Mazina'igan

A Chronicle of the Lake Superior Ojibwe

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Chronic wasting disease threat looms across region

GLIFWC launches interactive CWD website

By Travis Bartnick
GLIFWC Wildlife Biologist

Chronic wasting disease (CWD) continues to be a pressing concern for many throughout the Ceded Territories and across the nation. CWD is a contagious neurological disease that affects waawaashkeshi (deer), omashkooz (elk), and mooz (moose).

CWD is not a type of virus or bacteria, but rather a type of abnormally shaped protein called a prion (pree-on). These prions can cause damage to brain and nerve tissue, and eventually lead to the death of the infected animal.

Fortunately, the only detection of a CWD-positive free-ranging deer within the 1837, 1842, or 1854 Ceded Territories was found in the 1837 Ceded Territory near Shell Lake, Wis. in 2012.

Despite an increase in CWD testing around the Shell Lake area (over 2,000 samples were collected from 2012-2016), no other CWD-positive free-ranging deer have been detected in that area. This is encouraging news for those who hunt deer in the Ceded Territories, but with additional reports of detections at captive deer farms in the region, there is still a great concern over the potential for CWD to spread to the wild herd.

(see CWD threat, page 4)

Ayaabe (buck) in the 1842 Ceded Territory. (COR photo)

Native fire management returns to Apostle Islands

By Charlie Otto Rasmussen, Editor

Apostle Islands, Wis.—The Ojibwe language blended with the rhythm of white, curling waves along the southwest shore of Stockton Island. Ringed by a half-dozen pipe carriers plus another 60 participants, Leon Boycee Valliere presided over a ceremony October 11 that would consecrate the first cultural burn within the storied Apostle Islands archipelago in generations.

"By doing this ceremony, we're seeking authorization," said Valliere of Lac du Flambeau. "We're looking to do this in a good way." Valliere said he explained to the island and its spirits in Ojibwemowin that the coming burn would help cleanse and refresh the landscape, restoring plant and animal communities that have faded after years of fire suppression.

A few weeks later the controlled burn was completed over three days, executed by an experienced team comprised of National Park Service, Bureau of Indian Affairs, and US Forest Service specialists. From start to finish, the effort represents a major step toward bringing native know-how into the mainstream.

An interagency fire crew led by Dave Pergolski, Bureau of Indian Affairs, conducts a prescribed burn on the Stockton Island tombolo in late October. Emulating traditional native practices, the burn will help maintain a rare red pine barrens and generate native plant growth including blueberries. (Sara Sutton, NPS APIS photo)

TEK and a management (r)evolution

When Apostle Islands National Lakeshore (AINL) Park Ranger Damon Panek started fighting wildfires at the turn of the century, natural resource management agencies typically adhered to a long-standing policy of fire suppression. Deadly, monstrous conflagra-

(see Native fire, page 3)

Fall harvest = hearty wintertime bread & soups

Acorn squash

Wild rice meal and finished manoomin.

Learn more:
www.glifwc.org/publications/#Books

Mii o`apii aadizookeng biboong.

It is the time for storytelling in winter.

Line 3 Replacement Project in MN

By Esteban Chiriboga, GLIFWC GIS Specialist

The Minnesota Department of Commerce recently completed the Final Environmental Impact Statement (FEIS) for the Line 3 replacement project that Enbridge Energy is seeking to build. This new pipeline would replace the aging Line 3 pipeline and would continue transporting light crude oil from the Bakken oil fields in North Dakota to the oil terminal in Superior, Wisconsin (see map).

GLIFWC, along with many tribes, submitted comments and provided information throughout the development of the document. The FEIS contains a chapter focused on the tribes, and how they may be impacted due to changes in the environment and natural resources; however, in its comments to the Department of Commerce on the FEIS, GLIFWC noted that these impacts do not factor into the overall conclusions and recommendations in a meaningful way.

Environmental risks are considerable

The FEIS developed environmental impact information for a number of proposed pipeline routes and compared them to determine the route with the least impact ("preferred route"). The tribes' noted that the FEIS did not consider routes outside of the tribes' Ceded Territories within areas already impacted by more intensive infrastructure development. All of the routes considered in the EIS travel within, or nearby, wild rice lakes.

The preferred route would impact over 675 acres of wild rice lakes, including 181 acres of lakes with documented wild rice harvest. This route would also impact over 5,700 acres of sensitive ecological areas, 618 domestic water wells and 20 public water supply wells.

If permitted, the pipeline would cross 174 streams, over 5,600 acres of wildlife habitat and would lead to increased habitat fragmentation. Impacts to wetlands were not fully examined because detailed wetland delineations were not performed during the EIS process.

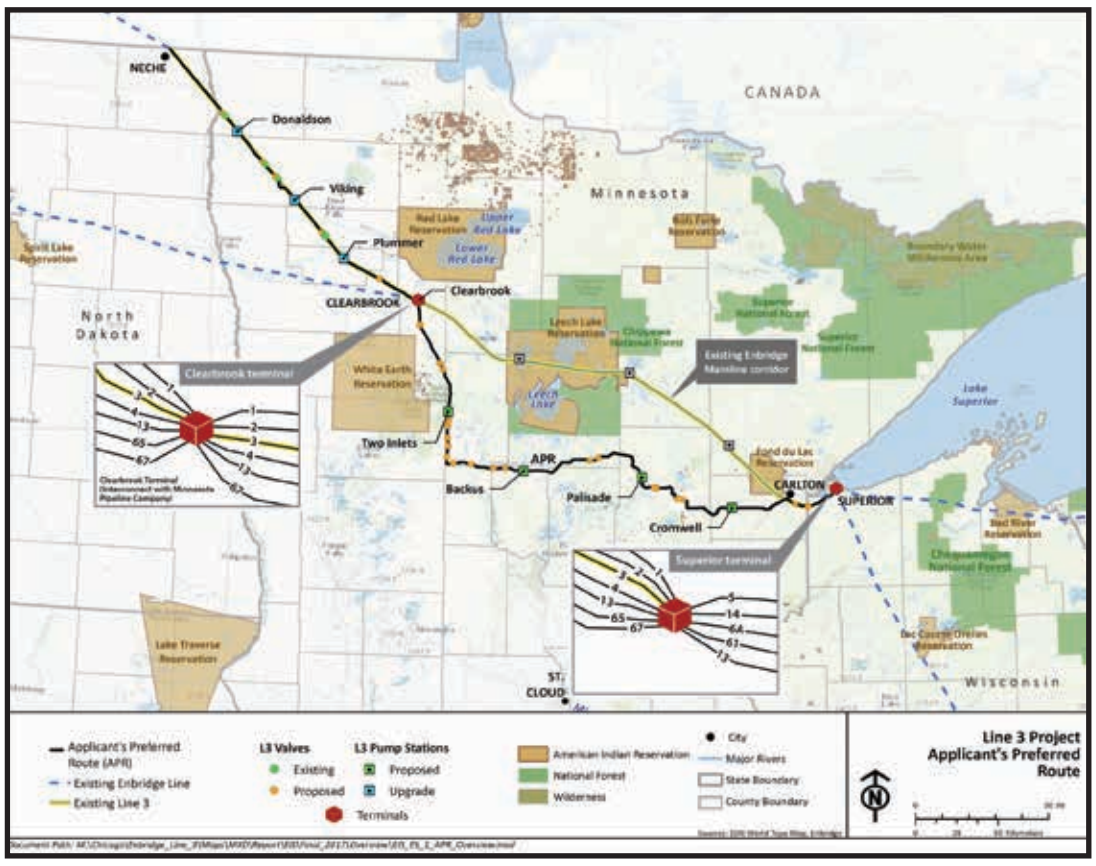


Figure from the FEIS showing the location of the existing Line 3, and the preferred route for the replacement pipeline.

All of the routes considered in the EIS travel within, or nearby, wild rice lakes. The preferred route would impact over 675 acres of wild rice lakes.

The need for the pipeline is questionable

To support its analysis, the Minnesota Department of Commerce hired an independent energy consultant to conduct an analysis of the oil market. The purpose of the analysis was to establish the need for the pipeline given that there are many other pipelines currently transporting oil throughout the region.

The overall conclusion was that Enbridge has not established a need for the pipeline. Establishing this need is required under state law. The reports indicate that the economic benefits of the new pipeline would mostly occur outside the state, and the Ceded Territories, while environmental and socioeconomic risks would remain in the state.

Deer registrations up, bear registrations down from 2016

The dagawaagin (fall) hunting season has been quite productive for waawaashkeshi (deer) hunters and below average for makwa (bear) hunters in the Ceded Territories. From the start of the season (the day after Labor Day) through December 1, Ojibwe hunters registered 1,655 deer and 23 black bears. At the same time last year, tribal members had registered 1,448 deer and 48 black bears.

This is the first year tribal hunters have had the option of registering their deer remotely, via phone. Of the 1,655 deer registered so far, 357 (21%) of waawaashkeshiwag have been registered using the new phone registration system. Depending on the year, tribal hunters will generally have registered about half of the number of off-reservation deer that will be taken over the entire hunting season by mid-November. The peak of the off-reservation tribal deer harvest typically falls over the second, third, and fourth weeks of November.

—T. Bartnick

On the cover

Ojibwemowin on the go. Join Amik and tap into GLIFWC language resources including audio and interactive website activities at *www.glifwc-inwe.com*. Learn more on page 23. (Wesley Ballinger graphic)

Michigan orders repairs, safety improvements to Line 5

Amid mounting concerns about the structural safety of Line 5, Michigan officials called on Enbridge to take immediate steps to help ensure the environment is protected from potential spills. Constructed in 1953, the 645-mile Line 5 runs from Superior, Wisconsin to Sarnia, Ontario, transporting up to 540,000 barrels of crude oil daily. The line crosses vast areas of the 1836 and 1842 Ceded Territories where Ojibwe and Ottawa tribes hold off-reservation treaty rights to natural resources.

Oil-transport company Enbridge recently entered into an agreement with the State of Michigan to address the state's concerns regarding the line's safety. According to the agreement, Enbridge is required to replace a portion of Line 5 that crosses underneath the St. Clair River and conduct a suite of studies to improve safety along the route, including the area of highest concern for regulators—the Straits of Mackinac, where the underwater pipeline runs across the lakebed at the intersection of Lakes Michigan and Huron. The state developed the list of requirements after discovering that Enbridge failed to reveal multiple deficiencies in the pipeline at the Straits, including washed away pipe supports and missing areas of protective coating on the line.

Another Enbridge pipeline (Line 6B) dumped an historic 1.1 million gallons of oil into the Kalamazoo River system in 2010, devastating waterways and wetlands. The Canadian company spent more than $1 billion over four years in an effort to clean up the massive spill.

Concerned about the age and condition of the line, the Bad River Tribe called for removal of Line 5 from reservation lands in far northern Wisconsin early in 2017. The line also carries natural gas liquids, which are refined into propane.

—CO Rasmussen

Zorn to retire from GLIFWC

In a letter to the GLIFWC Board of Commissioners October 20, Executive Administrator James E. Zorn announced his retirement effective May 21, 2018. The six-month interim provides time to complete a smooth and successful transition.

"The depth of my gratitude for the opportunity to serve the Commission for nearly 31 years is immeasurable," Zorn wrote. "It is time for a new phase in my life that offers wonderful opportunities for me and my family."

GLIFWC has launched a search for Zorn's successor. The Executive Administrator serves in key leadership and liaison roles regarding the co-management of Ceded Territory natural resources by GLIFWC's tribes and with external federal, regional, state, local, and international agencies. For more see *www.glifwc.org*.

Ceded Territory news briefs

Stocked walleye prosper on Minocqua Chain, still no natural reproduction

Two years after the Voigt Intertribal Task Force and the Wisconsin Department of Natural Resources (WDNR) agreed to close Minocqua, Kawaguesaga, and Tomahawk Lakes to walleye harvest, stocked fish are surviving well, but natural reproduction has not yet returned.

Ojibwe tribes and WDNR agreed prior to the 2015 fishing season that the walleye population on the chain of lakes was low enough to warrant special protection from harvest in order to help the walleye recover. Thus far, extended growth walleye fingerlings stocked in the fall have been surviving in good numbers to their second autumn, but natural reproduction is lagging.

GLIFWC and WDNR plan to continue annual fall surveys to evaluate natural reproduction and juvenile survival, and will conduct adult walleye population estimates on the chain in spring 2019. **—M. Luehring**

GLIFWC receives ANA grant for traditional food code models

As part of an effort to expand use of treaty-harvested fish, game, and plants for food in tribal communities, GLIFWC is establishing a traditional food regulatory system through a 3-year Administration for Native Americans (ANA) SEDS (Social Economic Development Strategies) grant.

Entitled "GLIFWC Chippewa Ceded Territory Traditional Food Regulatory System Project," the program increases tribal self-regulatory capacity and sovereign control over activities relating to the use of treaty resources.

Within the next months, project specialists will be administering a Traditional Food Interest Survey via SurveyMonkey® along with paper surveys in GLIFWC tribal communities. The survey will allow project staff to conduct environmental and legal research into traditional Anishinaabe foods that tribal members would like to see incorporated into a food code model. Stay tuned to the GLIFWC Facebook page for the survey link. **—L. Coffin**

Trumpeter harvest a first in modern era

A St. Croix Tribe hunter registered the first legally harvested trumpeter swans taken in Wisconsin in nearly a century. Two trumpeters were harvested in northwest Wisconsin's Burnett County December 4.

Extirpated from the Ceded Territory generations ago, trumpeter populations have soared over the past decade through the restoration efforts of state, federal, tribal and private organizations.

Recent population estimates indicate that nearly 5,000 birds now live in Wisconsin, and more than three times that many in Minnesota. In consultation with US Fish & Wildlife Service, GLIFWC first added a tundra/trumpeter swan hunting season in 2014. Under treaty hunting regulations, the annual general swan season closes if the trumpeter harvest reaches 10 birds. **—CO Rasmussen**

Rain, water levels contribute to uneven manoomin yields

By Peter David, GLIFWC Wildlife Biologist

CO Rasmussen photo

Every manoomin (wild rice) season seems to bring something new, and something ancient. Often a new teaching is provided, along with reminders of lessons shared year after year.

In many ways, it was a challenging year for manoomin, especially in Wisconsin, where a summer of cool temperatures and seemingly endless rain elevated water levels across broad regions of rice country. The status of the crop generally reflected an inverse relationship with rainfall.

Northeast Wisconsin was very wet, and the crop was poor—with a record number of date-regulated rice lakes remaining closed in that region for the year. Northwest Wisconsin was less drenched, and pulled off a fair to average crop. And remarkably, further west into Minnesota, precipitation levels were far lower, and in many areas the rice flourished.

It will be interesting to see what the respondents to the annual Wisconsin harvest survey will tell us (*and **please** respond if you receive a survey*), but early returns suggest that despite these tough conditions, the manoomin still provided remarkably generously for those who ventured out to gather the grain. It seems as though three things may have combined to make that possible: a bit of technology, a bit of luck, and a bit of respect.

The technology—and part of the luck—came in the form of the air surveys and the internet: a few clear sky days just before ricing season allowed GLIFWC to complete its annual aerial surveys of manoomin lakes. Ricers are logging on more than ever to use that information to find the beds most able to provide good

(see Manoomin, page 15)

Native fire management continued

(continued from page 1)

tions in late 1800s and early 1900s swallowed lives and entire towns from Wisconsin to the mountains of the West. Backed by a public awareness campaign featuring Smokey the Bear, land managers worked to snuff out every errant flame throughout America's woodlands. But a fundamental change in attitudes toward wildland fire was emerging.

In a sweeping 1996 report chartered jointly by the Secretaries of Interior and Agriculture, federal land managers recognized that a century of fire suppression had built up massive woody fuel loads, creating threats to human life and property. Ecosystems, furthermore, were no longer fully functional without the benefit of wildland burning. The seeds for a future with fire management were sewn.

"More and more federal agencies identified fire as an important part of the landscape," Panek said. "They were becoming more receptive to input from tribes too."

After a few years, Panek took an assignment from Park Supervisor Bob Krumenaker to update fire management plans for the AINL. Experience on western wildfire crews and interviews with elders on the Red Cliff Ojibwe Reservation helped crystalize a vision for the Apostle Islands and mainland portions of the park.

"As I developed an understanding, a certain comfort level with fire, I saw cultural opportunities along with

Tribal members share stories following the October 11 ceremony and feast on Stockton Island. Park Ranger Damon Panek (pictured second from right) led an afternoon hiking tour of the tombolo and prescribed burn site. (CO Rasmussen photo)

opportunities to improve some really rare habitat," said Panek, a White Earth Ojibwe who tapped into traditional ecological knowledge, or TEK, to establish how local Ojibweg interacted with the land. "I knew native people had traditionally picked blueberries out on Stockton Island from oral stories. They maintained good picking by rotational burning. There are fire scars and charred stumps everywhere, which backs up everything people have said."

On this same landscape—located on a sandy peninsula-like feature called a tombolo—an uncommon swath of red pine barrens was long overdue for a low-intensity fire to burn away competitive shrubs, hardwoods and other species. Krumenaker said that without fire, the tombolo would transition into mixed-species forest.

"This is a globally significant ecological system. But what's really unique, what makes it so special, is that it got this way because of humans," Krumenaker said. "This is the best combination of cultural heritage and land management that I can think of."

A good burn

Around a week after the ceremony, the 10,054-acre island soaked up a light, steady rain followed by five days of drying. With the arrival of a gentle breeze, Panek said conditions were perfect.

The interagency crew set up around the 5-acre burn site on a mowed firebreak with an assortment of equipment, including hoses that tapped water from an adjacent creek. Limbs from large spruce and balsam were sawed off well before the drip torches were lit. Between branch removals and spot-spraying with the water hose, crews were able to keep much of the burn confined to the forest floor and out of the tree tops away from the large red pines.

Positioned at a safe distance from the action, the late October burn on the Stockton tombolo included a handful of natives from Red Cliff, Bad River, and Fond du Lac—many who had attended the ceremony weeks earlier with other tribal representatives and GLIFWC staff.

"You think about it, some Bad River and Red Cliff members out there are descendants of those who used to go out and pick berries, interact with that island," Panek said. "Now they are back on the landscape during a burn like their great grandparents."

The Park Service, tribes and their partners plan to continue cultural-based management on Stockton Island well into the future.

Tribes putting the MOU to work

By Alex Wrobel, GLIFWC Forest Ecologist

In recent years, due to an increase in costs associated with home heating, the tribes have looked to the Memorandum of Understanding (MOU) entitled *Tribal-USDA Forest Service Relations on National Forest Lands within the Ceded Territories in Treaties of 1836, 1837, and 1842* to provide an additional fuelwood source for their communities beyond what can be harvested from reservation lands.

Pursuant to the MOU Gathering Code (which provides the basic regulations for tribal members gathering plants in Ceded Territory National Forests), with a small-scale firewood permit tribal members may:

- Harvest up to ten cords of firewood.
- Generally only gather dead and down trees.
- Not cut any standing dead trees within 100 feet of any road or designated use area.
- Not cut down standing dead trees on the National Forest within 200 feet of a pond, lake, stream or river.
- Not cut any live tree for firewood unless your tribe has issued you a special permit to do so.

While collecting dead and down trees may suffice for singular household needs, tribes have identified the need to provide fuelwood for their communities at a broader scale. To fulfill this need in an efficient manner, the tribes would need to harvest live standing timber in addition to dead and down trees. Here are some circumstances that you may receive a harvest permit to cut live trees for firewood:

- There is a designated National Forest "firewood sale" location, or
- A sugarbush permit allows you to do so, or
- You possess a small scale timber permit which is valid for five live trees.

In addition, your tribe has the opportunity to negotiate an agreement to harvest live standing timber under Appendix C of the MOU, the *Tribal Timber Harvest Framework Agreement*. Initially, tribes worked with GLIFWC and the appropriate District Ranger to develop locations where live trees could be harvested by hand, however it was soon discovered that the amount of man-power and resources needed to harvest large amounts of timber are outside of the capacity of hand-felling operations. This started a conversation about tribes contracting to logging companies, not only to harvest the timber needed for the tribe, but to also fulfill management objectives for the US Forest Service (USFS).

Currently, there are four tribes with signed Operating Agreements to carry out mechanized logging operations on National Forest lands in the Ceded Territories with three others under negotiation. While this is a relatively new concept, it is yet another example of the successful working relationship that the tribes have developed with the USFS on ceded lands.

Parties interested in small-scale permits for firewood can contact their tribal registration office. Tribes interested in harvesting timber under the Timber Harvest Framework can contact their Voigt Intertribal Task Force representative, or myself at *awrobel@glifwc.org*.

Sokaogon's Wayne LaBine and Mark Dilly, US Forest Service, inspect a firewood harvest site. (A. Wrobel photo)

CWD threat looms across region

(continued from page 1)

New CWD detections in 2017

Wisconsin: CWD-positive deer were found on captive hunting ranches in Waupaca and Shawano counties. State authorities announced the new detections in October 2017. Game farms can be problematic because the disease can spread by nose-to-nose contact through the fence, or in the event a captive deer escapes into the wild. The Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP) has no plans to depopulate the hunting ranches despite the risk of other potentially undetected CWD-positive deer coming in contact with the free-ranging population.

Michigan: A free-range white-tailed deer in southern Michigan tested positive for CWD in late September. The 1.5-year-old buck was harvested in Montcalm County during the state's youth hunt. Thus far, 10 free-ranging white-tailed deer have tested positive in Michigan's Clinton, Ingham, and Montcalm counties.

Minnesota: After officials traced a CWD-positive deer from a Crow Wing County deer farm to a Meeker County deer farm, the Meeker County deer farm was depopulated in April 2017. Of the 14 deer that were euthanized, four tested positive for CWD. Two of the four CWD positive deer came from a Wright County deer farm in 2014. The Wright County deer farm remains under quarantine.

Education and outreach

GLIFWC wildlife biologists recently worked with other Commission staff, an intertribal CWD working group, and CWD experts to develop and publish an informational brochure focusing on the threat the disease imposes on waawaashkeshi in the Ceded Territories. The brochure can be found at tribal registration stations throughout the Ceded Territories. In addition, GLIFWC has added a CWD page to their website. The page has answers to frequently asked questions, safe handling and carcass disposal recommendations, and testing information. The website also includes an interactive map that displays the current distribution of CWD positive detections in both captive and free-ranging populations of deer in Minnesota, Wisconsin, and Michigan. Access the new GLIFWC CWD website here: *https://data.glifwc.org/cwd/*.

Another way GLIFWC biologists and policy staff have promoted education and outreach of the CWD issue has been through public information meetings in tribal communities. Last fall I traveled with GLIFWC Policy Analyst Philomena Kebec to the Sokaogon Mole Lake and Lac du Flambeau communities to speak about CWD with tribal hunters and other community members. The attendees expressed concern about CWD and asked many questions related to how CWD might impact the deer herd, or their traditional methods of deer hunting.

In early November, the Wisconsin Department of Natural Resources hosted a CWD sampling training session in Rhinelander. Members from Lac du Flambeau and Lac Vieux Desert communities and a GLIFWC biologist participated in the training. The session included background information on CWD testing, a tutorial about aging deer based on tooth eruption and wear, and hands-on extraction of lymph nodes from recently harvested deer. The objective of this training was to provide representatives from local tribal communities with an understanding of how to extract samples for CWD testing. GLIFWC has facilitated CWD testing for deer harvested in the Ceded Territories in the past and will continue to do so upon request. In addition, the Wisconsin DNR has extended an offer to help provide testing opportunities to tribal members.

Carcass transport is another potential avenue that wildlife diseases, including CWD, can spread. Phone registration has been implemented for deer this fall, primarily for hunter convenience, but it will also help to minimize the risk of spreading wildlife disease via carcass transport. Successful tribal deer hunters are encouraged to register their harvest over the phone at 844-234-5439. You will need your NAGFA ID number, carcass tag number, date of harvest, county, and management unit to register your harvest.

See *glifwc.org/Regulations/GLIFWC.phone.registration.instructions.pdf* for detailed instructions.

Elk herd health

One issue that keeps coming up in discussions about CWD is how the disease could also affect the omashkoozoog (elk) populations that are part of restoration efforts conducted over the past few decades. A great deal of financial and logistical planning has gone into the elk restoration program. Arduous steps were taken to ensure the elk were sourced from an area where CWD has not been detected and that any feed given to the translocated elk while in quarantine pens was sourced from areas that were CWD-free.

Tribal gaming contributions to Wisconsin's elk reintroduction program total $1.7 million since 2001. State agencies and other groups, such as the Rocky Mountain Elk Foundation have also made significant contributions to the elk restoration efforts in Wisconsin. However, the issue of CWD is not going away and the threat to free-ranging white-tailed deer and elk populations continues to grow as CWD spreads. GLIFWC wildlife biologists will continue to investigate potential actions that can be taken to further protect wild deer and elk populations that are so important to tribal communities throughout the Ceded Territories.

Pick up the phone hunters!

Successful tribal deer hunters are encouraged to register their harvest over the phone at 844-234-5439. You will need your NAGFA ID number, carcass tag number, date of harvest, county, and management unit to register your harvest.

Phone registration eliminates the need to transport your harvest to a registration station, and can help prevent the spread of wildlife diseases, including CWD. Turkeys and cranes can also be registered over the phone, see *glifwc.org/Regulations/GLIFWC.phone.registration.instructions.pdf* for detailed instructions.

Whitefish traditions, research span northern hemisphere

13th International Coregonid Symposium

By Charlie Otto Rasmussen, Editor

Bayfield, Wis.—Researchers from around the globe gathered in far northern Wisconsin September 10-15 to share insights about coregonids, a broad, silver-scaled fish that forms a centerpiece of some fresh and saltwater fisheries. Best known to anglers and restaurant diners as whitefish, in Lake Superior these also include cisco (lake herring), chubs (bloater, kiyi, shortjaw), and menominee (or round whitefish).

While talk of bathometric profiles and spatial genetics permeated every corner the Bayfield Pavilion, certain plainspoken truths emerged from this international gathering of scientists. Among them, whitefish are intimately linked to human communities across the northern hemisphere. From four-season northern hemisphere ports, generations of commercial fishermen continue to provide for extended families and keep fresh whitefish on the menu at local eateries.

"In Puck Bay, there is a huge tradition, a family tradition, of fathers and sons that catch whitefish for many years," said Ana Was, senior scientist at Poland's National Marine Fisheries Research Institute. "It's a big tourist area. They want to sell a high-quality product."

For folks acquainted with Great Lakes fishing towns, Poland's Puck Bay region on the south Baltic Sea sounded pretty familiar—where regional economies are built around waterfront vacationlands that feature flavorful coregonid (kor-EE-go-nid) populations. The pattern is replicated in Ojibwe Country in places like Bayfield, Paradise, and Petoskey. For Ojibwe speakers, the fish is *adikamageg*. In the Polish language, it's *sieja*. Both translations carry deeper meaning, of people and natural resources intertwined.

More than 125 people from three continents attended the 13th International Coregonid Symposium. Sponsored by GLIFWC, Red Cliff Band, and eleven other organizations, the event featured 78 speakers and three-dozen poster presenters—all gathered at the shore of Lake Superior.

Echoing the cultural importance of whitefish to Great Lakes Indians, Scandinavian researchers shared stories that date back to the Middle Ages. Although the Tornionjoki River marks the border between Sweden and Finland, its whitefish resource unites villages on either bank. Local educators are working to preserve the cultural history of the area by incorporating fishing heritage into school curriculum. Oral histories with elder fishermen are also underway to document traditional fishing methods, food preparation, and to draft instructions on how to construct a krenkku—a wooden pier that provides access to whitefish dipnetting locations. For more visit the Symposium website www.coregonid2017.com

—Bill Mattes contributed to this report.

Flags from 13 nations, including Red Cliff Band, were displayed at the 13th International Coregonid Symposium where scientists shared whitefish research and talked about the unique place these fishes have in cultures around the northern hemisphere. (CO Rasmussen photo)

GLIFWC researchers investigating role of splake on native fish populations

By Bill Mattes, GLIFWC Great Lakes Biologist

Upper Michigan—Last fall GLIFWC's Great Lakes Section crew collected samples from splake and lake trout at the Copper Harbor spawning reef in Lake Superior. These samples are being analyzed to determine the genetic makeup of the fish to determine if splake are spawning successfully with lake trout at the reef. The genetic analysis will also verify the accuracy of species identification.

Splake are a hybrid fish reared in hatcheries, spawned by crossing a male brook trout with a female lake trout. Splake exhibit hybrid vigor—they grow slightly faster than lake trout or brook trout, making them sought-after by sport fishers in harbors and bays around Lake Superior. Tribal fishers can keep them for subsistence use but currently cannot commercially harvest or sell the fish.

Brook trout and lake trout typically do not hybridize in the wild. Brook trout spawn in streams, or very near shore reefs, over small gravel where they make redds (small indentations in the gravel). Lake trout spawn on reefs submerged by 15 to 50 feet of water over large cobble where fertilized eggs settle into the spaces between the rocks to grow and hatch.

Splake, however, have been observed in streams where brook trout are spawning, as well as on reefs where lake trout are spawning. These observations highlight a potential risk associated with the practice of stocking splake in areas where brook trout and lake trout populations thrive. Splake are fertile so there is the possibility of interbreeding. The continued success of brook trout and lake trout restoration in Lake Superior may be at risk if this interbreeding occurs, causing detrimental effects on the wild populations of lake trout and brook trout.

Much genetic work has been done documenting the ill effects hatchery fish have on wild populations of fish. This could be the case with splake. Considering the 30-plus year investment in lake trout recovery following the sea lamprey invasion, and the continued need to limit fishing for all species based on the number of lake trout available to harvest, it is prudent to investigate whether or not splake are having a negative impact.

USFWS photo

Ishpaagoonikaa
Deep Snow Cultural Camp
Lac Courte Oreilles, Hayward, WI
January 26-28, 2018

Ishpaagoonikaa seeks to increase knowledge and utilization of treaty rights in harvesting and protecting natural resources, encourage environmental stewardship, and promote natural resource careers.

Additionally, the program strives to increase leadership skills in tribal youth, foster intergenerational learning opportunities between tribal elders and tribal youth, and focus on passing traditional Anishinaabe winter activity knowledge from generation to generation.

This year's Ishpaagoonikaa program will be held in Hayward, Wisconsin, on January 26-28, 2018, where GLIFWC's Law Enforcement Division will partner with the Lac Courte Oreilles Band of Lake Superior Chippewa Indians.

Tribal youth will interact with elders, cultural knowledge sharers and GLIFWC staff in activities such as traditional tip-ups and ice spearing, storytelling, small game trapping/snaring, animal processing, outdoor cooking, brain tanning, animal and track identification, winter shelter building, ishkode (fire) making, outdoor survival tactics, snow snake play, snowshoeing, cultural crafting, and moccasin games. This year will also feature an optional sweat lodge. This program seeks youth in grades 4-10. Older youth may apply to serve as mentors.

Participants must spend both nights in the LCO school gym, 8575 N Trepania Road, Hayward, WI. The program will start on Friday at 6:00 pm CST and conclude Sunday at 1:00 pm.

For more information, including an application to attend camp, please contact:

Heather Bliss
GLIFWC LE Outreach Officer
(906) 458-3778
hnaigus@glifwc.org

Patti Quaderer
LCO Trails Coordinator
(715) 558-7449
Patti.Quaderer@lco-nsn.gov

Ogaa cannibalism, habitat research slated for Mille Lacs Lake

BIA grant supports 2018 interagency study

By Mille Lacs and GLIFWC Inland Fisheries Biologists

In spring of 2018, the Mille Lacs Band of Ojibwe, GLIFWC, Fond du Lac Band of Lake Superior Chippewa, and US Fish & Wildlife Service will begin an ogaa (walleye) tracking study in Mille Lacs Lake. Currently in Mille Lacs Lake, adult ogaa are primary consumers of juvenile ogaa, which is resulting in a decline of adult/harvestable fish. While the causes behind the walleye cannibalism are unknown, a recent Minnesota Department of Natural Resources (MDNR) diet study showed that it is occurring during the warmest months of the year (mid-July to October).

The MDNR diet study result is interesting because ogaa (and all giigoonh, or fish) prefer to occupy depths and habitats that are close to their preferred temperature (juvenile walleye >22°C / >71.6°F; adult walleye 18-22°C / 64.4-71.6°F). It is possible that increased water clarity (partially due to invasive species) and climate change are increasing water temperatures at deeper depths in Mille Lacs Lake, thereby shrinking the amount of colder habitat that ogaawag and other coldwater giigoonh species need to optimize growth and survival (i.e., squeezing coolwater fish into a smaller habitat; Figure 1).

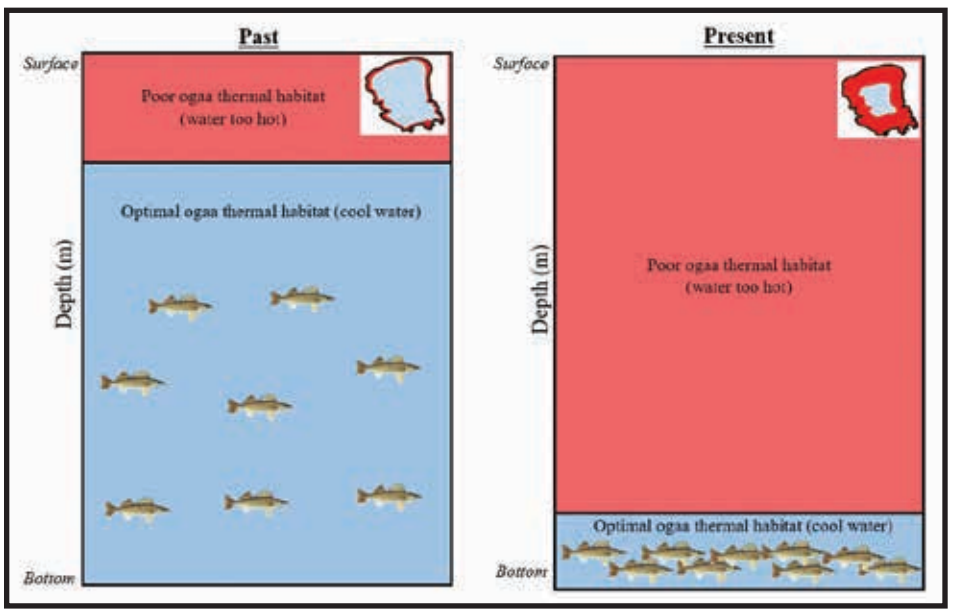


Figure 1. Feeling the squeeze: potential reduction of ogaa thermal habitat in Mille Lacs Lake under warmer conditions.

A reduction in thermal habitat during the warm months may also be changing the abundance and location of coldwater wiisiniwi giigoonh (food fish) that buffer/protect juvenile ogaa against cannibalism. These changes may result in overlap of juvenile and adult ogaa thermal habitat, leading to increased encounter rates and as a result, cannibalism.

To test these predictions, biologists will use acoustic tags to track juvenile and adult ogaa in Mille Lacs Lake, and evaluate changes in habitat use (including thermal habitat) across seasons. By doing so, we hope to shed some light on why and where ogaa cannibalism is occurring in Mille Lacs Lake. This research will contribute to the ongoing efforts to rehabilitate walleye stocks in Mille Lacs Lake.

Funding for the project comes from a Bureau of Indian Affairs Tribal Fish and Wildlife Grant. For more information contact Mille Lacs Band Biologist Carl Klimah at *Carl.Klimah@millelacsband.com*.

—Carl Klimah, Aaron Shultz, Adam Ray, Mark Luehring, Joe Dan Rose and Ben Michaels

Sea lamprey wounds reveal a broad diet

By Bill Mattes, GLIFWC Great Lakes Biologist


B. Michaels photo

Invasive sea lamprey are ferocious feeders and will attack just about any fish that swim their way. While lake trout are a historic favorite of parasitic lamprey, GLIFWC researchers are finding wounds on less likely suspects like suckers.

Damage inflicted by sea lamprey on Great Lakes fish populations is estimated by tracking wounding rates on lake trout. To accomplish this, fisheries technicians that are out monitoring commercial and sport fishing, or doing research and assessments, make note of lamprey-wounded lake trout while collecting data like measurements and length. These observations are used to develop wounding rates; combined with adult sea lamprey spawning population estimates, biologists track the success of sea lamprey control in the Great Lakes. Wounding rates, however, might not always follow expected sea lamprey abundances. For instance, in years when sea lamprey numbers have been low, wounding rates on lake trout have been high and vice-versa.

Field staff have observed wounds on various species including lake whitefish, cisco, walleye, and even on the softer undersides of heavily-plated adult lake sturgeon. To better document the scope of lamprey attacks, GLIFWC Great Lakes Section staff have recorded sea lamprey wounds and length from all the fish they handle in assessments and monitoring for the past several years. Sea lamprey clearly prefer more than just lake trout as a meal. By continuing to track sea lamprey wounds on other species fisheries managers anticipate that valuable insights into conflicting trends between lake trout wounding rates and sea lamprey spawning abundances will be gained.

For more information on sea lamprey control in the Great Lakes visit the Great Lakes Fishery Commission website at *www.glfc.org/*. The commission coordinates fisheries research and sea lamprey control, and facilitates cooperative fishery management among the state, provincial, tribal, and federal management agencies surrounding the Great Lakes.

Aquatic invasive species infestations multiply

Native to the southeastern US, Georgia mystery snails are now found in a number of Ceded Territory lakes. (S. Garske photo)

GLIFWC staff wrapped up the annual aquatic invasive species (AIS) survey in September. It was a busy summer as staff surveyed 21 lakes for aquatic invasive species (AIS) in the Ceded Territory of northern Wisconsin and western Upper Michigan.

More than 30 new aquatic invasive species occurrences comprising 11 taxa were found in 2017. Samples for zebra mussels and waterfleas will be examined this winter.

Study lakes were chosen in coordination with tribal, state, county and local management partners. Most sites have high recreational visitor numbers or are in close proximity to infested waters; many are important for tribal ogaa and manoomin harvest.

GLIFWC staff also surveyed three Lake Superior coastal wetlands and area roadsides for common reed (*Phragmites australis*).

In addition, over 1,000 miles of roadsides, trails, beaches and shorelines were assessed. Surveys were done by motor vehicle, motorboat, canoe, biking and walking, as needed.

Four non-native common reed (*P. australis subsp. australis*) populations and 69 native (*P. australis subsp. americanus*) populations were mapped this summer. (The native subspecies is much less aggressive than the non-native subspecies, and generally isn't a problem in natural habitats).

Using a combination of manual, chemical and biological controls, GLIFWC crews treated over 200 invasive plant populations, including populations of wild parsnip, yellow iris, purple loosestrife, teasel, and non-native Phragmites.

GLIFWC staff continued to work cooperatively with the Minnesota Department of Natural Resources, 1854 Treaty Authority, Fond du Lac Band, and St. Louis River Alliance to manage non-native Phragmites on the Minnesota side of the St. Louis River Estuary. Treatment on the Minnesota side was carried out by Duluth Community Action.

—Steve Garske

DNR dredging buys time, $3.1 million effort begins to protect Buffalo Reef in Keweenaw County

EPA forms task force to develop long-term stamp sands management plan

The Michigan Department of Natural Resources (DNR) recently completed an emergency dredging project in Keweenaw County to restore the Grand Traverse Harbor channel for commercial and recreational boating. The $246,230 dredging project, undertaken by Marine Tech, LLC of Duluth, Minnesota, through the DNR's Parks and Recreation Division, pumped 9,000 cubic yards of sand to a beach area north of the harbor.

Previous dredging at the harbor was done by the DNR in 2015 and the U.S. Army Corps of Engineers in 2009 and 2003.

Meanwhile, more extensive sand removal and containment efforts are needed to protect important lake trout and whitefish spawning habitat on Buffalo Reef and a juvenile whitefish area south of the Grand Traverse Harbor, which is situated on the east side of the Keweenaw Peninsula, northeast of Lake Linden.

"Buffalo Reef is a 2,200-acre spawning reef located down drift of stamp sands that have eroded into Lake Superior since the early 1900s," said Phil Schneeberger, DNR Lake Superior Basin coordinator. "It is currently estimated that this reef, critical to both lake trout and lake whitefish populations in the area, is currently 35 percent unusable by spawning fish due to sand that has filled spaces between rocks, which are necessary for successful fish egg deposit and incubation. Furthermore, migrating sands along the shore have made nursery areas unusable by newly-hatched fish."

Nearly a quarter of the annual lake trout yield from Lake Superior's Michigan waters comes from within 50 miles of Buffalo Reef. GLIFWC estimates the annual economic benefit of the reef at $1.7 million.

"The Keweenaw Bay Indian Community (KBIC), as well as other tribes located around Lake Superior, are and have always been, fishing tribes," said KBIC President Chris Swartz. "Since time immemorial, these tribes have used the resources provided by gitchi-gami (or Lake Superior) to sustain their communities. This sustenance is not only physical; it is also spiritual, cultural, medicinal and economic." Swartz said modeling predicts that by 2025, 60 percent of the reef will no longer be viable for lake trout and whitefish spawning.

In this part of the Keweenaw Peninsula, the coarse, black stamp sands threatening the reef were created as a by-product of century-old copper mining at the Mohawk and Wolverine mines.

The mines hauled copper ore from near Calumet 13 miles to a four-stamp mill in the community of Gay, where ore was crushed by the stamps and the copper separated through a flotation process. Stamp sands are the waste material resulting from the milling work. They were dumped into Lake Superior and on the shoreline.

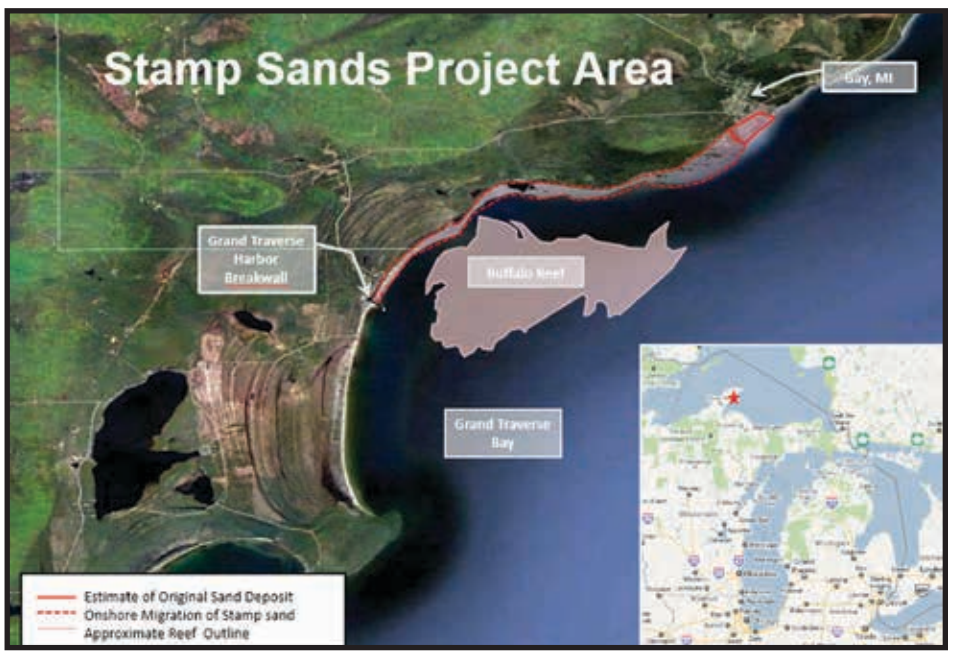
Over the past roughly 80 years, the stamp sands have shifted south — moved by winds, waves and nearshore lake currents—about five miles to the Grand Traverse Harbor, covering 1,426 acres of shoreline and lake bottom.

"Without taking measures to slow the movement and down-drift accumulation of the stamp sands, they will eventually move past the harbor and deposit on the natural white sand beach south of the jetty, at the mouth of the Traverse River," said Steven Check, a project manager with the U.S. Army Corps of Engineers in Detroit.

The DNR has applied for a permit from the Department of Environmental Quality (DEQ), under the Great Lakes Submerged Lands Act (Part 325 of Michigan's Natural Resources and Environmental Protection Act), to allow the Army Corps to remove more of the stamp sands from Lake Superior.

The EPA has provided $3.1 million to the Army Corps to design and carry out the dredging work, scheduled for May 2018. A public comment period on this permit closed Nov. 1. No public hearing for this permit application is planned, with a permitting decision deadline set for Dec. 14.

Under the permit, a total of 172,500 cubic yards of stamp sands are expected to be removed from an underwater bedrock trough, moving the sand to a 37-acre placement site that has the capacity to store 380,000 cubic yards. This 2,350-foot-long by 700-foot placement area, located about 1.5 miles from the dredge location, would be north of Buffalo Reef, behind a temporary berm.



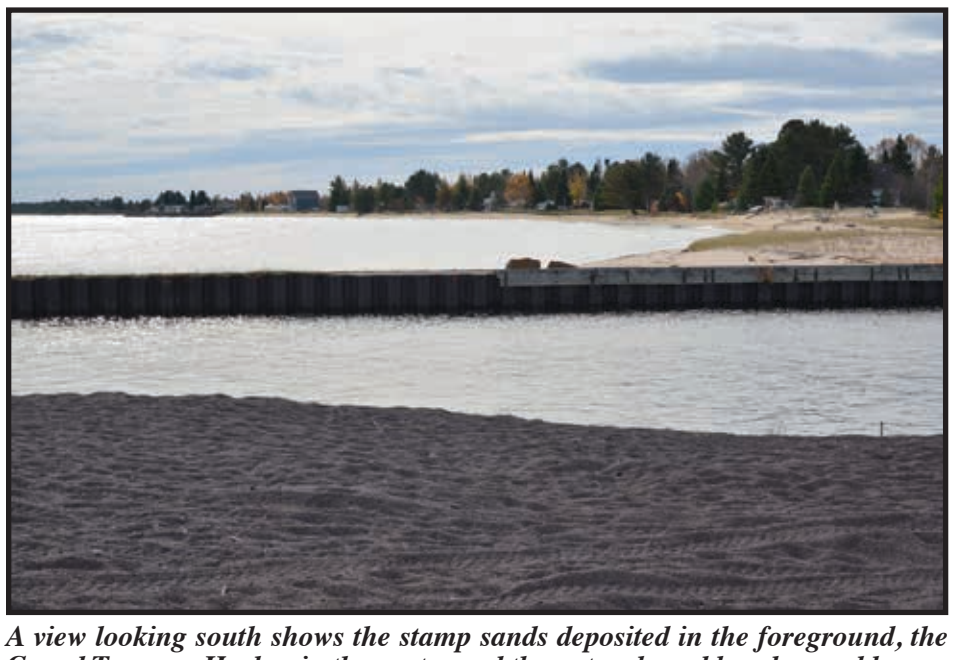
Stamp Sands Project Area. (Michigan DNR graphic)

Another 20,000 cubic yards of sand would be removed from Grand Traverse Harbor, while 10,000 cubic yards of material would be dredged from an upland area next to the harbor, on the beach.

"This dredging project would buy five to seven years of protection for the reef and the whitefish juvenile recruitment area south of the harbor," said Steve Casey, Upper Peninsula district supervisor for the DEQ's Water Resources Division. "In the meantime, we need to develop a long-term, adaptive management plan, a solution, for the Gay stamp sands problem."

The EPA has formed a cooperative multi-entity task force to develop that plan over the next couple of years, which will solicit input from many stakeholders, including the public.

(Editor's note: This Michigan Department of Natural Resources news release is issued in conjunction with the Michigan Department of Environmental Quality, Keweenaw Bay Indian Community and U.S. Army Corps of Engineers.)



A view looking south shows the stamp sands deposited in the foreground, the Grand Traverse Harbor in the center and the natural sand beaches and homes south of the harbor in the background. (Michigan DNR photo)

Ceded Territory news briefs

Mercury pollution at Grassy Narrows spans some 50 years

A study by Japanese researchers reveals that an alarming 90% of Grassy Narrows First Nation residents in northwest Ontario exhibit signs of mercury poisoning. The results back up what the Asubpeeschoseewagong people have believed for decades—industrial contamination continues to cause serious health problems.

Upstream from the Ojibwe reserve on the English-Wabigoon river system, paper mill operators began dumping mercury in 1962 and continued into the 1970s. A byproduct of the paper-bleaching process, mercury transforms into the neurotoxin methylmercury when released into the environment.

By ingesting mercury-tainted walleye, community members experienced numbness, imbalance, headaches, sensory impairments and a range of disabling conditions. It has been especially harmful to developing children.

While Ontario officials have been slow to fully address the toxic legacy of the old paper mill, authorities are establishing groundwater monitoring stations in an effort to locate mercury-filled drums reportedly buried after direct discharge into the river ended in the 1970s.

At *Mazina'igan* press time, Indigenous Services Minister Jane Philpott announced the government would fund the creation of a treatment center for community members suffering from mercury poisoning. **—CO Rasmussen**

NCAI 2017 mid-year conference

The National Congress of American Indians held their mid-year conference in downtown Milwaukee October 15-20. Tribes from all over the United States attended and leaders shared their views at various consultations and working sessions. Over 1,700 people attended more than fifty different sessions.

Among the conference standouts, over 90 tribal youth ambassadors participated in the youth track. A number of sessions included a special youth and elder roundtable, which spurred conversation between the two generations.

Many former federal government appointees and new administration officials spoke out on issues and listened to tribal concerns. A total of 50 resolutions were passed throughout the week. **—D. Jennings**

Fall surveys track fish & contaminants in Gichigami

Wild weather produces 100 mph winds

By Ben Michaels
GLIFWC Fisheries Biologist

The crew of GLIFWC's Great Lakes Section again braved the cold, windy weather around the Keweenaw Peninsula of Lake Superior in an effort to tag and release spawning lake trout and lake whitefish. Individual tags help researchers monitor the relative abundance and geographic movement of these two important species. Biological characteristics including length, weight, sex, age, and sea lamprey wounding rates are also collected each year during the fall assessment.

This year seems to have been particularly windy with 20+ mph winds being fairly common. On October 24 wind conditions were quite fierce all across Michigan waters of Lake Superior.

A buoy located near Munising, Mich. recorded a wind speed of 107 mph and a wave height of 28.8 feet! On that same day, Grand Traverse Bay Harbor, located near Gay was mercilessly pounded by onslaughts of massive waves, which caused stamp sands to fill back into the harbor channel, reversing all the dredge work that the Michigan Department of Natural Resources had done earlier in the fall to remove this traffic-impeding sand from the canal. Needless to say, GLIFWC's assessment crew decided not to set nets that day.

In addition to the fall assessment work, GLIFWC Great Lakes Section continued to participate in the Environmental Protection Agency's (EPA) Great Lakes Fish Monitoring and Surveillance Program, which was established in the 1970's to monitor the potential presence of contaminates within body tissue of predatory fish from each of the Great Lakes.

While GLIFWC's assessment crew went about their normal business of setting gill nets for lake trout during the fall assessment, some of those fish were retained for the EPA to analyze for the presence of contaminates, such as Polychlorinates Biphenyls (PCB's) and Polybrominated Diphenyl Ethers (PBDEs), which can pose human health risks. Due to Lake Superior's size, depth, and temperature, lake trout within this Great Lake commonly have relatively low levels of these contaminates compared to the other Great Lakes.

For questions or comments contact Ben Michaels at *smichaels@glifwc.org*.

Vulnerability of ginoozhe to climate change

By: Hannah Panci, Kim Stone, Melonee Montano and Aaron Shultz
GLIFWC Staff

Figure 1. Range map of ginoozhe.

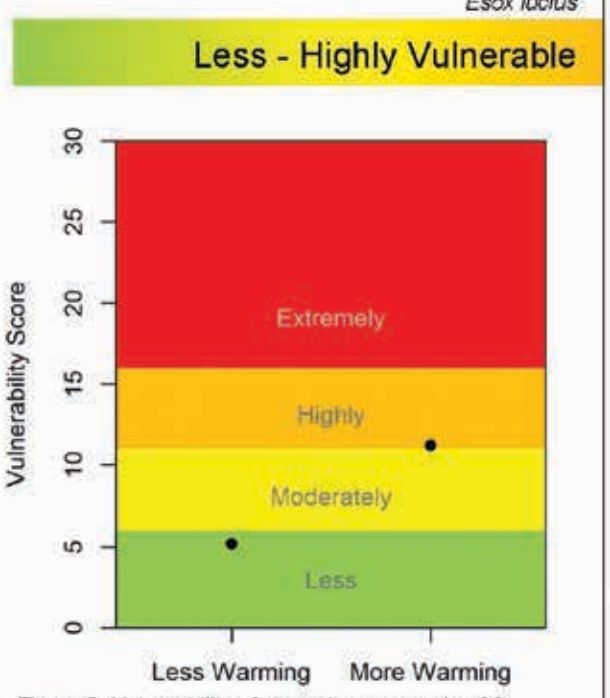


Figure 2. Vulnerability of ginoozhe on a scale of 0 (lowest vulnerability) to 30 (highest vulnerability). Dots indicate average score; lines indicate possible range of scores for each warming scenario.

General Description:

Ginoozhe is not as commonly harvested as other fish species such as ogaa (walleye) but it remains an important part of the Anishinaabe lifeway. It is one of the species carved for fish decoys on the Lac du Flambeau reservation. In the Bay Mills Indian Community, the Ojibwe name is Ginoozhekaaning, which refers to the place of the pike. Ginoozhe is also the main subject of many Anishinaabe dibaajimowinan (stories) told around the Great Lakes as well as other areas such as the Lac La Croix First Nation of Ontario Canada, where the creation of ginoozhe is said to have occurred near the reserve at Pictured Rocks.

Ginoozhe live in lakes and rivers throughout the Ceded Territories and are harvested by Anishinaabe and state anglers. Ginoozhe spawn over flooded vegetation (e.g., wetlands) in early spring, shortly after ice-out. Young ginoozhe avoid predators by seeking shelter in vegetated habitat. Adult ginoozhe prefer similar habitats so they can ambush prey from cover.

The population of ginoozhe is unknown in most water bodies in the Ceded Territories, but it is believed to be stable. In the well-studied Mille Lacs Lake, the population of ginoozhe, on average, has increased by approximately 12,500 fish per year between 1993 and 2006.

Some tribal members mentioned ginoozhe in the context of climate change during their interviews. One member from the St. Croix tribe indicated that foodweb interactions might be altered as the climate changes, with a specific reference to the timing of spawning of northern pike influencing other species. A Mille Lacs band member indicated that northern pike populations have increased in Mille Lacs Lake, but this increase may or may not be climate related.

Climate Change staff are conducting a climate change vulnerability assessment for the 1837 and 1842 Ceded Territories of over 60 species of importance to GLIFWC's member tribes. The assessment uses the Climate Change Vulnerability Index (CCVI) tool as well as input from regional species experts.

Climate Change staff have been conducting interviews with tribal elders and harvesters from each of the GLIFWC member tribes. A final report will integrate Traditional Ecological Knowledge (TEK) and Scientific Ecological Knowledge (SEK) to assess the vulnerability of these species to climate change.

To the left, is an example of the results you can expect from this report; look for more results in future editions. If you have any comments or questions about our assessment, please contact Climate Change program coordinator Kim Stone at *kstone@glifwc.org*.

(see Ginoozhe vulnerability, page 19)

Lemon Baked Fish

Ingredients:

1 tbsp	sunflower seed oil, divided
1 each	lemon, cut into 1/4" slices, divided
1 each	shallot, diced, divided
1 tbsp	fresh chives, minced, divided
1 tbsp	fresh dill, divided
1 pound	skinless, boneless northern pike fillets, divided

Directions:

1. Using a 9" x 13" baking dish, layer half the oil, lemon, shallot, herbs, and filet and repeat.
2. Position the oven rack so that the fish will be 4-5" below the broiler.
3. Broil on high heat for 10-15 minutes or until fish flakes easily.

Chef notes: If you are using an electric oven preheat the broiler for 5-10 minutes before broiling fish. If you are using a gas oven there is no need to preheat the oven. This recipe is great for all different types of fish.

More traditional Anishinaabe recipes can be found in *Mino Wiisinidaa! Let's Eat Good!* cookbook at: *www.glifwc.org/publications/#Books*.

Original concept from biskakone, Lac du Flambeau

Gathering miinikaanan for the future

By GLIFWC Climate Change Program Staff

In an effort to collect and store miinikaanan (seeds) of important tree species in the Ceded Territories, GLIFWC Climate Change staff have been gathering aagimaak (ash) and wiigwaasaatig (birch) miinikaanan for long term storage. The collections are part of a pilot project to establish a miinikaan (seed) bank to preserve genetic diversity and store miinikaanan for future use.

For long term storage of the collected miinikaanan, GLIFWC formed a Material Transfer Agreement with the National Center for Genetic Resources Preservation in Fort Collins, Colorado. The Center is a U.S. Department of Agriculture facility, but the agreement ensures that GLIFWC retains ownership of the miinikaanan and must be contacted for any withdrawal requests.

The project's success will depend on many factors. Each step of the process—finding trees with a good miinikaan crop, collecting the miinikaanan, and cleaning the miinikaanan—has its own challenges and requires time, equipment, and expertise.

Melonee Montano, GLIFWC TEK outreach specialist, uses an arborist's slingshot to gather seeds. Right: A handful of miinikaanan. (staff photos)

Finding trees with enough miinikaanan can be difficult. Miinikaanan are hard to spot when the canopy is fully leafed out, as they are small and often located in the upper level of the canopy. Some trees do not produce miinikaanan every year; aagimaakoog (ash trees) may only produce large crops every three to five years whereas wiigwaasaatig (paper birch trees) produce at least some miinikaanan annually but typically produce a heavy crop only every other year.

Once trees with ample miinikaanan are located, GLIFWC staff have a small window in which to collect them as miinikaanan must be harvested after they mature and before they have fallen to the ground.

The miinikaanan of aagimaakoog are mature when the samara (the papery wing) has faded from green to yellow or brown. The miinikaanan of wiigwaasaatig are mature when the catkins (the structures that store the miinikaanan) have turned brown.

Perhaps the greatest hurdle to successfully collecting miinikaanan has been the physical challenge of obtaining them, as they are typically found high in the canopy. Assisting GLIFWC in this endeavor was Kyle Cadotte, a Red Cliff tribal member, tribal conservation warden, and professional tree climber. Using specialty climbing gear and trimming equipment as well as an arborist's slingshot, Cadotte was instrumental in helping GLIFWC staff access and obtain the miinikaanan.

To collect the wiigwaasaatig miinikaanan, Cadotte and GLIFWC staff used the arborist slingshot to toss a rope over a branch and shake them out of the tree and onto tarps set out below. This method was successful, although it yielded fewer miinikaanan than is generally recommended for a successful collection. A different technique might be necessary in the future.

For aagimaak, Cadotte assisted GLIFWC staff in cutting miinikaan-bearing limbs and dropping them onto a tarp and also felled one smaller tree. Once GLIFWC staff gathered the miinikaanan, Bad River member April Stone collected the trunk to use for basket making.

For cleaning and processing the aagimaak miinikaanan, GLIFWC has the assistance of Dr. Andrew David, a University of Minnesota forest genetics

(see Gathering miinikaanan, page 15)

Climate change and carbon credits:

An introduction to tribal carbon projects and their potential risks and benefits

By Kim Stone, GLIFWC Climate Change Program Coordinator

The burning of fossil fuels puts carbon dioxide into the air, trapping the sun's warmth and contributing to the earth's warming. Trees can counteract this effect because they naturally absorb carbon dioxide from the atmosphere and build it into their woody material. A growing and potentially lucrative market exists whereby landowners can sell the carbon absorbed or sequestered in their forests to those whose fossil fuel-burning activities put carbon into the air. (C. Rasmussen photos)

As our earth continues to warm due primarily to excess carbon dioxide in the atmosphere, many public and private entities are seeking ways to offset their impact on the environment. One approach is the selling of carbon credits, a method by which those who put carbon into the air pay those whose actions remove carbon or preserve it in existing sources. What does this mean for tribes?

First, a bit of background. Excess carbon dioxide produced by humans warms the earth. This warming occurs because manufacturing and industrial processes produce large amounts of carbon dioxide, in part, because many use fossil fuels to create heat and steam for the production of products. When a fossil fuel is burned it releases energy but also produces carbon dioxide; the carbon stored in fossil fuels gets transformed to carbon dioxide during the process.

As carbon dioxide levels in the atmosphere increase, the gas acts as an insulator, trapping the sun's warmth and causing the earth to warm. This greenhouse gas is a primary contributor to climate change. The largest human source of carbon dioxide emissions comes from the burning of fossil fuels for heat, electricity, and power.

At the other end of the climate change spectrum lie forests and the work they do naturally to counteract climate change. Trees, as they grow, absorb carbon dioxide from the air and build it into their woody material in the form of carbon. Growing and preserving forests—thus sequestering carbon—can counteract the warming effect caused by excess carbon from burning fossil fuels. The cycle can also reverse: when a tree dies and either rots or is burned, much of the stored carbon is released back into the atmosphere, meaning standing trees are huge reservoirs of stored carbon.

Putting a dollar amount on pollution

As environmentally conscious companies and governments seek to counteract the impacts of the greenhouse gasses they produce, one way used to lower their carbon footprint is by purchasing carbon credits, also called greenhouse gas offsets or reduction "credits." Carbon credits originate when a person or entity with forestry holdings measures the amount of carbon in their forest and quantifies this amount into units. The landowner then makes a commitment to keep that forest standing, thereby not releasing the wood's trapped carbon. This carbon, because it is being stored rather than being added to the atmosphere (and contributing to climate change), becomes a "carbon offset" or "carbon credit" that can be sold in a carbon market.

(see Climate change and carbon credits, page 16)

Deer season brings annual crop of new hunters

New hunters took to off-reservation woodlands across the Ceded Territory following several rounds of hunter safety education classes in native communities. Both GLIFWC and tribal wardens taught combined classes of Indian and non-native students from Minnesota across Upper Michigan to Bay Mills.

GLIFWC officers alone certified 117 hunters that included both kids and adults. At some locations families took safety courses together, looking to start their own hunting traditions while harvesting healthy food for home-cooked meals.

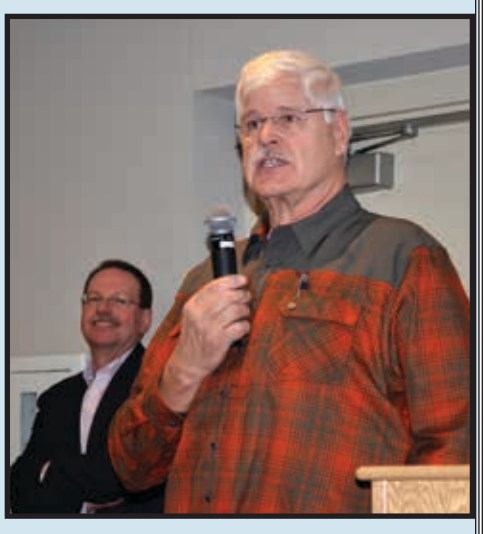
At the request of the Lac Courte Oreilles Tribal Governing Board, GLIFWC wardens added a second hunter safety class at the LCO Boys & Girls Club in November. It was first time area wardens offered a combination online class with a mandatory field day. Students completed the lecture portion of the class online, reporting that it took roughly 10 hours. The field day consisted of safe firearm handling, tree-stand safety, a regulation question-and-answer session, and other hands-on skills, before students took the written and practical exams.

"I've been teaching hunter education for six years and this is the first class in which every student scored 100% on both the written and practical test," said Officer Lauren Tuori who taught the class with fellow GLIFWC wardens Mike Popovich and Holly Berkstresser. "I was impressed at that level of proficiency the students gained through the online course and a single day of hands-on practice." A total of six students were certified.

Look for future offerings from GLIFWC for internet hunter safety classes with a field day. For more information contact your local GLIFWC warden. **—CO Rasmussen**

An adult hunter safety education student takes aim at a target while a Red Cliff conservation officer looks on. Safety courses for new hunters typically involve both classroom exercises and time in the field to become familiar with weapons, tree stands, and learning how to safely cross a fence. Individuals enrolled in GLIFWC member tribes are required to successfully complete a hunter education and firearm safety course before hunting off-reservation if they were born on or after January 1, 1977. Check with your local GLIFWC conservation wardens for exceptions including mentor hunting, and completion of basic training in the US Armed Forces, Reserves, or National Guard. (CO Rasmussen photo)

Kroeplin retires from law enforcement



Following a second stint working as a conservation officer in the Wisconsin Ceded Territory, Tom Kroeplin says he's retired for good after turning in his GLIFWC badge, GL91, last October.

Kroeplin joined the GLIFWC Enforcement Division in March 2011 as its inaugural training director. Charged with developing comprehensive programs for GLIFWC's 20 officers spread across three states, he provided leadership to both new recruits and seasoned personnel.

Kroeplin created annual training sessions in the field as well as in-house activities to review ethics and legal authority. He also served as a liaison for the division with other law enforcement agencies.

His conservation enforcement career first began with the Department of Natural Resources. As a state warden Kroeplin worked alongside a mix of interagency officers at Ceded Territory boatlandings in the 1980s during the early years of off-reservation spearfishing seasons. A fair-minded presence during sometimes chaotic nights along the lakeshore, Kroeplin earned the respect of tribal members for his efforts. Enjoy your retirement, Tom!

—CO Rasmussen

Dagwaagin-gabeshiwin

Dagwaagin (fall) is a time for the Ojibwe people to harvest manoomin (wild rice) and to hunt for waawaashkeshi (deer). When the Ojibwe lived off of the land, it was also a time to prepare everything for winter. Children often helped with activities such as processing rice, drying meat, and gathering fire wood. But it wasn't all work. Fall was also a time to play games like lacrosse and the moccasin game.

This past fall, Bad River and Mole Lake Bands of Chippewa hosted fall camps aimed at keeping these seasonal traditions alive. On October 27-28, Bad River's camp got underway despite a nasty rainstorm that forced activities from the outdoor lodge constructed for camp to the community center.

Under a nice dry roof, participants learned how to clean a deer, brain tan a deer hide, can venison, make apple cider, and play the moccasin game. Relatives from nearby Waaswaaganing (Lac du Flambeau) and Nagaajiwanaang (Fond du Lac) joined the Bad River community to teach, share, and spend time with all who attended. **—P. Maday**

Camp participants of the Sokaogon Mole Lake fall camp learn how to set up water sets for trapping. (K. McGeshick photo)

Jarrold Ojibwe, (from the left) David Sam, Bazile Panek and Damon Panek help teach moccasin games at the Bad River dagwaagin gabeshiwin. (P. Maday photo)

Health emergency brings out the best

By Dylan Jennings, Staff Writer

Niibin (summer) often brings joy and laughter while youth and adults take to the outdoors. Many kids in the area attend Camp Onji-Akiing at the US Forest Service's Camp Nesbit property in Upper Michigan. This year, as youth explored the waters, completed the high ropes course, and constructed their own ricing sticks, a camp emergency was the last thing on anyone's mind.

Camp participant Jasmine Brunette visited the nurse's station for what looked like a skin rash. The camp nurse treated her symptoms and began to monitor Jasmine over the next few hours. Rashes and upset stomachs are common symptoms among youth, however this was the one-in-a-thousand exception. Jasmine stumbled and passed out unconscious in front of a camp building and began to go into anaphylactic shock.

Caught off guard, the crew rushed to Jasmine and didn't waste a second. GLIFWC Warden Adam McGeshick checked her vitals while camp nurse Amanda Lambert pulled Jasmine's health sheet. Joe Panci of the Forest Service called 911 numerous times to assure an ambulance was in route, while Camp Counselor Maranda Maulson distracted the other youth that were beginning to rush to the scene, and continued activities so that nobody would panic.

GLIFWC Wardens Matt Kniskern and Steven Amsler loaded Jasmine into a vehicle and raced to meet the rescue squad. Anyone that has been to Camp Onji-Akiing knows that it's not a great place for cell reception. In fact, the dirt roads that lead towards the camp make it feel even more off the grid.

"Every one of us had a part to play in this successful outcome. Teamwork was everything and is truly is something to be proud of," recalled McGeshick.

At the annual Forest Service MOU meeting in Mole Lake, Nikki Crowe, a grateful auntie of Jasmine and the 13 Moons Program Coordinator for Fond du Lac Tribal College, held an honoring for the wardens and others involved with the rescue mission. "I told myself I wasn't going to be emotional, but it's hard when you talk about potentially losing your babies. Nothing I can ever do will repay you guys for what you did," she recounted.

GLIFWC wardens and others were honored at the annual Forest Service MOU meeting in Mole Lake for helping save the life of a camper at Camp Onji-Akiing this past summer. Pictured, from the left, James Zorn, GLIFWC executive administrator; Nikki Crowe, 13 Moons program coordinator for Fond du Lac Tribal College; Steve Amsler, GLIFWC warden; Matt Kniskern, GLIFWC Warden; Jasmine Brunette, Onji-Akiing camper; and Adam McGeshick, GLIFWC warden. (D. Jennings photo)

The wardens were wrapped in beautiful blankets and given bundles of medicine and manoomin. An honor song was rendered and Forest Service staff along with tribal leaders lined up to shake hands with the guys.

"It was quite an ordeal to see my niece going through this, and a helpless feeling not knowing what to do for her," Crowe said. "Miigwech to these guys and the GLIFWC staff for all their care and compassion towards the youth at Onji-Akiing Camp."

Safety is always a huge component in every GLIFWC course taught by staff. This teachable moment reaffirmed the importance of teamwork, safety classes, and the need for harvesters and community members to always be prepared, because somebody's life may just depend on it.

GLIFWC would like to commend every individual involved with the emergency, from Forest Service staff to the ambulance involved. Miigwech for helping save one of our campers!

First Nations Development Institute Conference

GLIFWC law enforcement staff Heather Bliss and Kim Campy networked with other groups that promote native youth and culture at the Power of We convention in Denver, Colorado last September. The two-day event brought together First Nations Development Institute grant recipients from across the country to learn about outreach strategies and fundraising opportunities.

A look back at Onji-Akiing

By Heather Bliss
GLIFWC Warden

Surrounded by their plant and animal relatives, tribal youth gathered deep in the heart of the Ottawa National Forest for the 9th annual Onji-Akiing: From the Earth Cultural Youth Camp last summer.

"We, as Lake Superior Ojibwe kids, feel at home here in the woods with all our relatives, human and non. We learn important things from them," said Saagi Stark, Bad River member, junior camp counselor.

Fifty-five campers and nine Junior Counselors celebrated their indigenous heritage with adventure-based learning activities that connect to the Medicine Wheel, in which mental, physical, emotional, and spiritual aspects are explored.

Not only did kids experience canoeing, fishing, archery, swimming and the team-building low ropes course, they also got to step into the shoes of several natural resources professionals that traveled from far places to share their cultural, collegiate, and outdoor knowledge.

Building upon the philosophy, "water is life," camp centered around water activities. Campers worked with US Forest Service (USFS) staff to test water quality in Lake Nesbit. Campers also examined water-based plants around the lake and in the bog.

Brooks BigJohn, Lac du Flambeau, instructed campers on the cultural and sustainable importance of decoy carving. Each camper constructed their own decoy to use this winter. (H. Bliss photo)

Natassia, a visiting botanist from Belarus, introduced campers to a plant that serves as a bio-indicator for clean water. Natassia told the kids that in her culture, this plant is extremely rare and celebrated when found.

Also this year, students had the pleasure of learning the cultural and the sustainable importance of decoy carving with cultural speaker and decoy maker, Brooks BigJohn of Lac du Flambeau. Each student brought a perch decoy home that they painted and will hopefully use for the winter ice spearing season.

For the service project this year, campers painted and placed recycling bins around the camp, making recycling accessible to all the areas of camp for the first time ever. Campers were allowed to get creative and personal with the tops of the cans, bringing a sense of fun and excitement to recycling.

GLIFWC, USFS, US Fish & Wildlife Service, and Michigan Department of Natural Resources staff also reinforced environmental stewardship to Mother Earth through hands-on activities, and held a Natural Resource Career Fair that offered personal experience to working, playing and caring for the outdoors. This fair included several colleges and tribal professionals from around the Great Lakes region.

This camp is designed to empower the lives and strengthen the paths of Native American youth today through cultural activities and wisdom. Onji-Akiing works to provide the tools that youth need in order to enrich their lives, their culture, and the communities they live in. If you are interested in information on the 2018 Onji-Akiing Camp Program (scheduled July 16-20), please contact Heather Bliss, outreach officer at *hnaigus@glifwc.org*. Also, please find more information at *www.facebook.com/Full-Circle-Project-178794532131794/*.

Manoomin camps develop skills, produce miijim reserves for winter

Every good ricer in Indian Country knows the sure signs of wild ricing season. Trees along rivers and lakes display fall colors. The arrival of birds and other waterfowl are intricate biological indicators announcing that manoominikewi-giizis has arrived.

In tribal communities around the western Great Lakes region, rice camps have always been a family-oriented activity. Families would spend weeks at the camp, sometimes setting up right on the lake. Everyone had a special job, even the little ones, who were needed to dance the manoomin and loosen the husks during this precious time of year. Both food (miijim) and medicine, wild rice has helped Anishinaabe people survive the lean winter months for centuries.

Today, rice camp takes on a little different form. With families unable to spend weeks away, schools and youth programs are stepping in to help educate young Ojibwe people about the environment and Anishinaabe Traditional Ecological Knowledge (TEK), through hands-on manoominikewin. GLIFWC staff—including biology, health, and outdoors skills professionals—also attend camps in support of event planners, helping fortify students with 21st Century know-how and timeless Anishinaabe TEK.

Shelby Powless, Bad River, gathers manoomin at Pacwawong Lake. (CO Rasmussen photo)

Nagaajiwanaang (Fond du Lac)

On an unseasonably cold and rainy Saturday in August, Fond du Lac's 13 Moons program hosted a manoomin camp for both the community and the Minnesota Master Naturalist program. Wrapped up in a warm sweater under canopy tents, wild rice processor Sam Greensky, Fond du Lac (FdL) elder, demonstrated the traditional method of processing manoomin (wild rice) from harvest to table. Event-goers soon warmed up as they took turns parching the rice on an open fire, dancing the rice the traditional way or by taking a turn threshing rice with the table top thresher, and finally whisking hulls away from rice grains in a traditional winnowing basket. Each step in the finishing process had a dedicated station with both the Ojibwemowin and English name.

Later in the morning, the event moved inside an annex building of the Fond du Lac Tribal Community College Environmental Institute where everyone could dry off and learn about a variety of topics related to a healthy relationship with manoomin. FdL Natural Resources Wetland Specialist Shannon Kesner gave a presentation on wetland ecology, aquatic plant communities, and their impact on the growth of manoomin. 1854 Treaty Authority's Cultural Preservation Specialist Marne Kaeske followed with detailed information on the human relationship, both past and present, to manoomin growth focusing on wild rice bed monitoring and management. The closing program, led by GLIFWC dietary specialists, tied it all together with a presentation on the nutritional importance of manoomin which included a food sample and a hands-on demonstration of how to make wild rice flour. The day wrapped up with a warm lunch of wild rice soup and great conversation.

—Owen Holly Maroney

Zaka'aaganing (Mole Lake Sokaogon)

Mole Lake Sokaogon staff, youth, and community volunteers pooled together resources to host their annual manoomin camp September 16-17. Prior to the camp, youth completed a workshop where they assembled all of the necessary equipment and passed "Canoomin," a canoe safety course led by GLIFWC wardens to promote safe ricing habits out on the water. Youth and community members were armed and ready for the lake.

On opening day, the forecast called for clear, sunny skies and 89 degrees. Youth and community volunteers loaded up each jiimaan (canoe) and took to the water. After a few hours, Mole Lake Vice Chair Arlyn Ackley, Jr. pulled back into shore. "This year the manoomin is looking really abundant compared to years prior. We are very blessed it all worked out for our youth to learn today," he said.

Day two in Mole Lake was all about passing along traditional ways for finishing wild rice. Today, many rice harvesters utilize mechanized methods of finishing manoomin, with hand-built machines that alleviate some of the grunt work and can process larger quantities more quickly. But hand finishing wild rice is important cultural knowledge and a bonding experience like no other, allowing harvesters to infuse love, songs, and good energy back into each grain. It provides the opportunity for the Ojibwe people to feed their most ancient, sacred food, as it has fed them.

Traditional finishing methods include parching the rice in a large kettle over the fire, dancing (sometimes also called hulling or jigging) the rice in a pit, and winnowing the rice with a birch bark basket. The final step is hand-cleaning any remaining hulls from the rice, one by one. This process removes any excess moisture from the rice and prepares it for storage, as well as cooking.

A twelve-year-old young man was the first to try his hand at parching the rice. With Ackley beside him, gently guiding his motion, he learned how to stir the rice so that it slid down the back of the pot and didn't scorch. After a few minutes, he got into a good rhythm and everyone cheered him on, the smell of roasting manoomin filling the air.

Next, veteran harvester Pete McGeshick, Jr. demonstrated how to dance and winnow the rice. The young boys at camp picked up on these tasks quickly, even throwing in some delicate spin moves while in the pit, and keeping a good cadence while the manoomin danced inside a large, duct-taped birch bark basket that had belonged to Pete's father. The sun, the spirits, and many generations smiled down on camp that day as relatives from all over Ojibwe Country ended the day laughing and visiting over chicken wild rice soup and fry bread. In Mole Lake, the ceremony of manoominikewin was complete.

—Dylan Jennings/Paula Maday

Under the direction of GLIFWC Officers, Fond du Lac members learned about canoeing and safely harvesting wild rice at a Canoomin course. (M. Kaske photo)

Mole Lake Vice Chairman Arlyn Ackley, Jr. guides youth Ashenni McGeshick in parching manoomin. (P. Maday photo)

Freshly harvested manoomin. (P. Maday photo)

Odaawaa-zaaga'iganiing (Lac Courte Oreilles)

Nearly 150 miles away at the Waadookodaading Immersion School, the day starts with ceremony as the drum sounds and a prayer is lifted in the language. Ojibwemowin is the only language heard in this circle. Students are instructed to gather their lunches, bags and supplies and load onto the buses. These fourth through sixth graders have all been ricing before and are eager to arrive at the lake. The LCO charter school takes students out just about every year to harvest the good berry. Pacwawong Lake is famous for its long and dense manoomin stalks, sometimes sitting higher than the canoe poler.

Without hesitation, the students unload the canoes and offer asemaa. The manoomin beds are their classrooms for the day. Teachers and chaperones float by in other canoes and encourage the kids to keep speaking Ojibwemowin throughout the day. The students take turns poling, knocking and identifying plants and animals in the language. "Wiidookawashin! (Help!)" rings out in the autumn air. One canoe flipped over but the rest of the crew showed up just in time to help. A perfect opportunity to teach about reseeding and the ecology of manoomin.

—Dylan Jennings/Paula Maday

Elder Pete McGeshick, Jr. assists Gavin Douyette in winnowing manoomin at the Mole Lake Manoomin Camp on September 16-17. (P. Maday photo)

Above, a day camper dances, or jigs, parched rice to separate grain from the hull. To the right: Mark Duffy demonstrartes how to use a a mechanical thresher. (OH Maroney photo)

Mashkiziibing (Bad River)

Ashland High School—in collaboration with Bad River tribal programs, GLIFWC, and University of Wisconsin-Extension—gathered at Pacwawong Lake in hopes of bringing back a few fresh bags of manoomin. Much like the Waadookodaading crew, the Ashland High group sustained a couple of reseeding spills, but the attitude is all around excitement and ambition as two soaking wet teenagers climb back into their jiimaan, asking: "Can we still rice?"

Many of the students that participated in this outing are part of the Native American Club at Ashland High. The majority of the group has never been ricing before, however the number of youth that signed up for the field trip indicated it was a very popular choice. "This is a great way to get out of the classroom and teach. I think we definitely need to keep this event going for years to come," said Ashland High Home School Coordinator Joe Corbine.

Rice harvested that day made its way to the Ashland School District's Fall Fest a week later on September 28. There, the participating students parched, danced, winnowed, and hand cleaned the rice alongside Bad River community members and GLIFWC staff. Against the backdrop of a birch bark canoe made by the community, students learned and then shared information about manoominikewin with classes K-12. It was a wonderful event that boosted cultural knowledge and confidence for Bad River youth and created cross-cultural understanding in a Ceded Territory school that serves both Native and non-Native students.

The day ended to the beat of the drum as several classes joined hands for a round dance in the field. Sitting with a few others, hands deep in a tub of manoomin, it was easy to see that in Ojibwe Country, old ways become new again, and manoominikewin is still very much a family affair.

—Dylan Jennings/Paula Maday

Miskwaabekong (Red Cliff)

Along the recently reclaimed shores of Frog Bay Tribal National Park the fire was crackling, the leaves changing colors, and the smell of fried fish was in the air. The 2nd Annual Manoomin Seeding event hosted by the Red Cliff Environmental Department was underway.

For water bodies with plentiful rice, ricers have already helped to reseed beds for the year. However, for waters where the conditions may be right, but no rice is growing, seeding efforts like this occur all over the Great Lakes region.

The October 1 event opened with good words from staff and volunteer rice educators and a warning about not getting sand on any wild rice related equipment! Activities kicked off with a party of jiimaanan (canoes) loaded with event-goers and staff heading out to assess the rice in Frog Creek. After initial assessment, it was time for wild rice processing demonstrations.

Red Cliff Chief Warden Mark Duffy provided a hands-on demonstration with modern, small scale processing machines, showcasing techniques to help increase efficiency with these types of machines. Event

(see Different manoomin processing, page 14)

In gratitude for manoomin and its many gifts

A view from Upper Michigan

By Valoree S. Gagnon, For Mazina'igan

It began as an idea sparked in the mind of Lac Vieux Desert tribal member Roger LaBine last summer: "Do you think we could host a wild rice camp here this fall?"

LaBine and I were sitting in the Ford Center dining hall in Alberta, Mich. with Scott Herron, Ferris State University faculty member, Evelyn Ravindran, Keweenaw Bay Indian Community's Natural Resources Department manager, and Center Director Ken Vrana. We'd just finished cleanup of a two-day wild rice camp for area youth. "Of course we can," Vrana chimes in.

Knowing that manoomin (wild rice) will be ready for harvest in a few short weeks, LaBine points around our circle and says: "If we all work together, I think we can make this happen."

Wild rice camp came together at the Ford Center & Forest Sept. 22-24, through the tremendous efforts of volunteers, donors, and a partnership team that was established in just two days: KBIC's Natural Resources Department, Keweenaw Bay Ojibwa Community College, Michigan Tech's School of Forest Resources and Environmental Science, and Ford Center & Forest, Great Lakes Indian Fish & Wildlife Commission, and our teachers, LaBine and Herron.

More than 20 individuals—including staff, technicians, and college interns—got to work on the registration process, securing funds and in-kind donations, planning the menu, plus inventorying and collecting hundreds of tools, tarps, drills, processing equipment, two dozen canoes, paddles, and life jackets from upper and lower Michigan and Wisconsin. Some went to Minnesota to bring back more than 1,000 pounds of manoomin to seed in local waters.

Other volunteers collected forest materials. Michigan Tech forester Jim Schmierer gathered and transported several 15-foot hardwoods to Alberta. Alan and Canon Gagnon, alongside college interns, located and sawed more than 30 "forks." Pam Nankervis of the US Forest Service helped to find the much needed giizhik (cedar), and Harry Miron and Clifford Nankervis each delivered a truckload.

Michigan Technological University joined Keweenaw Bay Indian Community in sponsoring two wild rice camps in Alberta, Michigan last August and September. GLIFWC staff attended both events, which were led by Lac Vieux Desert's Roger LaBine and Scott Herron, a native professor from Ferris State University. At the August camp (above) campers carved manoominike implements from Upper Michigan cedar. LaBine says the next camp is tentatively planned for Labor Day weekend 2018. (OH Maroney photo)

These gifts led to the construction of more than 100 knocking sticks, parching paddles, and push poles by camp participants.

I acknowledge manoomin—for being in the heart of my friend Roger, for inspiring our partnership and the hard work of many, for teaching us the importance of gathering and harvesting together, and for reminding us to forge new friendships and to strengthen existing ones—with each other and our other-than-human relatives. For all these gifts, chi miigwech manoomin.

Different manoomin processing methods demonstrated at camps

(continued from page 13)

goers helped to parch rice over propane burners, thresh, and winnow rice using the machines. No impurity too large or small escaped Duffy's keen eye as he cleaned the rice.

Following the demonstration utilizing modern equipment, Red Cliff members Shelly and Charlie Gordon walked event goers through each step of the traditional processing method. Everyone had the opportunity to try their hand at parching, dancing, and winnowing rice.

During a lunch break, a prayer was offered for the food. Excited and hungry, everyone jumped in line for some of Joe Duffy's famous fried whitefish. Jokes and laughter peppered the air as bits of conversation picked up and stories were shared.

After lunch, the day concluded with broadcasting manoomin into Frog Creek. Staff and event goers again donned lifejackets and clambered into jiimaanan with buckets of green rice, paddling out into the creek to find the area that appeared to be most suitable for the rice to grow. Once there, at just the right place, the rice was scattered into the water. The seeds settled into the creek bed below along with hope of harvests for generations to come.

–Owen Holly Maroney

Instructors Roger LaBine and Scott Herron demonstrate how to craft a push pole at manoomin camp. (L. David photo)

Gakiiwe'onaning (Keweenaw Bay)

A heavy afternoon downpour prompted Keweenaw Bay Indian Community's manoomin camp participants to gather their chairs and hand planers under a large tent to share stories and laughter as they worked on fashioning their own rice knockers and parching paddles out of cedar. To help pass the time, GLIFWC Community Dietitian Owen Maroney helped keep campers engaged and their bellies full with an interactive talk on wild rice nutrition. Campers had the opportunity to sample the Wild Rice Berry Salad and ask questions about manoomin and health.

The manoomin camp, held September 22-24 at the Ford Center in Alberta, MI, was sponsored jointly by the Keweenaw Bay Indian Community's Natural Resources Department, Ojibwa Community College, Michigan Technological Institute's School of Forest Resources and Environmental Science, and the Ford Center and Forest.

The Ford Center provided the optimal setting for teaching, comradery and interaction as many participants shared meals together in the cafeteria hall and even lodged or camped overnight at the site as well. Roger LaBine, Lac Vieux Desert elder and manoomin knowledge holder, led the day's activities using his subtle humor to guide and instruct those on hand as the cedar shavings piles grew higher.

Bright sunshine the following day afforded the chance for some to watch LaBine construct a gaandakii'iganaak (push pole) with a traditional maple forked footing. Other participants headed off with KBIC Natural Resources staff to assist them in a seeding effort at nearby Net River Impoundment.

Although participants did not have the chance to harvest their own rice this year, traditional finishing was demonstrated the last day of the camp with seed gathered and air dried earlier this season. LaBine described and demonstrated the entire process from fire parching to winnowing and cleaning the finished manoomin grains.

In addition, an electric thresher machine was on hand to show the oft-mechanized steps that combine jigging and winnowing in what they called the "Manoominator!"

Participants left the camp prepared for the next ricing season, equipped with their new rice knockers, a better understanding of manoomin in the Ojibwe culture, and an even greater appreciation for this special food from the Creator.

—Lisa David

Manoomin

(continued from page 3)

picking. The biggest bit of luck came with the weather: despite a summer of storms, the winds and rains held back enough in many areas to provide a much-needed window for good harvesting.

And then there was the respect. The cool summer meant harvest would be late. Some of the dates we tend to assume will provide ripe rice were not going to this year. Would people hold off and let the rice mature, or would they go anyway, hurting themselves, other pickers, and the manoomin itself?

In the end, I was pleased. Certainly there were exceptions, and perhaps there always will be. But my own impressions, and those of most of the ricers I spoke to, were that most ricers respected the manoomin. Folks held off, or cut early trips short when they realized the rice needed more time. They gave back a bit to the plant that gives so much to us. I think this was an incredibly important part of the season.

This kind of respect really cannot be captured and put in a regulation or be enforced by law. It has to be taught and learned and ingrained as an attitude in the ricer. Not all have it—and we have a ways to go with instilling it into the non-ricing community—but I was heartened by the respect I witnessed ricers displaying this year.

Miigwech ricers, and miigwech manoomin!

Gathering miinikaanan

(continued from page 9)

researcher who heads a conservation effort to protect genetic diversity of aagimaak. After preparing the miinikaanan, Dr. David sends them to the vault in Fort Collins.

For the wiigwaasaatig, however, preparing the miinikaanan for storage presents a greater challenge as GLIFWC staff must clean them before sending them to the Fort Collins facility. Separating the tiny miinikaanan from other debris by hand is painstaking and labor intensive. GLIFWC hopes to find an alternative method before collecting wiigwaasaatig miinikaanan next year.

The length of time the miinikaanan can remain viable in storage differs between species and depends on proper processing and storage conditions. Aagimaak miinikaanan can remain viable for up to 20 years if properly dried and stored at a constant temperature and relative humidity. Wiigwaasaatig miinikaanan are less hardy but can be stored for up to eight years if stored at 35-40 degrees in sealed containers at low moisture.

With lessons learned from these efforts, GLIFWC hopes to increase its collections next year and will explore the possibility of purchasing equipment for cleaning different types of miinikaanan. GLIFWC might also consider the potential for storing miinikaanan in other locations or entering partnerships with other tribes or organizations looking to store miinikaanan.

For more information on GLIFWC's miinikaan banking pilot project, see *www.glifwc.org/ClimateChange/SeedBank.html* or contact Kim Stone at *kstone@glifwc.org*.

2018 phenology calendar

By Travis Bartnick, GLIFWC Wildlife Biologist and Hannah Panci, GLIFWC Climate Scientist

Phenology is the study of the timing of biological events throughout the year—when the maple sap starts running, ruffed grouse begins drumming, or blueberries ripen. Phenology is a useful way to monitor possible long-term trends in environmental conditions, such as a changing climate.

Seasonality is related to phenology, but has less to do with biology and more to do with variations in environmental factors that occur at specific intervals that span less than one year.

Seasonal observations are also important to record from year to year, as they help determine trends in things such as the average ice-on or ice-out dates on lakes, the date of the first snowfall, or the first thunderstorm of the year.

Many people jot down observations on their own calendars, and some have been keeping phenological or seasonal records for decades! This information can be useful for scientists trying to gain a better understanding of which species are more or less able to adapt to environmental changes over time.

GLIFWC's 2018 fold-out calendar notes some phenological events that occur within the Ceded Territories throughout the year. Since the Ceded Territories span such a large area, there will be variation in the timing of some of the events on the calendar, based on regional differences in weather patterns and other environmental factors.

The date someone observes ice-out in the southern portion of the Ceded Territories will likely be earlier than the date of ice-out observed in the northern portion. Getting many different observations from across the Ceded Territories could help us understand how some of these observations vary across the region.

Use the two-sided form below to write down your own observations. 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.

Complete as much of the form as you can. If you submit your 2018 observations to GLIFWC, we will try to include some of your observations in future phenology calendars. If you would like to submit observations online instead of mailing in the paper form, please visit *www.glifwc.org/ClimateChange/PhenologyStudy.html* to find the link to our online observation form. Using the online form, you can submit observations as they occur.

This can be a fun activity for teachers, families, or anyone that enjoys spending time outdoors!

(see What are you observing in the Ceded Territories, page 16)

Tape and stamp this form and return to GLIFWC by June 30, 2018. Make sure to include the information below:

Name:_____

Address:_____

_____

Tribal affiliation (if any):_____

_____

Phone number or email:_____

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

www.glifwc.org/ClimateChange/PhenologyStudy.html

PLACE STAMP HERE

Please print return address clearly:

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, 2018.

Great Lakes Indian Fish & Wildlife Commission

Climate change and carbon credits

(continued from page 9)

Those who wish to combat climate change can then buy these offsets, claiming the credit for the reduction in carbon emissions and mitigating the effects of their own activities that might be generating greenhouse gasses.

Landowners looking to quantify and sell the carbon from their landholdings typically begin by working with a carbon project developer to put together a project. Several types of forest carbon projects exist, but the most common is the "Improved Forest Management" (IFM). An IFM project begins with a feasibility analysis and involves inventorying the property to determine how much carbon it will store over time. When the land's carbon amount is documented and verified by a third party, it can be registered with one of the three national carbon registries which then issue the credits. The credits can then be sold on the carbon market.

Carbon credits can be developed for sale in either the voluntary market or the compliance market, each of which has specific carbon accounting and eligibility rules. For the compliance market, a carbon project must be maintained for 100 years following the final credit issuance, the forest inventory must be updated at least every 12 years, and the monitoring documentation must be updated every year to account for harvesting, growth, or any significant damage from natural disasters. On the voluntary market, the time commitment can be negotiated between the parties.

BIA: General guidance on carbon credit but no official policy

While many tribes consider whether a carbon project is or is not in their best interests, the Bureau of Indian Affairs (BIA) has yet to publish an official policy on the issue. The agency's lack of regulations concerning carbon credits is based in part on a lack of directive from Congress. Because Congress has not enacted laws relevant to carbon credits, nor provided any type of funding to develop carbon sequestration projects, there is little for the BIA to act on.

Another factor underlying the BIA's lack of policy guidance is that carbon credits may or may not be considered a trust asset. If they are not, the agency does not need to approve a tribe's carbon project as a sale of a trust asset. But the agency still requires general review of a tribal carbon project to evaluate whether the project implicates other regulations or policies. Contracts greater than seven years, for example, require secretarial approval, as do other situations that may arise in a carbon project.

While the BIA officially neither encourages nor discourages carbon agreements, it recommends that any tribe considering a carbon project proceed with caution, emphasizing that agreements in the compliance market require a limited waiver of sovereign immunity as well as a 100-year commitment (although projects sold in the voluntary carbon market may involve a much shorter time commitment). A carbon agreement might require modifications in a tribe's current land management practices and—depending on the property and the terms of the carbon agreement—could contradict good forest management practices.

Despite a lack of guidance from Congress, the agency does have a draft carbon policy in development that it hopes to publish within the year.

Potential rewards and pitfalls of tribal carbon projects

For some tribes, carbon projects can provide an opportunity to develop a revenue stream while at the same time protecting or restoring forest land. Others take a different approach, seeing carbon projects as a way for polluters to continue polluting.

Certainly a big sticking point for any tribe, however, is the requirement that a tribe sign a waiver of sovereign immunity relating to the agreement, meaning that a tribe can be sued in court if disagreements arise concerning the requirements of the program or the rules they committed to.

Carbon credit agreements also cannot contradict a tribe's existing land management plan: If a tribe's Forest Management Plan specifies a certain amount of harvest, and that amount conflicts with the carbon agreement, one or both will need to be modified. And exiting a carbon agreement can be very costly if a party changes its mind down the road.

But others appreciate the benefits of a tribal carbon project, including the potential revenue stream. Ernest Neptune, forest supervisor for the Passamaquoddy Forestry Department, calls himself a "carbon credit fan" mostly because he sees it as "a stewardship program that holds polluters accountable for their destructive nature."

For his own tribe and forest lands, Neptune says: "I couldn't believe we would be paid millions of dollars to keep doing what we were already doing." In going forward with the project on its tribal lands, the Passamaquoddy Tribe considered its existing forestry reporting efforts (already being done with the BIA) and felt the demands of the carbon project would not be difficult to meet. The tribe recently submitted a 98,000 acre project for a net revenue of $30 million dollars.

Neptune recommends that any tribe considering a project seek an experienced developer that has successfully worked in Indian Country. Neptune also stressed the need for a tribe to have a solid Integrated Forest Management Plan in place, and be educated about the 100-year commitment and waiver of sovereign immunity.

For tribes looking to learn more

One organization assisting tribes with their carbon projects is the National Indian Carbon Coalition (NICC). NICC formed several years ago from a partnership with the Indian Land Tenure Foundation and the Intertribal Agriculture Council. The organization provides education, training and technical assistance to tribes and Indian landowners who are interested in entering the carbon credit market.

NICC also assists tribes and landowners with baseline assessments of their reservation carbon assets and helps to identify resources and potential partner-

(see Carbon credits, page 22)

(continued from page 15)

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, 2018. Miigwech!

Biboon / Winter Date/Location

Ice thickness on January 1st (specify lake) _____

First white coat seen (snowshoe hare, ermine) _____

First snowfall _____

First snow that sticks _____

First temperature below zero _____

Ice storms/unusual storms _____

Lake freezes (specify lake) _____

First walleye caught through the ice _____

First ravens building nests _____

First musky speared through ice _____

First eagles at nests _____

First snow fleas _____

First ski / snowshoe _____

First deer antlers dropped _____

Last deer with antlers seen _____

First day above freezing (32°F) _____

Other biboon observations:

_____

_____

_____

_____

_____

_____

Ziigwan / Spring Date/Location

First flowers on trees _____

First leaf buds bursting on trees _____

First new needle growth on trees _____

First maple sap flowing _____

End of maple sap season _____

First plants (species) _____

First leeks harvested _____

First wildflowers blooming (species) _____

First fiddleheads harvested _____

First deer fawns _____

First bear _____

First frogs calling (species) _____

First walleye speared (lake) _____

Walleye spawning (lake) _____

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 _____

First dragonfly _____

First rain _____

First thunderstorm _____

First crusty snow _____

Last snow before summer _____

Last frost before summer _____

First night above freezing (32°F) _____

Ice out (specify lake) _____

First canoe (lake/river) _____

First mushrooms harvested _____

Other ziigwan observations:

_____

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Ceded Territory SCIENCE

Lake Gogebic A conservation success story

Summary

Biologists often direct their efforts towards natural resources that are declining, yet rarely highlight when a fishery has been stable over time. Lake Gogebic, a large nutrient-poor (oligotrophic) lake in the1842 Ceded Territory, stands out as a stable walleye fishery relative to many walleye lakes (e.g., Lac Vieux Desert Lake, *Mazina'gan* Summer 2017, pg. 10) in this region.

There have been boom and bust years for production and/or survival of young walleye (less than one year old) over time (a typical trend in most walleye lakes), but overall the number of young walleye in Lake Gogebic has been stable. This has translated into a relatively constant density (greater than 2.5 fish/acre) of adult walleye (greater than 15 inches) since the mid-1970s. A low combined state and tribal harvest rate of approximately 12.6% may be partially responsible for the success of this fishery.

Future management actions should consider the success of managing this fishery with a relatively low exploitation rate as well as the needs of both tribal and state harvesters, with the ultimate goal of sustaining stable stocks of walleye in this lake for future generations.

Technical Summary

A study from the Quantitative Fisheries Center at Michigan State University used long-term datasets from the Michigan Department of Natural Resources and Great Lakes Indian Fish & Wildlife Commision to 1) evaluate the status of walleye in Lake Gogebic and 2) determine if fish stocking or habitat enhancements influenced walleye stocks.

The study revealed that production and/or survival of age-0 walleye (typically 4–8 inches) has been cyclical since yearly surveys began in 1990 (Figure 1). Peaks in production and/or survival of age-0 walleye occur every 5–6 years, but these peaks have not always resulted in high catch rates of age-1 walleye (typically 8–12 inches) the following year.

For example, approximately 200 age-0 walleye were captured per mile of shoreline in 2001, but very few age-1 walleye (<10 fish/mile) were captured in 2002. The number of eggs fertilized during spawning and environmental factors such as temperature in early spring and food availability for young walleye all likely play a large role in determining the variable number of walleye that survive to age-1.

Mark/recapture population estimates of adult walleye (>15 inches) have been conducted in this lake 1–2 times per decade since 1975. The density of adult walleye in Lake Gogebic has been approximately equal to or above 2.5 fish/acre, the average for other large lakes in this region (Figure 2). Previous studies have indicated that angler exploitation is between 7.9% and 9.3% of the adult population. Tribal harvest has consistently been around 3.3%, resulting in a collective upper exploitation rate of 12.6%. This is quite low relative to the maximum sustainable exploitation rates between 24% and 35% used by state and tribal management agencies in this region.

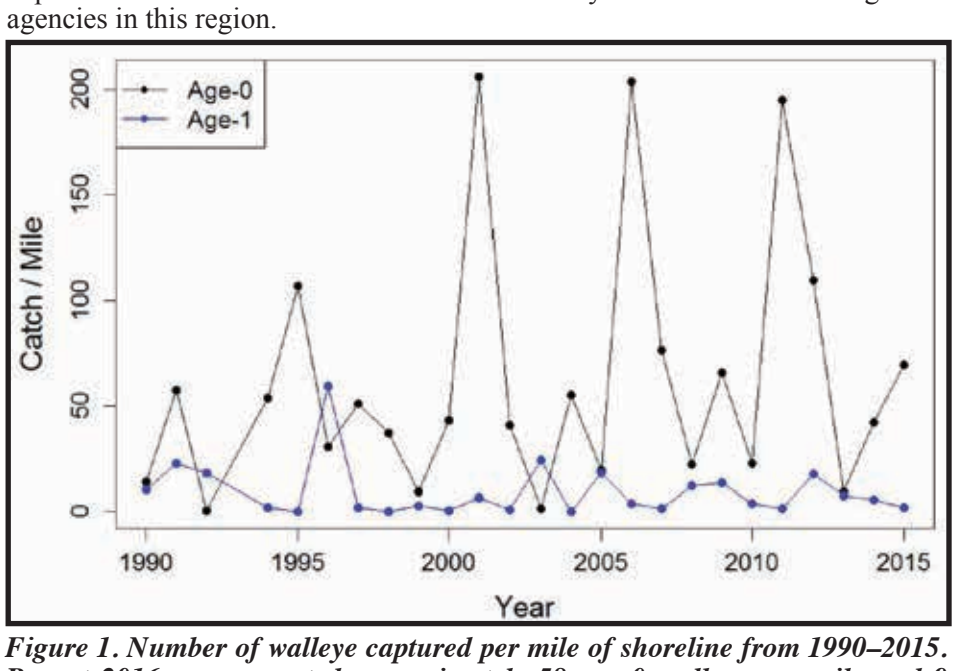
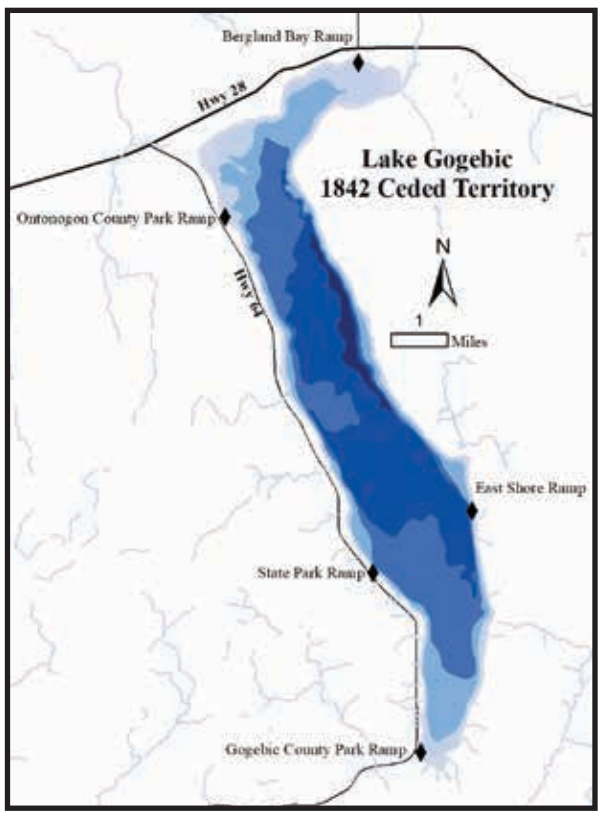


Figure 1. Number of walleye captured per mile of shoreline from 1990–2015. Recent 2016 surveys noted approximately 58 age-0 walleye per mile and 9 age-1 walleye per mile. Data were collected during fall electrofishing surveys conducted by GLIFWC. (Figure was reproduced from a stock assessment report from the Quantitative Fisheries Center at Michigan State University.)



Map of Lake Gogebic. (D. Olson graphic)

Lastly, walleye were stocked in the 1970s–1980s and baitfish in the late 1980s and 1990s. Based on the assessments conducted, there was no impact on the abundance or growth of walleye in Lake Gogebic (Figure 1, Figure 2).

Habitat enhancement projects (sinking of Christmas trees and wooden structures) also took place on this lake, but it is difficult to determine if this action had a positive impact on walleye production because of minimal to no monitoring efforts after the structures were deployed.

Future habitat enhancement projects should also focus on maintaining water quality and rehabilitating shorelines (e.g., adding a riparian zone that mimics a natural shoreline). These projects could benefit fish and other aquatic organisms in Lake Gogebic as well as bring the community members together to protect this valuable natural resource.

We value your feedback. Please send your comments/questions to biologist *aaronshultz@glifwc.org*.

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

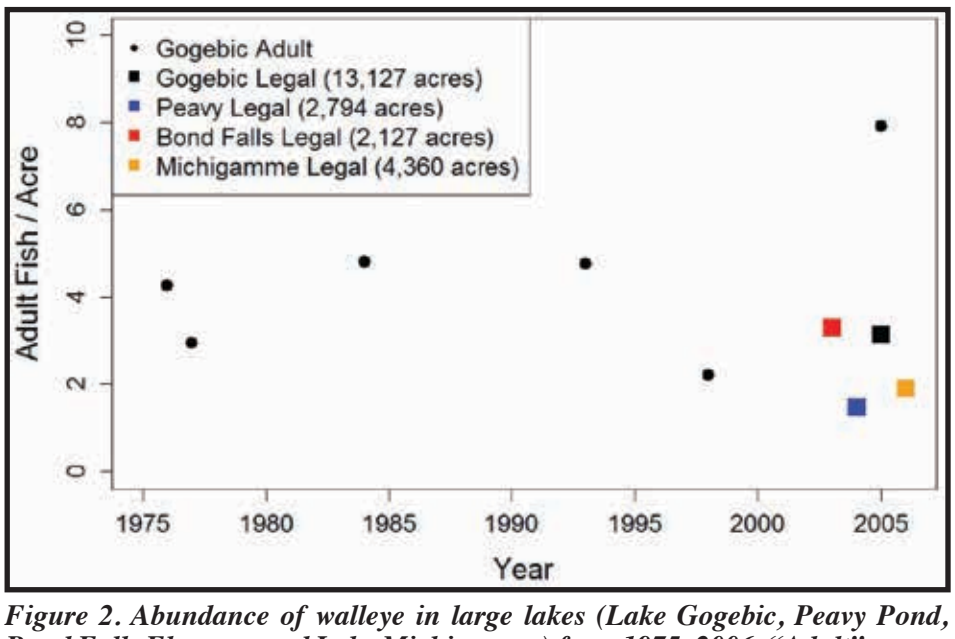


Figure 2. Abundance of walleye in large lakes (Lake Gogebic, Peavy Pond, Bond Falls Flowage, and Lake Michigamme) from 1975–2006. "Adult" means spawning age fish and "legal" means fish >15 inches. Density of fish was calculated from mark-recapture data collected by Michigan Department of Natural Resources. In 2017, the number of adult walleye was estimated to be 45,453 ± 3,245 or 3.5 adult walleye per acre. (Figure was reproduced from a stock assessment report from the Quantitative Fisheries Center at Michigan State University.)

Earthing and exploring The Adventure Gap at WAEE

By Paula Maday, Staff Writer

Mequon, Wis.—Against the backdrop of the beautiful Lake Michigan, educators from all over Wisconsin came together at Concordia University on October 19-21 for the Wisconsin Association of Environmental Education (WAEE) Conference. Under the theme "Water Rising," the conference provided the opportunity for participants to share best practices, learn about community engagement efforts, and strengthen networks in environmental education, particularly around the theme of water.

Conference co-chairs Chrystal Seeley-Schreck of the Wisconsin Technical College System, and Michael Beeth of UW-Oshkosh, recognized that this year's theme had a lot of connotations. "Water is rising due to climate change; people are rising around the world in defense of clean water; unparalleled hurricanes are causing unprecedented flooding around the world; awareness about water issues is rising in response to your dedicated community actions and hands-on environmental education," they wrote in the program welcome.

In step with growing global and cross-cultural concerns related to water, WAEE turned their focus for this conference to include ways of embracing diversity, equity, and inclusion in environmental education efforts across the state. The opening ceremony included an indigenous pipe ceremony and a water ceremony. Water protectors and members of the Menominee Nation spoke, sharing concerns about environmental threats posed to their homelands by the Back 40 mine.

The closing panel highlighted the work of UW-Madison Earth Partnership, GLIFWC, and Wisconsin Green Muslims, sharing cultural perspectives on environmental education. These major conference events bookended three days of workshops, field trips, and presentations intended to inspire and generate the tide necessary to carry environmental education efforts forward in diverse, equitable, and inclusive ways throughout Wisconsin.

Barefoot in the grass, soaking up electrons

Over 150 participants attended WAEE, choosing from over 50 sessions in five tracks. The tracks included: Stewardship, Advocacy and Community Engagement; Diversity, Equity and Inclusion; Hands-on Environmental Education and Recreation; Early Childhood Environmental Education, and Innovative Best Practices in Environmental Education. Some specific session topics included engaging youth in water quality monitoring, water and spirituality, the rights of nature law in protection of global waters, and formative assessment practices in environmental education.

James Edward Mills gives the keynote address at the 2017 Wisconsin Association of Environmental Education Conference. One of his projects, The Joy Trip Project, is a newsgathering and reporting organization that covers outdoor recreation, environmental conservation and sustainable living. Visit his website at* www.joytripproject.com.** ***(P. Maday photo)

On Saturday, I was fortunate to present to a full room on environmental education from an Ojibwe perspective. Many conference participants hailed from the southern part of the state and were unfamiliar with Ojibwe cultural knowledge, perspective, and history. It was a great opportunity to share information and make state-wide connections to enhance GLIFWC's public outreach efforts.

One of the most interesting sessions I attended at the conference was called Nature Heeling: Bioelectric Health. This session presented scientific evidence of the physiologic health benefits of touching the Earth. After a short PowerPoint on this practice—called Earthing or Grounding—our instructor led us in a short movement, awareness, and mindfulness protocol outdoors, our bare feet rooting into the Earth.

Earthing is reported to help with a wide range of health concerns from inflammation to wound healing by reconnecting the human body to the Earth's natural energy. This connection is increasingly lost as humans become more and more separated from the Earth by non-conductive materials such as rubber or plastic in our shoes, or flooring surfaces such as laminate or asphalt; the human body misses out on health benefits of exchanging electrons with the Earth. After the 15-minute protocol, I felt increased energy, improved mood, and clearer of mind. The change was drastic and lasted for days.

What was also interesting about this session was hearing the practice of Earthing discussed using medical vocabulary, and recognizing its similarities to Ojibwe cultural practices that seek to achieve the same human connection to the Earth. The way it's done isn't the same, the ways it's talked about isn't the same, but the goal is the same. This session gave me a real sense of the humanity that connects us all. There are many opportunities to bond through similarities when we take the time to truly understand and appreciate diversity.

The Adventure Gap

Following the conference's vein on diversity, equity, and inclusion, WAEE's keynote speaker was James Edward Mills, author of the book *The Adventure Gap*. In the book, Mills explores the question as to why minority populations are much less likely to seek recreation, adventure, and solace in the wild outdoors.

In his book, he writes, "It's estimated that by 2042, the majority of US citizens will be nonwhite. Which begs the question: What happens when a majority of the population has neither an affinity for nor a relationship with the natural world? At the very least, it becomes less likely that future generations will advocate for legislation or federal funding to protect wild places, or seek out job prospects that aim to protect it."

Mills researches and recounts some of the history of the connection between African American people and the outdoors, then chronicles the first all African-American summit attempt on Denali, the highest point in North America. His speech was thought-provoking and encouraging, emphasizing the importance of people of all races and ethnicities to form and maintain relationships with the Earth. It was also a call to action for those working with minority populations, especially youth minorities, to foster opportunities for wilderness experiences and adventures.

In the Ceded Territory, as we work to initiate our youth into traditional and cultural ways, we can't help but initiate that relationship between them and the Earth. That is part of who we are as Anishinaabe. Still, we face many challenges that pull our youth in other directions and we must continue our work to motivate the next generations to become stewards for our Mother.

As we closed the 2017 WAEE Conference, students from the Milwaukee Indian Community School sang a beautiful traveling song, sending everyone back to their waters and their homes in a good way. We have more work to do.

Tracing American Indian Ancestry

A common question that we receive is how a person can trace his/her American Indian ancestry. Unfortunately, there is no one-stop shop for finding this information; in fact, tracking this history can be very labor-intensive. Here are a few tips to help you get started if you believe you may have American Indian ancestry.

1. **Access and read "A Guide to Tracing American Indian and Alaska Native Ancestry," developed by the U.S. Department of the Interior.**
   The 12-page guide is free and can be downloaded or printed from: *www.bia.gov/sites/bia.gov/files/assets/public/pdf/idc-002619.pdf*. It answers many questions that you may encounter throughout your journey and provides helpful suggestions on where to look for information. Please note that the Bureau of Indian Affairs (BIA) does not maintain a massive national registry or comprehensive computer database of American Indian and Alaska Native individuals, nor does the bureau conduct genealogical research for the public.

2. **Make sure you have the right tools.**
   Computer and internet access are helpful in genealogical searches, as many records and documents can now be found online. If you do not have computer access, you can start with yourself and your family history. Look through records that may be in your home or seek out information from relatives.

3. **Determine your reason.**
   There are many reasons why a person might seek to establish their ancestry as American Indian. Some people may want to enroll in a tribe, others may want to establish eligibility for services, or just learn more about their family history. Identify your own personal reason for establishing descent. If you are looking to become an enrolled member of a tribe, there will be specific information that you will need in find in order to do so.

For more information, or to receive a copy of the guide write to: Office of Public Affairs–Indian Affairs, 1849 C Street N.W., MS-3658-MIB, Washington, DC 20240.

TEK, climate & understanding the natural world

By Jennifer Ballinger
GLIFWC Outreach Specialist

Work under GLIFWC's Great Lakes Restoration Initiative capacity grant continues to incorporate traditional ecological knowledge (TEK) into management of treaty resources within of the Lake Superior basin and throughout the Ceded Territories.

TEK is a source of understanding the proper respect for a particular resource and often includes information about harvesting techniques and best management practices. Interviews with elders and harvesters have been a vital resource for documenting and learning such knowledge.

One forager was gracious enough to share part of her recent interview related to manoomin and climate change management with anyone interested in plants found in the Ceded Territories. As customary in Ojibwe country, our talk begins with a traditional introduction.


M. Huerth photo

Noondinesiikwe izhinikaazo. Mikinaakwan odoodeman. Tonawanda ishkoniganing onjibaa. Noondinesiikwe (Little Wind Woman), also known as Hope Flanagan is turtle clan from the Tonawanda Seneca reservation. She has been gathering extensively for community members throughout the Ceded Territories since she was young. Flanagan recently shared some of her traditional knowledge on various plant topics.

"Every day I'll be out and about. I'll find something and I'll get all excited about. Hey, you can use this for this, or this one's showing up with a change in climate, or this one is going away. Or you can look at this birch bark and see how this poor tree really struggled because of all the injury that it's suffering from, borers or fungus. You can see from the plants how they struggle with climate change just by looking at them. So, that's something for the kids to start noticing. I want them to be able to see what's going on for the plants. That's what I do almost every day, something like that.

I truly believe that, every plant has its gift of food, utility, or medicine. Those three right there. And even if they didn't, they're giving us air. I truly believe that. It's like seeing a friend. It's like look at that one right there. I believe they have a spirit. Some people say they individually have different songs. I think that's probably true. I'm really interested in their gifts of healing through their spirit or medicines within. Also, how they talk to each other on the ground and even above ground, how they talk with their biochemistry. I just love that and how they help each other despite what their differences are. They will help each other. There's some really interesting stuff going on in that.

I recently asked Ogimaagwanebiik [Nancy Jones] about the difference of the awakaanag and the awesiinyag. I said: 'can you apply that to plants too?' And she said: 'sure.' Because if you think, the awakaanag are the enslaved ones or like a cow or a stalk of corn that has to grow in a row versus awesiinyag being like a bear or a chokecherry tree growing out at the edge of a forest. They're surrounded by their friends. They chose to be there so their medicine and their power is so much stronger and cleaner because they're choosing to be there. They have all their relatives around them and all their helpers around them.

I heard from University of British Colombia now, they said you can look at a forest. Those older trees are like a wagon wheel. They're giving out gifts to all the other trees that are around them and so there's all these wheels around of support and help. That makes sense why those medicine plants would be stronger.

Wild rice won't put up with our nonsense, I don't think. It says you're going to treat us like that, we're taking off. That was a teaching that I received from niiyawe'enh [my name giver]. She said when you don't respect your elders and your teachers, and she didn't mean just humans, she said they're going to leave. And then, what are you going to do?

Meaning if the rice says, oh, I've had enough of you or the spirit keepers that watch over the rice, if they go you're not treating us right, they're going to take off. That's why I always talk to the kids about. Thank them. Thank them: always put down your asemaa, always say thank you for giving this gift. Whenever, if you're out looking at a plant, thank them for showing up and showing their beauty and their gifts. They're offering us their gifts so generously and that's what brings them closer, just like your relatives.

I love that term that "ninandotaagonaanig" I heard from Ogimaagwanebiik, the ones that are listening to us all the time so when you thank them, they come closer. You say, oh I'm so grateful that whoever it is, has come around and is helping me out, or the ones I can't see. They come around. They want to help you. Same way with the plants, same way with the animals, they have these gifts to give.

I learn every single day. I learn from the plants every day. For example, the farmers where I work, [didn't want to] grow **parsnips**. I mean clearly the earth is allowing wild parsnips to show up. They're showing up everywhere. I've eaten them from Iowa up into Ontario. You buy them at the store for $2.99 a pound, and it's the exact same thing according to Sam Thayer. Let's grow them and harvest them. But this was an interesting thing. What people don't like is they'll come by with their weed whipper to mow them down, and of course, they get the juice on them. Then they get those photodermalogical blisters. Well if you just respect them and dig them out with a shovel, you're going to be fine. So to me, that's so symbolic of what we need to do. Instead of saying get rid of it, we have to look at what is its gift and let's treat it with respect. I mean if the worst possible thing is we have to put on some gloves to dig it up, how bad is that?

Flanagan was more than happy to share her observations about manoomin and other plants for GLIFWC's climate change work. Flanagan's willingness to share comes from a sense of duty from when she received her Indian name which was Ojibwe and not Seneca. "When I got my driver's permit, I used to drive an elder around, Rose Barstow. I loved to learn from her so I was always picking her up and taking her places or doing whatever I could. She had four Ojibwe names and she was a name giver. She told me that she had a dream of my name and that is why she told me to put up a ceremony to receive her great-aunt's name, Noondinesiikwe. So I feel really honored that she did that, and I'm grateful because then she told me that I would be carrying on the responsibility of her relative who carried that name. For the rest of my life, I will be carrying on her work—that's what I was told."

Flanagan currently works at Dream of Wild Health as a Wild Foods Educator and teaches Ojibwemowin at Four Directions Family Partnership in the Twin Cities.

Ginoozhe vulnerability

(continued from page 8)

Summary of climate threats:

Ginoozhe were in the 44th percentile of vulnerability relative to other fish in the assessment. Relative to other beings/species in the vulnerability assessment, ginoozhe were in the 66th percentile. The following factors increased their vulnerability to climate change: natural and anthropogenic barriers (e.g., connectivity of inland lakes, roads), hydrological niche (e.g., droughts), thermal niche (loss of coolwater habitat), and sensitivity to pathogens (i.e., more susceptible to infections and parasites).

Factors that increase ginoozhe's vulnerability to climate change:

SI — Natural barriers: Limited connectivity of inland lakes will limit the ability of ginoozhe to move to suitable habitat as the climate changes. Moreover, migration routes such as shallow waterways have the potential to warm faster than lakes, thereby creating a barrier for this coolwater species. Conversely, an increase in frequency and intensity of extreme weather and precipitation events potentially could create new migration routes between water bodies, but predictions of these events are scarce for the Ceded Territories. Collectively, natural barriers are likely to impede dispersal as the climate changes to a limited extent.

SI — Anthropogenic barriers: Barriers such as dams and road crossings can impede movements of ginoozhe in lakes and rivers. These barriers are likely to impede dispersal as the climate changes to a limited extent.

SI — Physiological thermal niche: Thermal niche for ginoozhe, a coolwater species, depends on the life stage. For eggs, the optimum temperature has not been defined, but mortality occurs when temperature decreases below 41 °F or greater than 60.8 °F. For fry (young fish capable of feeding themselves), optimal temperature for growth and survival is 69.8-78.8 °F, with higher mortality occurring at temperatures less than 42.4 °F. Upper lethal temperature is not defined for this life stage. Optimal temperature for growth of juvenile ginoozhe (young fish that have developed scales and working fins) is approximately 66.2-69.8 °F, with growth ceasing at 82.4 °F. (lethal limits are not defined). For adult fish (capable of reproducing), optimum temperature is approximately 66.2 °F with lethal temperatures between 84.2-86 °F (lower lethal limit is not defined). Water temperature is predicted to increase as the climate changes and potentially reduce thermal habitat for ginoozhe by 10-40%. This would have negative consequences for growth and survival of this species.

SI — Historical hydrological niche: The area ginoozhe occupies has experienced slightly lower than average variation in precipitation in the past 50 years.

SI — Physiological hydrological niche: Water drawdown or retention can negatively influence wetlands in the Ceded Territories, an important habitat for adult (needed for reproduction) and juvenile ginoozhe.

SI — Disturbance regime: More variable precipitation patterns (droughts, floods) might negatively impact wetlands, a key habitat for this species.

SI — Sensitivity to pathogens: Northern pike bioaccumulate environmental toxins and are hosts to many known parasites (e.g., fungi, protozoa, worms, leaches, mollusks, and crustacea) and pathogens (e.g. lymphosarcoma and esocid herpesvirus-1). As the climate warms, coolwater species might be crowded into smaller spaces that might increase parasite and pathogen transmission. Warm water temperatures may also force fish and their parasites and pathogens to migrate northwards, thereby acting as a vector for transmission to fish in the receiving waterbody. Extreme weather and elevated water temperature might increase stress in fish, making them more susceptible to pathogens because of reduced immune function. Overall, pathogen and parasite abundance, distribution, and impact will likely increase as the climate changes.

Legend

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

How makwa got a short tail

Aaniin (hello) friends and relatives! Biboon (winter) is a time for storytelling. Anishinaabe aadizookaan (original/traditional stories) are a big part of the Ojibwe lifeway. They teach us many things about life and how to act. They may also teach us how to treat each other and everything in creation.

Many times these stories are filled with humor, which is a universal form of healing. When listening to these stories, think about what virtues or lessons they might be trying to teach.

When makwa (bear) was created he was given the longest, bushiest, most beautiful tail of all the animals. He was very proud of his tail. He was so proud that he went around bragging to the other animals. He walked around, bragging as he told the other animals that his tail was the best looking of all.

The other animals grew tired of him bragging around. They talked about how makwa was given special treatment when he was given such a nice tail. One time as the waagosh (fox) was walking through the woods he thought of a plan that he thought would punish makwa.

It was getting along towards fall as the lake was icing over when waagosh left, catching giigoonh (fish) and waiting for makwa to come along. Soon he saw the bear approaching on the trail right by the lake. He saw the fox with the fish. "Fox, how did you catch the fish," asked the bear. "I went to the lake." "I chopped a hole in the ice." "I put my tail through the opening, waiting for the fish to grab onto my tail," said the fox. "Do [you think] that I'll catch some fish by doing the same thing," asked the bear. "Maybe," said the fox.

So the bear went out to the middle of the ice on the lake and chopped a hole, immersing his tail through the opening.

The bear sat for a long time. The bear didn't feel anything trying to grab his tail. The bear finally decided to pull his tail out of the hole. But he had sat for so long that his tail was encased in a thick circle of ice. He tried to no avail to pull his tail from the ice, as his tail was frozen solid. He jerked it with such force that he broke off the end of his tail. He looked at his tail but it was gone. All he had was a short little tail.

So his long, beautiful, bushy tail was now broken off. That's how he got a short tail.

Based on a story by the late Anna Gibbs, an Ojibwe spiritual leader from Ponemah, Minnesota.

Artwork by Jonathan Thunder *thunderfineart.com*

You can watch this animated video at: *https://vimeo.com/117458136*

Makwa facts

- American black bears are found in Canada, Mexico and North America.
- They mostly eat grasses, herbs and fruit.
- The bear's coat has lots of layers of shaggy fur, which keeps it warm in cold winter months.
- They may be called black bears, but their coat can be blue-gray or blue-black, brown and even sometimes white!
- Their short claws make black bears expert tree climbers.
- They may be large, weighing as much as 300 pounds, and can run as fast as 25-30 mph!
- These big bears have a very good sense of smell, and they can often be seen standing on their hind legs, sniffing scents!
- They usually live in forests but black bears are also found in mountains and swamps.
- Black bears spend winters sleeping in their dens, feeding on body fat they built up over the summer and autumn.

What have you learned?

1) What is the Ojibwe name for the black bear? _____
2) How much does the black bear weigh? _____
3) What do black bears eat? _____
4) How fast can black bears run? _____
5) Can black bears climb trees? _____

Aaniin ezhiwebak agwajiing? What is happening outside?

Zoogipon. Gichi-kisinaa agwajiing. Daga aajimishin! Aadizooken, dibaajimon! Noogishkaan! Noogishkadaa! Gidaa-bizindaamin gaagiigidowaad ingiw aadizookewininiwag. Aatebidoon mazinaatesijigan! Nanaa'inan i'iw giigidowin! Nimaawanji'aanaanig ongow abinoojiyag. Daga na giwii-aajimag amik, ojiig, wazhashk, mooz, waabooz, igaye maang? Nindoozhiitaamin. Niwii-pizindaagemin. Wiidosemishin. Eya', chi-miigwech miinawaa.

(It is snowing. It is really cold weather outside. Please tell a story about him to me. Tell traditional stories, tell stories! Stop! Let's all stop! We should listen when they speak, those sacred storytellers. Turn off the television! Put away the telephone! We should gather these children. Please will you tell stories about the beaver, fisher, muskrat, moose, rabbit, and loon? We will listen to them. We are getting ready. Walk with me. Yes, thanks a lot again.)

Bezhig—1

OJIBWEMOWIN (Ojibwe Language)

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

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

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

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

VII: action-Verbs, non-living-Inanimate, no object w/ it-Intransitive

Root verbs translate to "IT IS...". Weather words, colors, time, etc.

Gisinaa.—It is cold weather.
<u>Wii</u>-kisinaa.—It <u>will</u> be cold. (future)
<u>Gii</u>-kisinaa.—It <u>was</u> cold. (past tense)
Gisinaa<u>g</u>.—<u>If/When</u> it is cold,
Zoogipon.—It is snowing.
<u>Gii</u>-soogipon.—It <u>did</u> snow.
<u>Wii</u>-soogipon.—It <u>will</u> snow.
Zoogipon<u>g</u>.—<u>If/When</u> it is snowing.
Giizhigad.—It is day.
Mino-giizhigad.— It is a good day.
Giizhiga<u>k</u>.—<u>When</u> it is day.

Niizh—2

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

A. <u>Megwaayaak</u> ishkwaa-anami'e-giizhgak, nindaagimose.

B. <u>Oodenaang niizho</u>-giizhigak <u>nindizhaa</u> adaawewigamigong.

C. Waakaa'iganing <u>aabitooseg</u>, ninjiibaakwe miinawaa nimbiiniz.

D. Agindaasoowigamigong niiyo-giizhigak, <u>nindanokii</u>.

E. Zhooniyaawigamigong, <u>naano</u>-giizhigak, <u>gaye</u> nindanokii.

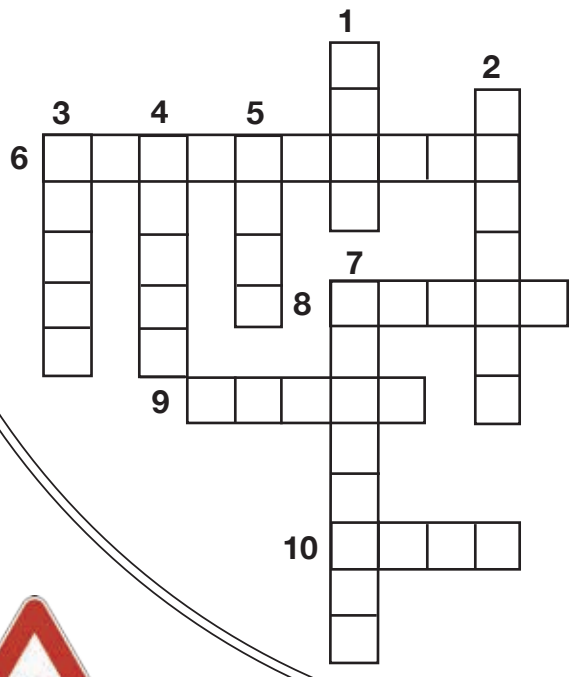
F. Zaaga'iganing giziibi-igisaginigegiizhigak, nindakwa'waa.

G. Aname'e-wigamigong <u>ogidaaki</u> anama'e-giizhigak, nimawadishiwe.

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

Niswi—3

IKIDOWIN ODAMINOWIN (word play)



Down:

1. moose
2. It is cold.
3. 4 (in counting)
4. 5 (in counting)
5. beaver
7. Thank you.

Across:

6. I work
8. loon
9. fisher
10. yes

Ozhaashikwaa.
There is slippery ice.

<u>Online Resources</u>
ojibwe.lib.umn.edu
umich.edu/~ojibwe
www.glifwc.org

Niiwin—4

VII Grammar

Inanimate color describes inanimate (nonliving) things.
It is yellow/brown?—Ozaawaa na?
It is green/blue?—Ozhaawaashkwaa na?
It is red now.—Miskwaa noongom.
Yes, It is black.—Eya', makadewaa.
Yes, It is white.—Eya', waabishkaa.
Gaawiiin ozaawaasinoon.—
No, it is not yellow/brown.
Gaawiin zoogiponzinoon.—
No, it is not snowing.
Waabang wii-aabitose.—
Tomorrow it will be Wednesday.

–g
Gaawiin
–sinoon
d turns to k
ina

1. Mino-giizhiga_____, ningichi-shoomiingwen.

2. Zoogipon _____ agwajiing? Gii-naawakeg, gii-kimiwan.

3. Gaawiiin ozaawaa_____i'iw weba'aagonaan. Waabishkaa. Daga ozhitoon ozide-miikanaang.

4. Gooniwan_____, nimbiindige. Nimbiindigazhaa.

5. _____ biiwanzinoon. Niminwedam. Miigwech.

Translations:

<u>Niizh—2</u> **A.** In the woods when it is Monday (the day after praying day), I snowshoe. **B.** In the town, when it is Tuesday, I go to the store. **C.** In the house when it is Wednesday, I cook and I clean. **D.** At the library when it is Thursday, I work. **E.** At the bank when it is Friday, also I work. **F.** On the lake, when it is Saturday, I ice-fish. **G.** At the church on the hill when it is Sunday (praying-day), I visit with people.

<u>Niswi—3</u> ***Down:*** **1.** Mooz. **2.** Gisinaa **3.** Niiyo **4.** Naano **5.** Amik! **7.** Miigwech! ***Across:*** **6.** Nindanokii **8.** Maang **9.** Ojiig **10.** Eya'

<u>Niiwin-4</u> **1. When** it is a good day, I have a big-smile. (d -> k) **2. Is it** snowing outside? When it was noon, it was raining. (ina) **3.** No, that shovel **is not yellow. (-sinoon)** It is white. Please use it on the footpath. **4. When** it is snowy, (-g) I go indoors. I bring him/her indoors. **5. No** there is not a blizzard. I am glad. Thank you. (Gaawiin)

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.

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

Edited by Jennifer Ballinger, Saagajiwe-Gaabawiik.

Ojibwe communities build strength, resilience through run/walks

By Jason Schlender, For Mazina'igan

Every step is a prayer. Drive up 10 and do 2. Prime rib sandwiches. Saunipi. EEEEYAAAAKEEE! If you are familiar with these words then you are familiar with the long-standing, powerful, and influential GLIFWC Healing Cirlcle Run/Walk (HCR).

The HCR was inspired by the Peace & Solidarity Runs, which were rooted in a dream by Ernie St. Germaine as a way to foster and promote peace and solidarity in a very tumultuous time—the spearfishing controversy of the 1980's & 90's. It was a time when many communities that neighbor tribal nations were openly opposed to the treaty rights exercised by Ojibwe people in northern Wisconsin.

Since its beginning in 2001, the HCR has transformed into a movement of healing, pride, and cultural strength. Under the tutelage of Zaagijiweyiban (James Schlender Sr.) and Kiniw (Neil Kmiecik), those two men, with assistance from Agnes "Punkin" Fleming and Giiwegiizhigookwe Martin, were able to set forth a model of prayer, healing, bonding, and friendship that has now spread to other Ojibwe communities.

In all of our communities we struggle with many social issues. Opiates, meth, heroin, and now fentynal have shown no mercy to our people in recent years. We still struggle with diabetes, smoking, and our longtime arch nemesis, alcohol. It seems so many negative things happen to our people that all hope is lost.

Don't be discouraged by all of that, though. One just needs to listen and learn from our great Uncle for he is our cultural hero. We rely on his teachings and miscues in our sacred aadizookaanan, and we apply those teachings to our lives and then we start to see gradual change for the better.

The summer of 2017 culminated with three prominent acts of bravery, healing, and positivity in three different Ojibwe communities. In Odaawaa Zaaga'iganing there was the Maamiwichigewin Run/Walk which took place to promote unity and healing. Maamiwichigewin translates to unity or coming together. The 70-mile course covered every community on the reservation. The miles weren't easy, but were softened by laughter, teasing, and dedication. A run through Lac Courte Oreilles wouldn't be complete without the occasional incursion from a rez dog. We have to thank LCO Tribal Warden Aaron Debrot for warding off those persistent animoshag. T-shirts were made up with the slogan: "We run together, We Walk together, We are stronger together."

In Misi-Zaaga'iganing (Mille Lacs) the community constantly deals with the infiltration of harmful drugs. Some of the members of the community have started "Smudge Walks" as a way to promote sobriety, healing, and health. All walkers and runners are smudged before the run/walk begins and they start going around the community to promote healing and prayer.

The Mille Lacs Band (top) promotes sobriety healing, and health through community "Smudge Walks."

To the left: At Lac Courte Oreilles, a unified community gathered together for the Maamiwichigewin Run/Walk. (J. Schlender photos)

In Miskwaabekong (Red Cliff) the community held the Red Cliff Healing Walk. In addition to the drug epidemics that plague our communities this community wanted to also focus on their loved ones that are sick. The community came out together to promote healthy lifestyles and choices. The closeness of Red Cliff was on full display as elders walked with children and many people participated in this event.

All of these community events were inspired by the GLIFWC Healing Circle Run/Walk. The model of consistency preached by such great teachers has impacted many more than we truly know. The power of asemaa, our music, and our language is evident by the testimony of the ones that have overcome addiction and have recovered from sickness. To the many people out there looking for some way out of the endless spiral of addiction and sickness join one of these healing run/walks and you'll see the difference in your life. Don't be afraid to start something for your own community because you can't go wrong when showing love and compassion for your people.

Miigwech to Brad Harrington, Rosalie Gokee, and Carolyn Gouge for having faith in the model and the many people that have contributed miles and prayers along the way. Every step is a prayer.

—Jason Schlender is Vice Chairman of the Lac Courte Oreilles Band

Dennis White receives UWS Distinguished Alumni Award

Lac Courte Oreilles tribal member Dennis White was honored with the University of Wisconsin-Superior Distinguished Alumni Award September 21 at the Yellowjacket Union. The award is presented to an alumnus whose success serves as an inspiration for current and prospective students. GLIFWC's LaTisha Coffin, a UWS Alumni Association Board Member, also presented White with a beaded eagle feather during the award presentation.

L. Coffin photo

A celebrated educator and administrator on the LCO reservation for more than 30 years, White is a world renowned fingerweaving and beadwork artist. Along with his wife Cleo, he has been a key figure in GLIFWC's language and traditional food projects, as well as participating in GLIFWC's GAAGIGE elder group. Comprised of elders from across the Ojibwe Ceded Territories, the GAAGIGE group advises GLIFWC staff on everything from traditional ecological knowledge (TEK) to natural resources management priorities.

In 2016, the Wisconsin Indian Education Association recognized White as Indian Educator of the Year. Coffin and fellow alumni board member Tom Culber nominated White for the recent UWS honor. White is a 1969 graduate of UWS.

—CO Rasmussen

Thomas Vennum a distinguished figure in Ojibwe Country

Thomas Vennum dedicated much of his life to understanding American Indian culture and music, sharing his knowledge with people across the country. The author, teacher, and ethnomusicologist walked on September 24 in Washburn, Wis. He was 82.

In 1999 Vennum was a featured speaker at GLIFWC's Wild Rice Research & Management Conference at the Fond du Lac Reservation in Minnesota. Conference organizer and current GLIFWC manoomin biologist Lisa David said Vennum's 1988 book **Wild Rice and the Ojibway People** remains required reading for researchers.

"For anyone doing work with manoomin, his wild rice book is an essential resource," David said. Vennum also published scholarly research on lacrosse and native drums as well.

A US Army veteran, Vennum went on to become Senior Ethnomusicologist in Folklife Programs at the Smithsonian Institute in Washington DC. He spent most summers on Madeline Island and built many friendships with Ojibwe people and others throughout the region**.** **—CO Rasmussen**

Carbon credits continued

(continued from page 16)

ships. NICC currently is working on a model carbon sequestration ordinance for possible use by tribal governments.

For tribal entities or individuals interested in learning more about carbon sequestration projects, NICC holds regional training sessions including U.S.D.A. energy programs, regulatory permitting procedures, and landowner options. For information on NICC, go to *www.indiancarbon.org/*.

Author's note: The intent of this article is to provide general information on carbon credit. GLIFWC neither supports nor opposes carbon projects nor does it endorse any organization mentioned in this article.

Omashkooz
Bi-azhegiiwemagak mashkikiin

Elk—Return of the Medicines

GLIFWC's 2017 poster featuring omashkooz (elk) is work of renowned Fond du Lac artist Sarah Agaton Howes.

In her rendition of omashkooz, Howes not only envisioned omashkooz, but many of the plants and medicines that have returned and helped to sustain their healthy survival.

Much like omashkoozoog* returning to their favorite plant foods, humans should also be following the food sovereignty movement backwards to a time of healthy and unprocessed foods. Howes delicately parallels omashkooz to the resurgence of Anshinaabe lifeway through language and cultural revitalization efforts.

Wiigwaas (birch bark) is seen in the background, gently reminding viewers of the preservation of oral tradition. Wiigwaas embodies the concept of old teachings and the interconnectivity that exists between the natural world and Anishinaabe way of life.

18 x 24″ posters are available from GLIFWC at PO Box 9, Odanah, WI 54861, by phone (715) 685-2108 or email *lynn@glifwc.org*. One copy is available free-of-charge, additional posters are $2.50 plus $2.00 postage for orders up to $4.99. You may also place your order online at *www.glifwc.org/publications*.

**Omashkoozoog is the plural for elk.*

W. Ballinger graphic

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To recieve the e-edition contact *lynn@glifwc.org* and provide your email address.

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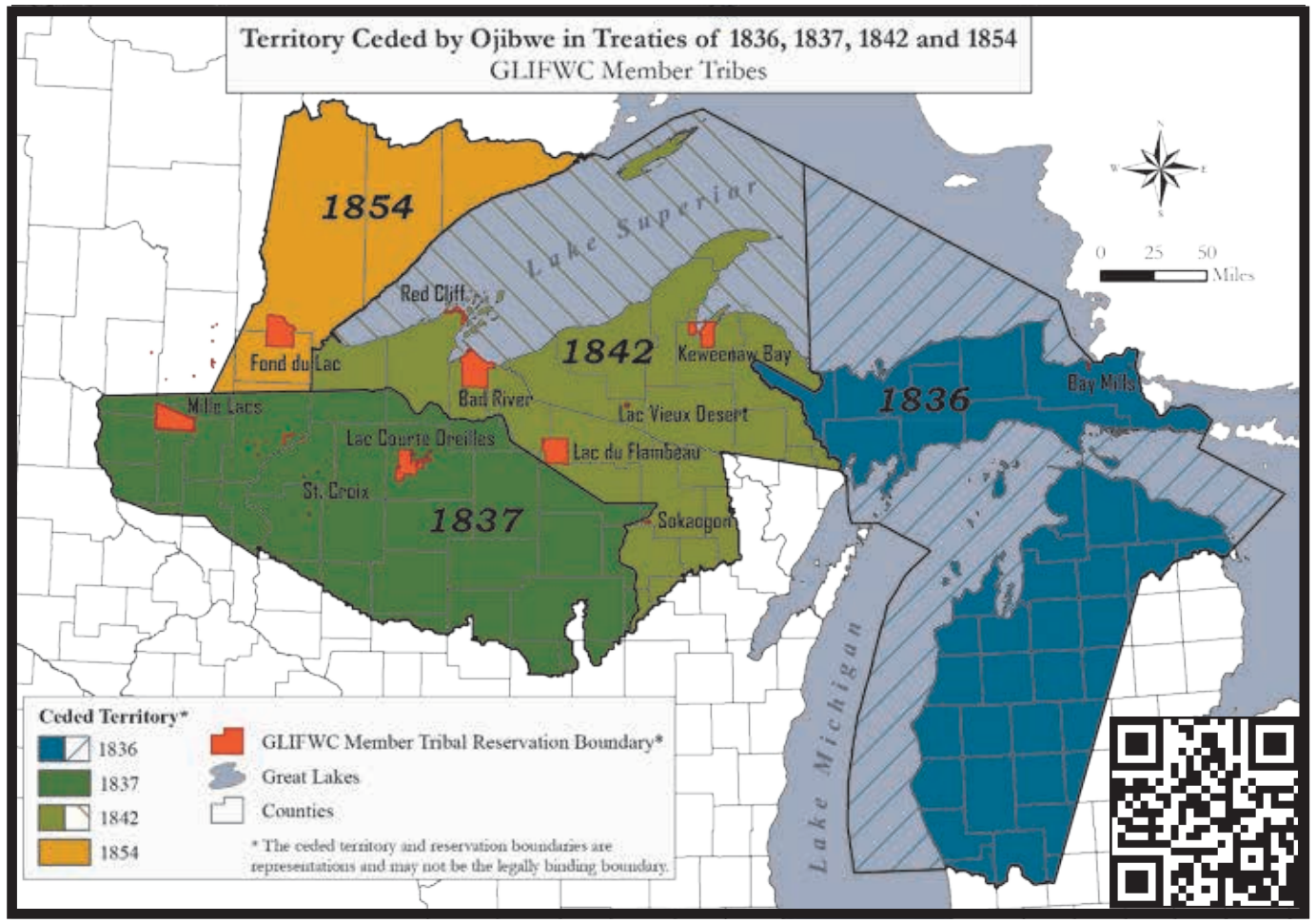
Although **MAZINA'IGAN** enjoys hearing from its readership, there is no "Letters to the Editor" section in the paper, and opinions to be published in the paper are not solicited. Queries as to potential articles relating to off-reservation treaty rights and/or resource management or Ojibwe cultural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



Mazina'igan

A Chronicle of the Lake Superior Ojibwe

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Manoomin Round Up
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