answer key on page 22.



Dagwaagin packed to the gills with inland electrofishing surveys

Despite wet and windy conditions early in the season, GLIFWC Inland Fisheries crews lucked out with a warm fall for their annual juvenile ogaa (walleye) assessments. Fieldwork began the second week of September and continued through the third week of October, covering Ceded Territory heavyweights like Mille Lacs, Trout Lake, and Lake Gogebic and many others in between.

Four full-time survey crews from GLIFWC carried out the fall season in 2025, who shocked nearly 100 lakes across the 1837 and 1842 Ceded Territories in cooperation with tribal fisheries staff at Bad River Band, Fond du Lac Band, Mille Lacs Band, Mole Lake Band, and St. Croix Band, as well as the Wisconsin Department of Natural Resources, U.S Fish and Wildlife Service, Michigan Department of Natural Resources, and the U.S. Forest Service.

Although survey results are still being compiled and analyzed, several waters showed favorable ogaa recruitment. Results will be finalized for December’s TWG meeting.

Chi-miigwech to all our seasonal Fisheries Aides, partner agencies, and to all the GLIFWC staff that volunteered to help with surveys this fall. You made this season a resounding success. Happy hardwater fishing in Biboon! —**B. Byrne**



GLIFWC Fisheries Aides Rick Barnaby (left) observes Jason Clark (right) collecting a scale sample to be used to age the juvenile ogaa (walleye) shown. (B. Byrne photo)

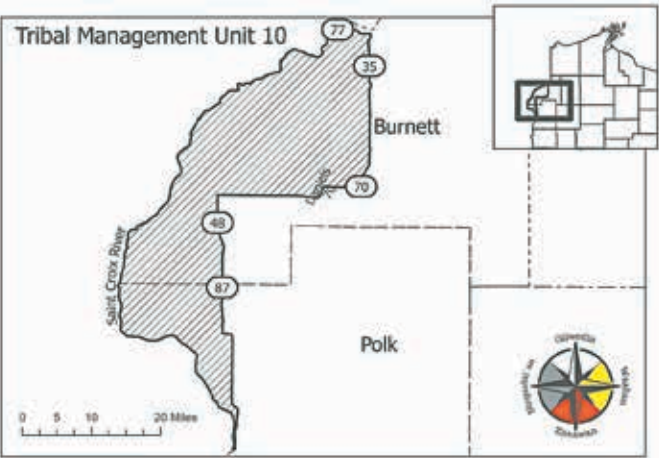
Bineshiinh hunts

(continued from page 3)

from the day after Labor Day to December 31. Just remember that you are not permitted to shoot wild turkey with a rifle. Harvested turkeys can be registered online or in person at a registration station or with a GLIFWC warden.

Aagask

Earlier this year, Wisconsin wildlife managers announced a sharp-tailed grouse hunt from Oct 18 to Nov 9. This was the first time the state has held a season since 2018. The 2025 sharp-tailed grouse season was limited to Zone 10, which is a small unit located in the northwest part of the state. A limited quota of 24 sharp-tailed grouse was set for this year’s season with the tribes declaring half (12 sharp-tailed grouse). To provide a similar opportunity for tribal harvesters, GLIFWC also established a special sharp-tailed grouse season in Zone 10



(also known as Tribal Management Unit 10,) which opened the Tribal Crex Meadows Sharp-tailed Grouse Closed Area for harvest during the Oct 18 to Nov 9 season or until the quota of 12 was reached.

The special sharp-tailed grouse season required a specific permit that was only issued in-person by tribal registration clerks and GLIFWC staff. There was also a requirement that sharp-tailed grouse harvested within Tribal Management Unit 10 be registered in person within 48 hours post-harvest. This season is just wrapping up at press time. Harvest information will be available from GLIFWC wildlife biologists this biboon.

High honor for GLIFWC ogimaa



Executive Administrator Jason Schlender has received the Glen T Miller Tribal Leadership Award from Native American Fish & Wildlife Society’s Great Lakes Region.

Schlender, a Lac Courte Oreilles citizen, was recognized for his work on the local and national level to promote tribal sovereignty and environmental protection. He is a member of the Lynx Clan with the given name, Manidoo Noodin.

GLIFWC Voigt Intertribal Task Force Chairman Conrad St John said: “Jason has reinforced culture and language into the organization and prioritized respect for those resources that we harvest to keep our ways of life alive and well.” St John is also chairman of the St. Croix Band of Ojibwe.

GLIFWC assists 11 Ojibwe member bands in implementing off-reservation harvest rights and natural resources stewardship in the Ceded Territories of Minnesota, Wisconsin, and Michigan.

AFDO / SEAFOOD ALLIANCE

HACCP TRAINING COURSE

Baraga, Michigan: December 16-18, 2025



LOCATION: Ojibwa Casino Hotel Baraga, 16449 Michigan Avenue, Baraga, Michigan 49908

CONTACT

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REGISTRATION

bit.ly/HACCP1225



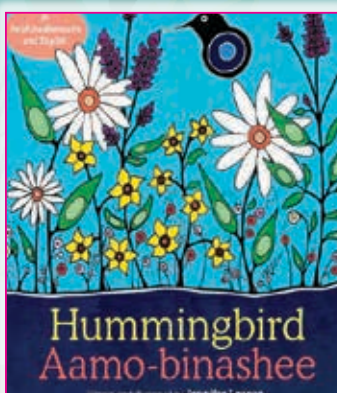
In partnership with



Michigan Sea Grant helps to foster economic growth and protect Michigan's coastal, Great Lakes resources through education, research and outreach. A collaborative effort of the University of Michigan and Michigan State University. Michigan Sea Grant is part of the NOAA-National Sea Grant network of 34 university-based programs.

SAVE THE DATE | Maadigindan! (Start Reading!) Book Club

A free, virtual space for educators, librarians, caregivers and community members to join authentic and lively conversations about books with their authors and special guests whose work highlights the important relationship between the Great Lakes and the Anishinaabe people.



Wed. 12/10
4:30-5:30 on Zoom

Remember the hummingbird's teachings.

In this deeply emotional and beautifully illustrated picture book, the ancestors send a hummingbird to a child lost in Windigo's darkness. Its teachings of resilience, love and connection bring the child home and remind us that our ancestors are always watching and can help us find our way if we only ask.



JOIN US | REGISTER @ go.wisc.edu/maadigindan



Inland fishery tech lives up to name

Since the fishery assessment field season began in mid-September, Mike Fish has been helping electrofishing walleye lakes to assess this spring’s hatch. At dusk, inland fisheries crews shock the shoreline of a lakes and net juvenile walleyes to count the number of individuals relative to the length of the lake’s shoreline. Crews also collect scale samples to age individuals and estimate overall juvenile age structure. Fish’s parttime job on the GLIFWC fishery team over the past two years is now a fulltime, permanent position

GLIFWC’s new inland fishery technician, Fish grew up squarely between Lac Courte Oreilles and Lac du Flambeau in Park Falls, Wis. In high school he worked for the Wisconsin Department of Natural Resources during the summer monitoring and improving brook trout habitat. “I remember having to haul the generators in and out, across the terrain. Thankfully the equipment we need has gotten a lot lighter over the years!” Fish graduated in the spring of 1983 and was off to the US Air Force that fall.

Fish was stationed at the Grand Forks Air Force Base in North Dakota with the 321st Strategic Missile Wing not far from the Minnesota border. Over his seven years of service, Fish’s duty stations would take him across the west from Montana, Wyoming, and Utah to the Vandenberg Air Force Base in Santa Barbara, California. In 1996, he earned his Bachelor of Science in Fisheries & Wildlife from the University of North Dakota.

A Northwoods hunter and fisherman, he’s always eager to visit his grandkids who live near Wausau and Madison; his family is looking forward to welcoming another grandchild soon.

—J. Van Sickle



Quality internship nets fishery tech position

Samson Wood joins the GLIFWC Great Lakes Section as a fisheries technician and will monitor juvenile lake sturgeon (name) abundance at the mouth of the Bad River, whitefish (adikameg) and lake trout (namegos) populations around the Keweenaw Peninsula, and trap adult and larval sea lamprey across Lake Superior tributaries.

Growing up in the urban setting of Toledo, Ohio, Wood recalls a lack of broad appreciation for the outdoors. A strong work ethic and drive to connect with the natural world led him to Northland College in Ashland, Wis.

“I decided I wanted to get out of the city for college, to a smaller town with better fishing and a stronger focus on nature,” said Wood.

In 2022, Wood signed up for a summer internship with GLIFWC with the Biological Services Division where he to helped assess fish abundance, diet, and ageing within Lake Superior, its watershed, and tributaries.

GLIFWC’s internship gave Wood a strong sense of community in the workplace, which attracted him to return to the next summer. After his second summer with GLIFWC, Wood was hired as a limited term employee which allowed him to keep studying in the field while continuing his education.

Part of the last graduating class of Northland College history, he earned his B. S. in Natural Resources with a focus on fish and wildlife ecology in 2025. Wood is now located near Ashland and never far from dropping his fishing line, “I am so excited to continue this work in my new role on behalf of GLIFWC’s member tribes,” said Wood.

—J. Van Sickle



Payroll and benefits specialist joins the team



Chantal LaFerner joins GLIFWC’s Administration Division in the Accounting department as the new Payroll and Benefits Specialist who will process bi-weekly payroll, ensure accurate employee time, deductions, and maintain compensation records.

LaFerner belongs to Bear Clan and is a member of the Red Cliff Band. “My roots are deep in the Red Cliff community; granddaughter of Leo LaFerner Sr. and Kenneth “Happy” Andrews, two strong and caring men who instilled in me a deep respect for our culture, hard work, and the importance of looking out for others,” said LaFerner.

Over the past nine years, LaFerner worked at Legendary Waters Resort & Casino in Red Cliff. She started there in the hotel department, where she learned the

importance of hospitality, teamwork, and building strong relationships with both coworkers and guests.

LaFerner eventually transitioned into the accounting office, and that’s where something really clicked for her. “I discovered a real passion for numbers, organization, and behind-the-scenes problem solving, especially when it came to making sure employees were taken care of,” she said.

Her experience in the accounting office inspired her to take the next step in her career by enrolling at Northwood Tech in the summer of ‘25 to pursue an accounting degree which she is expected to complete in spring of 2027.

Outside of work, LaFerner is a creative at heart. She enjoys beading, photography, and spending time with her family. LaFerner finds strength in creativity and meaning in the stories passed down through generations and tries to bring that same sense of purpose into her daily life and work.

Her family’s teachings continue to guide her, keep her grounded, and stay connected to her identity in both her personal and professional paths. LaFerner said she is excited for the journey ahead, “I’m incredibly honored to be joining GLIFWC; I still have so much to learn, and I’m grateful for the chance to do that alongside such dedicated and inspiring people.”

—J. Van Sickle

Honoring a half-century working for the Maskiiziibii fishery

Since the Bad River Fish Hatchery opened its doors in 1972 on the shore of the Kakagon River near Old Odanah, Hilary “Junie” Butler has been there. A fixture in walleye stewardship on the Lake Superior south shore, the Bad River Band elder invested some 50 years into natural resources work in and around the Chequamegon Bay region. Butler also made time to monitor manoomin beds in tribe’s famed Kakagon Sloughs and worked with Great Lakes Indian Fish & Wildlife Commission assessment crews on evening ogaa electrofishing population surveys across inland lakes in the Wisconsin Ceded Territory.

“Junie’s provided so much knowledge and stability, helping support the community fishery,” said Naomi Tillison, Maskiiziibii Natural Resources Department director. “He leaves the Bad River fishery program in really strong shape.”



Junie Butler (left) lifts a fyke net used to capture and release fish as part of walleye population surveys and hatchery operations. (MNRD photo)

The Maskiiziibii gigoonh hatchery typically raises walleye and yellow perch. Between 2014-2024 the solar-powered facility generated annual mean fish production levels of 7.4 million walleye fry, 324,236 walleye fingerlings, and 102,011 yellow perch fingerlings—all released into the Bad River and other local waterways. Butler’s decades of dedication have been essential to the Bad River’s Hatchery success.

“Having fish for the future, for the next generation coming, is what we’re doing,” Butler said.

Tribal hatcheries are a critical piece of natural resources management, helping ensure fishing opportunities for walleyes and other gigoonyag many decades ahead. Chi-miigwech Junie for all your efforts! —CO Rasmussen

 facebook

 Instagram

 YouTube

Kid’s Page Activity Answer Key:
1. (i) – Ma’ingan (wolf)
2. (o) – Amik (beaver)
3. (a) – Mizise (turkey)
4. (e) – Waawaashkeshi (deer)

Phrase: Gigii-pimose omaa!
Translation: You were walking here!



GLIFWC mourns a champion of sovereignty, steward of prosperity

For more than two decades, Ernie Stevens Jr. stood at the helm of the Indian Gaming Association—not merely as its chairman, but as a tireless advocate, a visionary leader, and a resolute protector of tribal sovereignty. His legacy is woven into the fabric of Indian Country, where his voice echoed in congressional chambers, his presence anchored national summits, and his heart remained rooted in the communities he served. Stevens died September 26 in his Oneida Nation homeland in Wisconsin at age 66.

Stevens was more than a steward of Indian gaming; he was a bridge-builder between tribal nations and the broader American landscape. Under his leadership, the Indian Gaming Association became a powerful platform for economic development, self-determination, and cultural preservation. He understood that gaming was not just about revenue—it was about revitalizing communities, funding education, expanding healthcare, and asserting the inherent rights of tribal governments to chart their own futures.

A staunch champion of treaty rights and tribal governance, Stevens never wavered in his commitment to the principles of sovereignty. He reminded

policymakers and the public alike that tribal nations are not relics of history, but living governments with enduring rights and responsibilities. His advocacy was grounded in tradition, yet forward-looking—always seeking new pathways for prosperity, unity, and justice.

Whether addressing the tribal leadership or mentoring native youth, Stevens carried the wisdom of his ancestors and the urgency of his mission. He believed in the power of native voices to shape policy, reclaim narratives, and inspire change. His leadership was marked by humility, strength, and an unwavering belief in the resilience of our people.

GLIFWC mourns the loss of Ernie Stevens Jr. But we are so grateful for the lives he touched, the sovereignty he defended, and the future he helped build. His legacy lives on in every tribal enterprise that thrives, every tribal leader who dreams bigger, and every community that stands stronger because of his work.

The Commission extends our sincere condolences to his wife Cheryl, his children and grandchildren. Miigwech aapiji go naa akina gegoo gaa-izhichiged... Ayaangwamizin gosha Uncle.

—J. Schlender



Commemoration & celebration on 1854 Treaty anniversary

Red Cliff, Wis—Treaty-making between the United States and Lake Superior indigenous nations had been ongoing for some 35 years when the calendar flipped to 1854. During that formative period, US authorities including Minnesota Territorial Governor Alexander Ramsey and others were actively working to rescind established treaty agreements, plotting to coerce Ojibwe people from their eastern homelands to lands west of the Mississippi River. On one infamous occasion, Ojibwe chiefs had witnessed the horrific outcome of the failed (and illegal) wholesale removal of Ojibwe communities westward to Sandy Lake, Minnesota in 1850. And so, when US Treaty Commissioner Henry C Gilbert arrived on Madeline Island in September 1854 to parlay for the Gichigami north shore and its inland mineral ranges, he soon learned that tribal headmen were resolute in their expectations.

Gilbert recorded his experience with Ojibwe negotiators in a letter: “We found that the points most strenuously insisted upon by them were first the privilege of remaining in the country where they reside and next the appropriation of land for their future homes. Without yielding these points, it was idle for us to talk about a treaty,”

If the United States wished to continue their expansion into the Old Northwest, Ojibwe chiefs demanded reservations of land and water around their principal communities, and once again, affirmation that the property right of hunting, fishing, and gathering is retained for signatory tribes. The US agreed to both.

Looking back, reaching forward

In honor of Ojibwe treaty negotiators and all those knowledge-keepers that make culture, language, spirituality and mino-bimatiziwin accessible and growing, communities across the region celebrated Treaty Day on September 30—the anniversary of the 1854 Treaty signed at LaPointe on Mooningwaankaan Minis. Music, ceremonies, memorials, talking circles, and festivities all had a moment on Madeline Island during the weekend lead-up to Treaty Day. On the water an Anishinaabe regatta drew beautiful birch bark jiimaanan that plyed the Lake Superior waters off LaPointe. Indigenous artists from across Buffalo Bay and across the country performed at island venues, sharing a rich variety of music with hundreds of visitors over several days.

Following a sunrise pipe ceremony and talking circle at Ojibwe Memorial Park, attention turned to the Red Cliff community on the mainland where a great mix of middle and high school students interacted with tribal elders, Ojibwemowin speakers, and knowledge keepers on the Bezhigogaabaw Cultural Center grounds. A pair of all-ages baaga’adowewin matches in a green open field drew a wide range of participants to engage in traditional lacrosse. Next to the baaga’adowewin grounds, Red Cliff Band conservation officers and technical staff were on hand with tools of their trades, sharing potential career previews with students. From wildlife tracking equipment to nuisance black bear live-trapping, young people came away with ideas and inspiration for their own roles in Ceded Territory natural resources stewardship.

Prior to a community feast bookending 2025 Treaty Days, a series of panel discussions inside the Leo LaFernier memorial building touched on tribal leadership, resource harvesting, and language—Ojibwemowin. For many, much of the native experience includes embracing all the knowledge and teachings that come from studying and speaking Ojibwemowin.

“I took this language for granted when I was younger,” said James Bucholz, a Lac du Flambeau citizen. “Without language there’s no ceremonies, there’s nothing we can do as Anishinaabe people without it. We couldn’t even call ourselves Anishinaabe people without it.”

Bucholz went on to say that Ojibwemowin provides deeper meaning to understanding everything *all over the world (miziwekamig)*—from plants and animals to places and ideas. Life on Turtle Island is enriched by learning original, oftentimes very descriptive, indigenous names.

“I love not just this language, but this way of life,” he said.

—CO Rasmussen



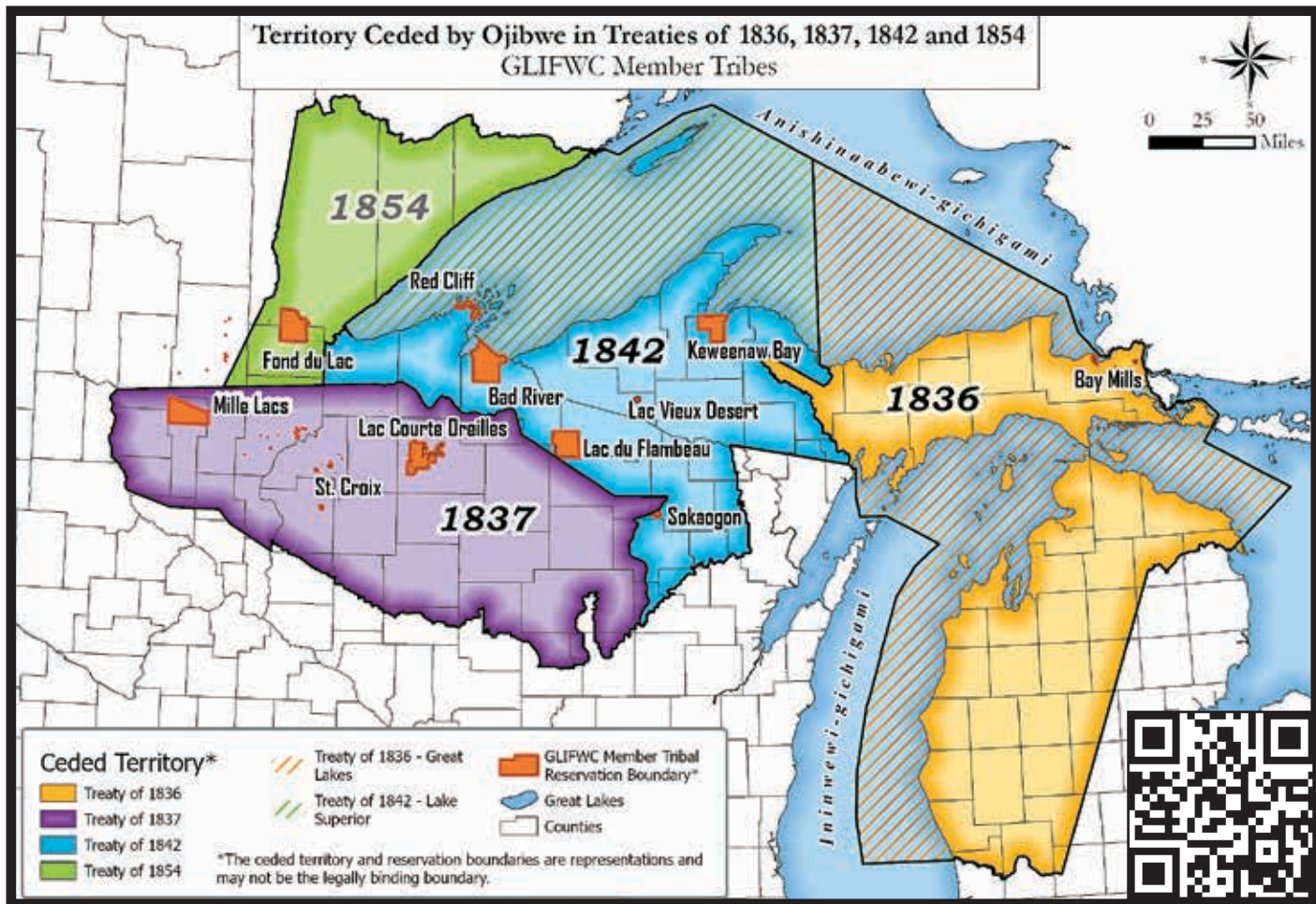
Reproductions of United States-Ojibwe treaties hung from the walls of the Leo LaFernier Bezhigogaabaw Cultural Center at Red Cliff, the site of panel discussions and a community feast on Treaty Day. Inset: A baaga’adowewin match at Red Cliff drew an all-ages group of participants on September 30. (CO Rasmussen photos)





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Omaskkooz hunt off to a slow start in Ceded Territory

Between large swaths of elk country made inaccessible from storm damage to high temperatures, Ojibwe treaty hunters had limited success during the early season.

In the Wisconsin Ceded Territory, above average temperatures contributed to reduced daytime movement for the omashkooz herd centered in the Chequamegon-Nicolet National Forest. Those same high mercury readings compelled some tag holders to delay going afield, waiting for cooler weather later in the season. Two tribal hunting parties did connect with bulls in late September and early October respectively.

For Lower Michigan elk hunters, a March 28-30 storm emergency that brought out the National Guard continues to



make access to prime elk country difficult. The widespread ice storm caused trees to snap apart across nearly a million acres of forest, closing roads and making overland travel impossible in places.

While timber salvage harvests and storm clean-up continues, wildlife officials report that the combination of warm weather and downed trees may produce the lowest hunting success rate on record.

Bay Mills Indian Community's three omashkooz tag holders were unsuccessful in early season hunting and are looking to return to 1836 Treaty woodlands for elk in December, said Justin Carrick from the band's conservation department.

—CO Rasmussen



BIBOON 2025/26

INSIDE:

Tracking mixed contaminants
Introducing Gimino-Miijiminaan
Warden focus: youth education