

Mazina'igan

A Chronicle of the Lake Superior Ojibwe

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Spearers encounter late ice, high water and ogaa

By Charlie Otto Rasmussen
Staff Writer

Odanah, Wis.—Treaty spearfishers navigated high water and ice floes during a second consecutive late spring harvest season. In many regions of the ceded territory the harvest dipped below annual averages, most notably at Lake Mille Lacs where fisheries managers are nursing a walleye (ogaa) population that is experiencing high mortality in young, fingerling-sized fish.

“Tribal fishers were challenged by high water conditions and a short spawning season due to the late ice-out,” said Mark Luehring, GLIFWC inland fisheries biologist.

By any measure biboon 2013-14 was a big one. Winter skies dropped 110 inches of snow near Lac Courte Oreilles—the highest total since record-keeping began in 1896 according to the National Weather Service in Duluth. The Chequamegon Bay area tallied 133 inches of snow, nearly twice the seasonal average of 70 inches.

Spurred by spring rains, snowmelt from the extraordinary winter

raised water levels on most lakes and muddied water clarity on stream-fed flowages. Spearers reported difficulty with visibility on reservoirs including the Turtle-Flambeau Flowage, which harnesses three rivers.

In the Wisconsin ceded territory, spearfishing kicked-off the evening of April 24 at a familiar location—Cedar Lake near the St. Croix Reservation. Although the season got underway later than usual, Cedar managed to shed its ice a full week earlier than last spring’s late, near-record thaw.

Fishing peaked in Wisconsin waters over a three-day stretch May 9-11 when spearers boated nearly one-third of the total harvest; after finishing up the work-week, tribal spearers fished hard bringing in just under 12,000 walleye over the weekend. By the time the spring season wrapped up, creel clerks tallied 27,527 walleye, plus 247 muskies. North into the Michigan inland waters, Lac Vieux Desert spearers registered 2,409 ogaa and nine muskies.

In the 1836 ceded territory, Bay Mills members faced similar conditions when the ice finally broke-up. High, fast (See Spearers, page 2)



In a show of unity to protect ceded territory water and natural resources, Wisconsin Ojibwe bands each declared one walleye from Galilee Lake. The small lake sits in shadow of the Penokee Range where developers are pursuing construction of a massive iron mine. Following a twilight ceremony May 13, Dylan Jennings (pictured) got the nod from Chairman Mike Wiggins to harvest a walleye for Bad River. (Photo by Charlie Otto Rasmussen)

Preparing for climate change at home FDL's Diver leads tribal planning on Obama task force

By Charlie Otto Rasmussen, Staff Writer

Cloquet, Minn.—As climate change claws forward, degrading natural resources in the ceded territory and elsewhere, leaders across the United States are exploring ways to lessen the negative impacts. Among those at the fore is Fond du Lac Chairwoman Karen Diver, a member of President Barack Obama’s Climate Advisory Task Force.

“We’re working to help the [Obama] Administration better tackle climate-associated problems in coordination with communities,” said Diver, one of only two native leaders tapped by the President for the Task Force on Climate Change and Resilience, which includes two dozen state governors, mayors, and county officials. “The breadth of the work is daunting. It’s everything from infrastructure to health to the environment to energy systems,” she said.

Across Turtle Island climate change is triggering severe and more frequent floods, drought, and wildfire—costly events that strain both financial resources and the environment.

“Unfortunately it’s taken some pretty severe weather events to get people thinking,” Diver said. Climate scientists have long-warned that fossil fuel pollution enhances a global “greenhouse effect” with warm air becoming trapped in the atmosphere. Above-normal annual temperatures are melting glaciers at an alarming pace, altering ecosystems and spurring severe weather events.

In the 1837 Treaty ceded territory alone, annual winter temperatures are 4.5° warmer than in the mid-20th Century, according to the Wisconsin Initiative on



Fond du Lac Chairwoman Karen Diver releases a juvenile sturgeon into the St. Louis River, part of a tribal fisheries enhancement project. President Obama appointed Diver to the Task Force on Climate Change and Resilience in 2013. (Photo courtesy of FDL)

Climate Change Impacts. Despite the recent harsh winter, average ice-out on lakes is occurring earlier, disrupting Ojibwe springtime harvest activities.

“We’ve been going from winter to summer in most of the recent years,” Diver explained. “Just a few years ago, all we could get from maple trees was a small amount of bitter sap.” Then in a dramatic pendulum swing, the 2013 season produced a banner harvest for maple tappers.

The move by Administration officials to connect with local leaders won’t produce a magic fix for the challenges ahead, but it is a significant step toward preparedness, Diver said. “It’s about laying out what steps the Administration can do; how do you make communities more resilient in the long term? People who live in these communities know what the problems are.”

On the Fond du Lac Reservation, for example, tribal officials arranged for the installation of a bridge where a flash flood had ripped through a culvert, washing away the road. State guidelines called for replacing the culvert, but after working through the Bureau of Indian Affairs, crews constructed a bridge at the site to accommodate the frequent, heavy rain events wrought by climate change. Diver said the case illustrates how different rules and different engineering standards within government agencies can encumber necessary improvements to infrastructure.

Fond du Lac, Lac du Flambeau and other GLIFWC member bands are also applying sustainable building standards to on-reservation construction projects; new tribal administration buildings are energy and water efficient, and built with environmentally friendly materials. Diver said these (See Diver leads tribal planning, page 18)



Spearing dominates Mille Lacs lake walleye harvest during quiet season

(Continued from page 1)
 water limited spearing success on the Escanaba River where treaty fishers took 15 walleye, said Justin Carrick, Bay Mills Conservation Department. In Lower Michigan, a Bay Mills spearer filled the band's lone Black Lake sturgeon tag, taking an impressive 73-inch, 108-pound fish on May 3. Catch reports detail additional activity in Waishkey Bay where subsistence fishers found limited numbers of walleye and smelt along the reservation's Lake Superior shoreline.

Tribes again largely chose spearing over gill-netting at Mille Lacs this year, targeting the lake's more abundant 18-inch-plus walleyes to conserve younger year-classes of oгаа. According to preliminary results, spear-harvested oгаа averaged 21.2 inches. State and tribal biologists are redoubling on-the-water fisheries assessments to understand why—despite good spawning hatches—so many walleyes fail to reach catchable size.

With a walleye harvest limit set at a modest 17,100 pounds, many regular Mille Lacs lake fishers stayed home. Others shifted their efforts to catching perch and other species. The walleye harvest quota for state-licensed anglers is 42,900.

"It was quieter this year," said area GLIFWC Officer Robin Arunigiri. "The entire scope of the harvest went very smoothly."

With the state fishing opener running concurrently with the tribal spring harvest, GLIFWC and Minnesota state wardens jointly monitored boat landings and maintained close communications, Arunigiri said. GLIFWC wardens also worked closely with fisheries biologists and creel teams, poring over a real-time data base that helps ensure each tribe stays within their individual quotas.

Members of two Minnesota and six Wisconsin Ojibwe bands fish Mille Lacs under the 1837 Treaty. At the close of the season, Mille Lacs harvest numbers totaled 13,451 pounds of walleye and 3,716 of northern pike.

The Fond du Lac Ojibwe had hoped to conduct limited walleye fishing on 1854 Treaty lakes in coordination with the Minnesota Department of Natural Resources, but the late ice-out prompted band officials to cancel the spear-only season.



Conservation officers from GLIFWC and Minnesota Department of Natural Resources conducted invasive species educational outreach at Mille Lacs boat landings during the spring harvest season. Fishermen learned how to properly decontaminate boat hulls and fixtures to help prevent the spread of aquatic invasive species. Biologists have identified spiny water flea, zebra mussels and Eurasian watermilfoil in Mille Lacs. (Photo by Rabindran Arunagiri)



10-year-old Kayled Martin, Lac Courte Oreilles (LCO), donated 26 fish to LCO elders this year, his first spearing season. (Photo by Mike Popovich)

Ganawendan Ginibiiminaan (Protect Our Waters)

Aquatic invasive species (AIS) can have negative impacts to treaty resources including spawning and fish habitats. Remember when out on the waters to take the precautions to prevent their spread. Watch for invasives hitching rides on plant fragments, mud or debris!

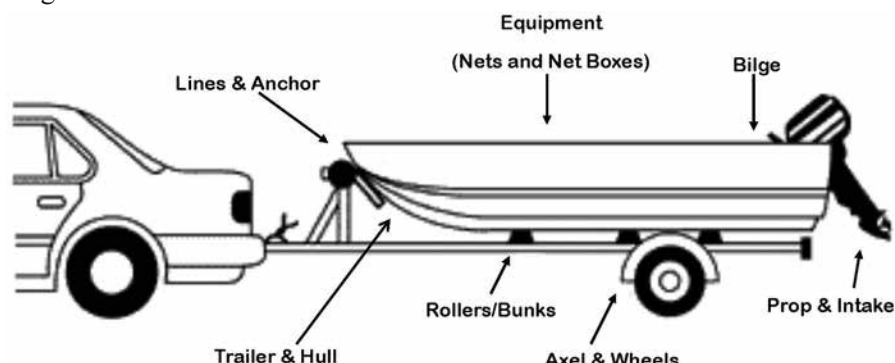
Stop Aquatic Invasives

- ✓ **REMOVE** any mud or debris, plants and animals from your boat, trailer and equipment.
- ✓ **DRAIN** all water from boat, fishing boxes and equipment ensuring it does not drain back into the waterbody.
- ✓ **CLEAN** or **DRY** boat, trailer and all equipment that came into contact with water including nets, buoys, anchors, ropes and lines, etc.
 - Submerge in boiling water.
 - Dry for 5 days, or
 - Freeze for at least 2 days*

* Note: 1837 Treaty Conservation Code for Minnesota Ceded Territory has additional requirements for "infested waters" (including Mille Lacs) to dry nets and equipment for a minimum of 10 days or freeze for a minimum of 2 days before using in non-infested waters.



GLIFWC Warden Vern Stone monitors the creel at the Whitefish Lake landing, Douglas County, during the 2014 treaty spearfishing season. Ben Baisley, GLIFWC creel clerk, measures the catch brought in by Bad River fishermen. (Photo by Dylan Jennings, GLIFWC intern)



Don't forget to check these spots for hitchhikers.

On the cover

The cover image depicts the Three Sisters (corn, bean and squash) as rendered by Lac du Flambeau's biskakone (Greg Johnson). The Three Sisters refers to a traditional, Native gardening technique where corn, beans and squash are planted in the same mound. The corn provides a natural bean pole for the bean to climb. The bean, in turn, enriches the soil with nitrogen, and the squash vines provide cover to stop emerging weeds.



MNDNR & tribes work to stop walleye decline at Mille Lacs

By Mark Luehring, GLIFWC Inland Fisheries Biologist

Growing concern about the health of the Mille Lacs walleye population prompted the Minnesota 1837 Fisheries Committee to adjust harvest strategies for the big lake in 2014. While biologists remain uncertain about the underlying causes of the walleye decline, they are pursuing a strategy to increase walleye populations as quickly as possible.

The total harvestable surplus to be shared between tribal fishers and state anglers was set at 60,000 pounds

for 2014, down from 250,000 pounds in 2013 and 500,000 pounds in 2012. According to the models used to estimate walleye population in the lake, a harvest of 60,000 pounds or less should keep the walleye population from declining further in 2015. The tribal allocation of the harvestable surplus is 17,100 pounds while the state allocation is 42,900 pounds

Mille Lacs has an abundance of good walleye spawning habitat, and hatching success and survival of young-of-year walleye to their first fall has been good, but the last good year-class was in 2008. Unfortunately, juvenile walleye

appear to be dying at higher rates than in the past between their first fall and the time they reach the adult population (at 3-6 years of age).

The 2014 strategy to help the walleyes bounce back centers around protecting young fish. The Minnesota Department of Natural Resources (MNDNR) and the tribes have agreed to relax regulations on northern pike and smallmouth bass since these populations are at an all-time high, and they may be competing with or preying on small walleye. The harvest cap for northern pike—split 50/50 between the state and the tribes—has been increased to 100,000 pounds (double what it was in 2013). Additionally, the tribes have authorized spearing for northern pike, and MNDNR extended the state northern pike season until the end of March while increasing the bag limit for northerns to 10 (only one of which may be over 30 inches).

The bands and the state also each made regulation changes to allow for more harvest of smallmouth bass. MNDNR will continue to use an 18-20

inch harvest slot to regulate the walleye angling fishery, along with a ban on night fishing from May 12th through December 1st. The tribes are allowing members to spear walleye of any size (previous regulations had focused harvest on fish under 20") to shift some of the harvest away from young fish.

Along with the changes in harvest strategy for 2014, biologists will continue to conduct thorough assessments to keep tabs on the fish community. Already completed this spring are tagging population estimates to measure the abundance of northern pike and walleye. This effort was coordinated between MNDNR, GLIFWC, Fond du Lac Band, and US Fish and Wildlife Service. GLIFWC and Fond du Lac are planning to conduct a late spring juvenile walleye electrofishing survey to gauge the overwinter survival of the 2013 year-class. Meanwhile, MNDNR will continue to evaluate diets of predators in Mille Lacs in order to estimate predation rates on young walleyes.

Survey crews command the night shift

By Mark Luehring, GLIFWC Inland Fisheries Biologist

Odanah, Wis.—GLIFWC crews in Minnesota, Wisconsin, and Michigan worked with partner agencies to conduct fish population assessments on 20 ceded territory lakes this spring. The walleye assessments went fast and furious as walleyes were ready to spawn as soon as the ice left ceded territory lakes. These estimates—conducted primarily through night electrofishing—provide biologists with quality data on walleye population abundance in important ceded territory waters.

In Minnesota, GLIFWC dodged ice floes with USFWS, MNDNR, and Fond du Lac to mark spawning walleyes and northern pike. GLIFWC participated in a recapture netting effort starting in late May to estimate the populations. An additional electrofishing survey is scheduled for early June to determine overwinter survival of juvenile walleye.

GLIFWC crews partnered with St. Croix, Mole Lake, and WDNR to conduct mark-recapture walleye population estimates on 18 lakes in Wisconsin ranging from 123-acre Sherman Lake to 2,508 acre Nelson Lake. Over 10,000 adult walleyes ranging from 10 inches up to 29 inches were sampled in these efforts.

In Michigan, GLIFWC conducted a mark-recapture population estimate on Pomeroy Lake, Gogebic County for the first time since 2005. The table below shows lakes where estimates were completed. Work at Mille Lacs is still in progress.



Mark Luehring, GLIFWC inland fisheries biologist, holds up a nice ogaa captured and released during electrofishing assessments on Evergreen Lake in Sawyer County, Wisconsin. (Photo by Butch Mieloszyk)

State	County	Lake	Area (acres)
MI	Gogebic	Pomeroy Lake	314
MN	Mille Lacs	Mille Lacs	132,500
WI	Bayfield	Siskiwit Lake	330
WI	Douglas	Amnicon Lake	426
WI	Forest	Jungle Lake	177
WI	Forest	Lily Lake	213
WI	Langlade	Sawyer Lake	149
WI	Oneida	Bearskin Lake	400
WI	Oneida	Squirrel Lake	1,317
WI	Price	Butternut Lake	1,006
WI	Sawyer	Mason Lake	190
WI	Sawyer	Evergreen Lake	200
WI	Sawyer	Nelson Lake	2,508
WI	Vilas	Big Lake (MI Border)	771
WI	Vilas	Kentuck Lake	957
WI	Vilas	Mamie Lake	400
WI	Vilas	Oxbow Lake	511
WI	Vilas	Sherman Lake	123
WI	Vilas	Squaw Lake	785
WI	Washburn	Bass-Patterson Lake	188

Updated mercury maps available

By Jennifer Burnett, GLIFWC Outreach Specialist

Odanah, Wis.—Spring harvest of ogaa (walleye) from inland lakes is an important part of the Anishinaabe bimaadiziwin (lifeway). For many tribal members, ogaa provides their family with high quality food that is a good source of lean protein, low in saturated fat and contains other important nutrients like selenium. However, eating fish often comes with a concern about exposure to mercury.

GLIFWC's mercury maps are an essential tool for tribal members to limit their exposure to mercury from eating fish harvested from off-reservation inland lakes. The maps offer a quick and easy reference for harvesters to select cleaner lakes, as well as the safe number of ogaa meals per month the sensitive

population (women of childbearing age and children), and general population (men and women beyond childbearing age) can enjoy without overexposure to mercury.

Under funding from the Great Lakes Restoration Initiative, GLIFWC updated the mercury maps for its member tribes with the most current mercury data available.

Data collected since the last update in March 2012 has added information for 11 lakes, and a total of 446 lakes harvested by GLIFWC member tribes now have color-coded, monthly consumption advice.

The updated mercury maps are available for viewing and download at <http://glifwc.org/Mercury/mercury.html>. Physical copies of the maps were provided to tribal registration stations and other locations on reservation for the spring harvest.

Lakes that now have more restrictive consumption advice for women of childbearing age and children include:

- Green Lake, Chisago County, Minnesota—4 meals or 32 oz./month (green) → 2 meals or 16 oz./month (yellow)
- Ballard Lake, Vilas Co., Wisconsin—1 meal or 8 oz./month (orange) → Do not eat (red)
- Grindstone Lake, Sawyer Co., Wis.—2 meals or 16 oz./month (yellow) → 1 meal or 8 oz./month (orange)
- Sparkling Lake, Vilas Co., Wis.—2 meals or 16 oz./month (yellow) → 1 meal or 8 oz./month (orange)

Five lakes have less restrictive advice for either the sensitive or general population include:

- Chisago Lake, Chisago Co., Minn.—4 meals or 32 oz./month (green) → 8 meals or 64 oz./month (blue) for the general population
- Kawaguesaga Lake, Oneida Co., Wis.—4 meals or 32 oz./month (green) → 8 meals or 64 oz./month (blue) for the general population
- Presque Isle Lake Chain, Vilas Co., Wis.—1 meal or 8 oz./month (orange) → 2 meals or 16 oz./month (yellow) for the sensitive population
- Shell Lake, Washburn Co., Wis.—2 meals or 16 oz./month (yellow) → 4 meals or 32 oz./month (green) for the general population
- Twin Lake Chain, Vilas Co., Wis.—4 meals or 32 oz./month (green) → 8 meals or 64 oz./month (blue) for the general population



Trapping standards goal of international committee

By Sue Erickson
Staff Writer

Odanah, Wis.—International issues surrounding trapping methods brought GLIFWC Wildlife Section Leader Dr. Jonathan Gilbert to Yakusk, Siberia last fall to provide native perspectives on trapping and humane trapping standards.

How did this happen? It's complicated, Gilbert explains. It all started back in 2007 when the European Union (EU) passed a law outlawing the use of foothold traps in Europe and required that any furs coming for sale in the EU must be trapped using human-trapping standards.

Essentially this law would effectively cut off international trade of wild furs among the US, Canada, the EU, and Russia.

In 2008, Russia, the EU, and Canada signed an agreement that they would develop humane trapping standards for wild furbearers and require trappers to use them. However, the U.S. was not a signatory to the agreement because the state and tribes regulate trapping here, so the federal government could not sign on. Instead the U.S. entered into an "approved minute" of the agreement to develop best management practices for trapping and testing traps.

The four involved entities then decided to meet annually to document progress towards humane trapping and established the Joint Management Com-

mittee (JMC) for the implementation of humane standards. The US delegation to the JMC is coordinated through the US Association of Fish and Wildlife Agencies (AFWA).

AFWA determined a Native American perspective was needed, so began the search for candidates and asked GLIFWC for nominations. GLIFWC nominated Gilbert, and this nomination was approved by the Voigt Intertribal Task Force and submitted to AFWA. Gilbert was accepted as an advisor on Native American perspectives. The first meeting that Gilbert attended was scheduled for fall 2013 in Siberia!

Gilbert felt this was a positive opportunity, not only to involve tribal interests in AFWA, but also to relate tribal perspectives and concerns on issues regarding trapping and marketing furs.

Gilbert found the meetings very formal and tightly organized. He was assigned a 15-minute slot from the United States' allotted time to provide an overview on tribes in the US, so had an opportunity to talk about tribal sovereignty, self-regulation and treaty rights at an international level.

A highlight of the trip was a visit to an outlying tribal village of reindeer herders. The issue that brought the committee to these native tribes dealt with trapping wolves. Beleaguered with a high rate of horses killed by wolves, the tribes engaged in wolf trapping, and the committee was interested in their method and perhaps encouraging humane trapping methodology for the tribes.



A trip to a Native Siberian community was a highlight during Dr. Jonathan Gilbert's trip to Siberia for an international meeting about trapping methods. Gilbert, GLIFWC's Wildlife Section leader, is pictured here with village leaders who gave their visitors a traditional greeting.

At the village, they were greeted in traditional fashion, entering through an arched arbor with fires going on either side. As they entered, they were brushed with light shrubbery and smudged with charcoal marks on their faces. The tribal chief and his wife greeted them.

Gilbert presented gifts from GLIFWC tribes, including black ash baskets, wild rice and a small, brightly painted fish decoy from Lac du Flambeau. That caught the eye of the chief's wife, and she quickly grabbed it for

herself. Later, they were entertained with songs, feasting, and dance.

One of the primary meats was horse meat, which Gilbert said was served in several fashions, some appealing and some, like the raw, frozen horse liver, not so appealing! Many of the foods, like fish and horse meat were served frozen, but raw, so you would eat them in little frozen cubes.

The next annual meeting of the committee is set for St. Louis, Missouri in September.

Elusive waabizheshiwag avoid detection Hair snares used to ID American marten in CNNF

By Sue Erickson, Staff Writer

Odanah, Wis.—Checking hair snares for signs of waabizheshiwag (American martens) in a vast swath of the Chequamegon portion of the Chequamegon-Nicolet National Forest (CNNF) became particularly grueling this winter with the extreme cold and heavy snow testing endurance. Nevertheless, GLIFWC Wildlife Technician Ron Parisien assisted by Ron Jr., donned snowshoes and face masks and made their weekly rounds of fifty hair snares, seeking evidence of the elusive waabizheshi in the frozen forest.

For three years running, 2008-2010, thirty Minnesota waabizheshiwag were released annually in the CNNF in an effort to bolster the apparently dwindling population which has shown low reproduction levels.



Hair snares and cameras are tools of the trade for Ron Parisien, GLIFWC wildlife technician, who placed snares and cameras in habitat preferred by American martens as part of an ongoing study. (Photos by Ron Parisien Jr.)

Waabizheshiwag in the Penokees

A GLIFWC study of waabizheshiwag in the Penokees is examining American martens' use of a corridor through Iron County to move from Wisconsin's Chequamegon-Nicolet National Forest (CNNF) to the Ottawa National Forest in Michigan.

Currently, Casey Day, a student from Purdue University, has undertaken the study for GLIFWC and is recording this movement with the use of cameras, hair snares and genetics to document an exchange of DNA between Wisconsin and Michigan waabizheshiwag. Day has succeeded in obtaining some samples, but the catch rate remains low, like in the CNNF.

The two-year project is divided into two parts: a one-year field season in 2013-14 and a year of analysis in 2014-15.

With the importation of 90 Minnesota martens in all, most of them females, researchers are now trying to find evidence of reproduction between the native Wisconsin martens and those released from Minnesota. "Did the Minnesota martens pass on genes? Is there evidence of breeding between the two? These are some of the questions the study hopes to answer," says GLIFWC Wildlife Section Leader Dr. Jonathan Gilbert.

GLIFWC is partnering on this project with UW-Madison, Wisconsin Department of Natural Resources, and the US Forest Service. Each has 50 hair snares in sections of the Chequamegon Forest. The two-year project will conclude this summer; however, funding is available to perform a similar two-year study in the Nicolet portion of the CNNF.

This winter GLIFWC's snares had a very low success rate, yielding only a few samples out of approximately 350 snare checks. While unsure of numbers from other partners, Gilbert believes success rates may have been better in the other project sections but still would be considered low compared to last year.

The snares, along with field cameras, were set out during the first week in January in an area south of Mellen, Wisconsin and north of Clam Lake, Wis. and retrieved in early March. The extremely cold temperatures played havoc with the cameras, however, requiring batteries to be replaced with lithium batteries in order to operate in those low temperatures, Parisien said. No martens appeared in view of the field cameras; however, the presence of (ojig) fisher and gidagaa-bizhiw (bobcat) was recorded. Extreme cold could also factor into the low success rate with the hair snares. Typically, martens tend to lay low and limit their movement in cold temperatures.



Stamp sands move towards Buffalo Reef spawning beds

Army Corps proposes stone wall to intervene

By Ben Michaels, GLIFWC Fisheries Biologist

Gay, Mich.—It was a tribal commercial fisherman who first noticed that stamp sand was encroaching upon Buffalo Reef, an important spawning site for lake whitefish and lake trout along the Keweenaw Peninsula's Grand Traverse Bay (known locally as Big Traverse Bay). When the fisherman expressed his concern to GLIFWC, fisheries staff investigated the situation and discovered a potential threat to important spawning habitat.

Stamp sands are the by-product of a refining process, which involves a large machine that pulverizes large rocks into smaller parts. The process facilitates the extraction of metals such as copper, however, produces large quantities of extraneous material (aka stamp sand). Stamp sands are known to contain high concentrations of metals such as mercury and copper; these metals can negatively affect aquatic and terrestrial organisms. Also, habitat degradation can be caused by the encroachment of stamp sand into small crevices within natural bottom substrates.

The Keweenaw Peninsula, which is part of the 1842 Ceded Territory, is a region subject to scores of copper mining operations throughout mining history. Many of the copper mines were operated from the mid-1800s to 1968. By 1968, 4.8 million metric tons (Mt) of copper was smelted from areas around the Keweenaw Peninsula. Unfortunately, 360 Mt of stamp sand were deposited into rivers and lakes, including 64 Mt into Lake Superior. By 1938, an estimated total of 22.4 Mt of stamp sand was deposited into a pile off the shore in Grand Traverse Bay. Since then, stamp sand has been eroding from this pile and spreading southwest along the Keweenaw shoreline (Figure 1).

In 2005, GLIFWC conducted an expanded gill net survey on Buffalo Reef to determine which areas of the reef contained important spawning habitat for lake whitefish and lake trout. Additionally, GLIFWC contracted Environment Canada to conduct sonar sampling in order to determine the distribution of stamp sand within Buffalo Reef. The results of the survey revealed that the entire area of Buffalo Reef was an important spawning area for lake whitefish and lake trout. Also, the sonar survey showed that stamp sands were indeed moving in close proximity to important spawning habitat within the reef, posing a habitat risk for spawning fish.

In addition to the expanded gill net survey on Buffalo Reef, GLIFWC has conducted beach seining on areas of stamp sand and native sand on the shoreline area of Grand Traverse Bay to determine whether any fish species were thriving

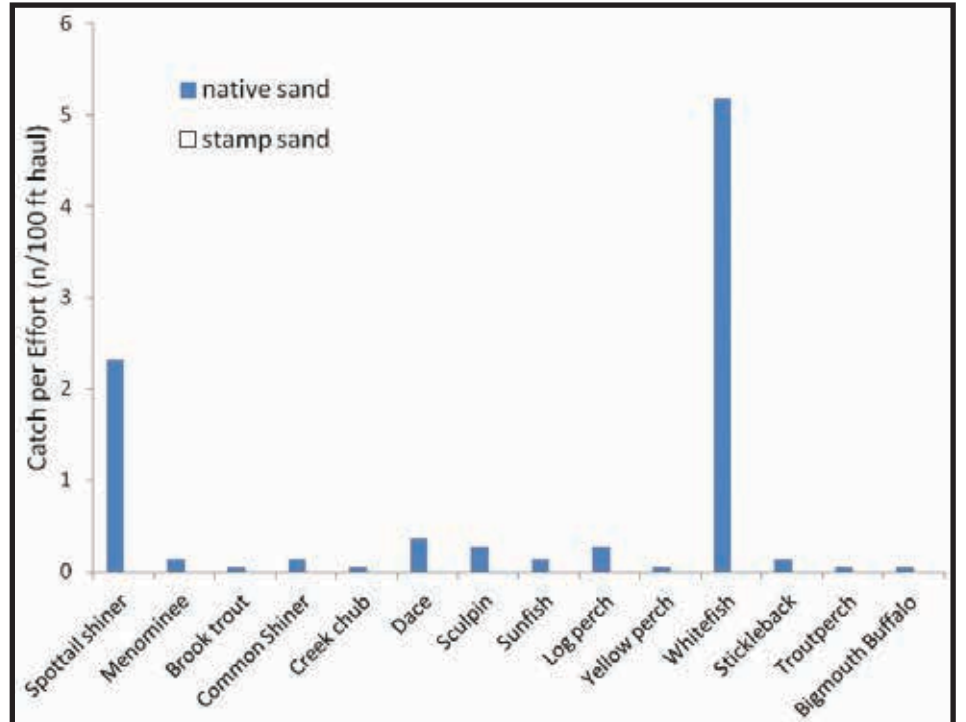


Figure 2. Catch per effort (number/100 ft haul) of native fish species on native sand and stamp sand. No fish were observed in samples taken on stamp sand substrate.

on stamp sand substrate. During 2008, 2011, and 2013, several species were found in samples taken on native sand, however no fish were found in samples taken on stamp sand during the same years (Figure 2). The absence of fish on the stamp sand beaches suggests there is insufficient habitat and/or food for the survival of small fish, which are an important diet item for larger predators such as lake trout.

The results from GLIFWC's expanded gill net survey and beach seine survey show that Buffalo Reef is susceptible to habitat loss via stamp sand encroachment, and on-shore stamp sands have created an inhospitable environment for small-sized fish. In response to the negative impacts of stamp sand, the Army Corp of Engineers proposed construction of a stone wall in Grand Traverse Bay; the intent of this project is to prevent additional erosion and dispersal of the stamp sand pile near Gay. Once the stamp sand pile is stabilized, restoration efforts will be undertaken by removing stamp sand from Grand Traverse Bay. A feasibility study is underway for the project and is expected to be completed by the end of 2014. Meanwhile, GLIFWC will continue to monitor fish populations within and around Buffalo Reef.

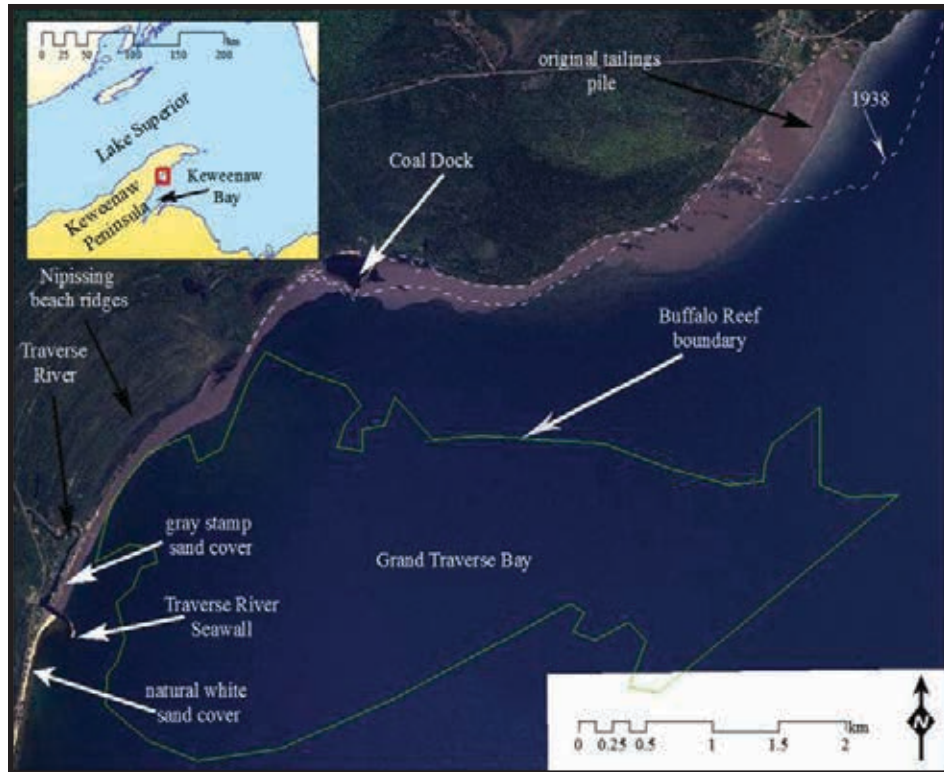


Figure 1. Distribution of on-shore stamp sand in Grand Traverse Bay. The dotted line represents the distribution of stamp sand during 1938.



Representatives from the 1854 Authority and the Council of Great Lakes Fishery Agencies (CGLFA) sign The Joint Strategic Plan for Management of Great Lakes Fisheries which represents a collective will of the fishery management agencies to protect and, where necessary, to rehabilitate the fisheries of the Great Lakes. The 1854 Authority is the third inter-tribal and sixteenth government agency to sign the agreement since its inception in 1981. Pictured above during the signing are: Seated—Dr. Seth Moore, Grand Portage wildlife biologist; Millard (Sonny) Myers, 1854 Authority executive director; Jim Dexter, CGLFA acting director. Standing—Tom Swader, Grand Portage trust lands administrator; E.J. Isaac, Grand Portage fish and wildlife biologist; Chris Johnson, 1854 Authority conservation officer. (Photo by T. Lawrence Great Lakes Fishery Commission)

Mazina'igan digital flipbook

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GLIFWC involvement in the environmental review of the proposed PolyMet Copper Mine

By Esteban Chiriboga, GLIFWC GIS Mapping

Should the State of Minnesota permit its first non-iron metals mine? What would the environmental impacts be? Are they likely to be outweighed by economic benefits? What would the impacts be to tribes that hold off-reservation rights to harvest on the land that would be excavated to develop the mine?

These are some of the questions that the State of Minnesota and several federal agencies are considering as they decide whether to issue permits for that state's first sulfide mine, the Northmet project proposed by the PolyMet Mining Corporation. Although Minnesota is home to a number of iron (taconite) mines, no mines have been developed that would extract metals like copper, nickel, zinc and gold. These metals tend to be bound to sulfur, and so-called sulfide mining poses a heightened risk of metal leaching and acid mine drainage when the metals are mined. Acid mine drainage has damaged thousands of miles of streams in other states in the US.

Concerns about impacts to water quality, wetlands, treaty rights and traditional properties, as well as the cumulative impacts of mining on the Iron Range, prompted tribes to get involved in the evaluation of the environmental impacts of the proposed PolyMet mine. Since, if permitted, the PolyMet project would be the first sulfide mine in the state, tribes were also aware that the state and federal agencies' approach to environmental analysis and permitting would be likely to influence the evaluation of future sulfide mining proposals.

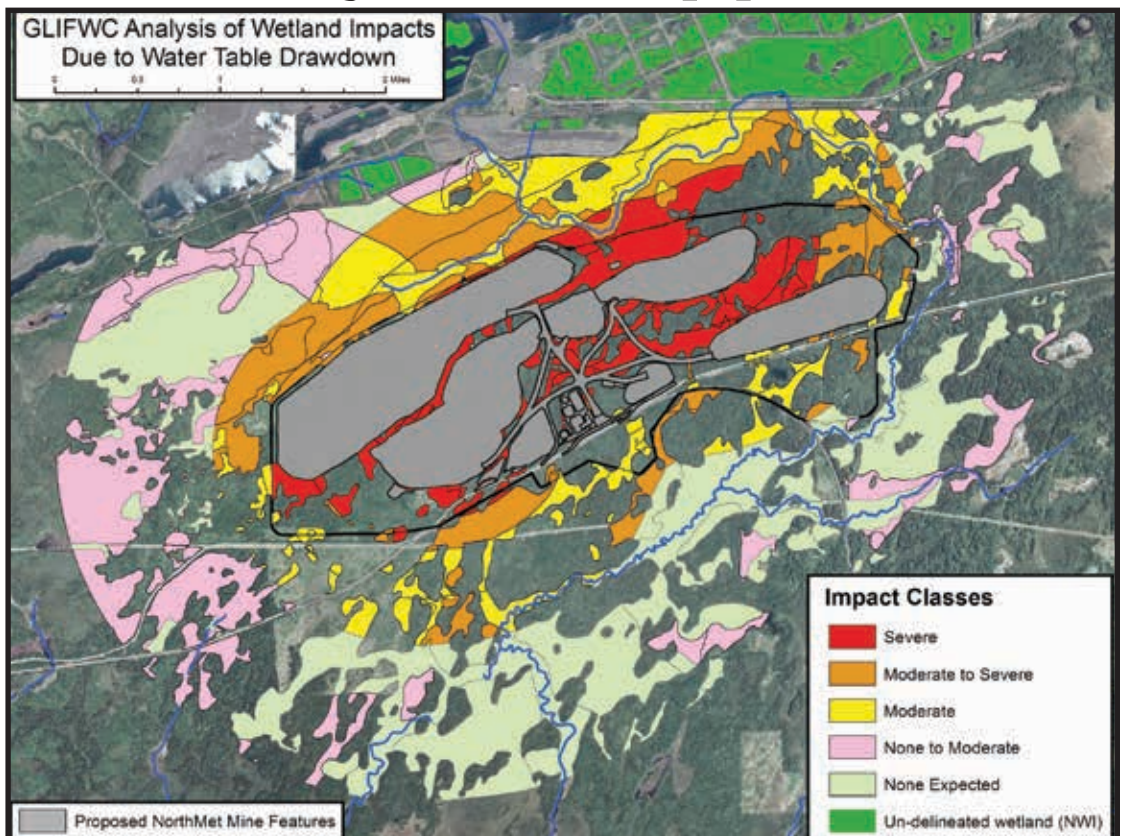
GLIFWC staff first became involved in analyzing the environmental impacts of the proposed PolyMet mine in 2005 when the Army Corps of Engineers (ACOE) and Minnesota Department of Natural Resources (MNDNR) conducted preliminary scoping of environmental issues related to the project. In 2006, GLIFWC began attending technical meetings related to the project at the request of the Fond du Lac Band of Lake Superior Chippewa, one of its member tribes. At that time, the PolyMet Mining Company had begun releasing technical mining documents and the ACOE and the MNDNR, the lead agencies in the Environmental Impact Statement (EIS) process, began meetings to inform tribes and other agencies about project issues. During the early meetings, numerous concerns related to wetland loss, impacts to water quality, and water table drawdown were identified.

The Fond du Lac, Bois Forte, and Grand Portage Chippewa bands requested that the Army Corps of Engineers (ACOE) invite them to become cooperating agencies in the EIS process. However, the ACOE did not act on this request until after the State of Minnesota's scoping period had ended. The effect of this delay was that issues advanced by the tribes in the early period, like groundwater quantity and quality, were mostly overlooked by the MNDNR. Fond du Lac and Bois Forte eventually became cooperating agencies.

Since then, GLIFWC staff have continued to provide technical assistance in several areas as the environmental analysis of the proposed PolyMet project was developed. This has included analysis of mine induced drawdown effects on wetlands, analysis of flow in local rivers, prediction of noise levels near the mine, mapping of wild rice beds, evaluation of alternatives such as underground mining and mine pit backfill, evaluation of cumulative impacts, and modeling of groundwater hydrology. Those analyses have played a role in developing comments on the project and pointing to areas that need additional clarification and baseline data.

Project proposal: 2007

In 2007, a formal project description was submitted by PolyMet Mining Corp. It proposed seven unlined and uncapped waste rock stockpiles, (allowing for release of contaminated water), no treatment for water escaping the tailings facility, minimal stormwater and tailings water seepage collection, over 1,000 acres of wetland fill, and no backfill of the open pits. Minimal cover for a portion of exposed Virginia formation, a formation with the potential to generate acid, was proposed. There was no doubt that if this initial proposal had been permitted, serious pollution would have occurred to the surrounding environment. In addition,



GLIFWC analysis of wetlands impacted by groundwater drawdown at the proposed PolyMet mine in Minnesota.

tion, PolyMet suggested that perpetual water quality treatment was likely to be necessary. The project lead stated that water treatment would likely be needed for "forever and a day." (Jim Scott, PolyMet project manager, meeting of January 30, 2007, St. Paul, MN).

The project proposal was analyzed for environmental impacts over the next two years. Unfortunately, the applicant had not collected adequate baseline water quality and quantity data, so conclusions about potential impacts were based on models that did not adequately describe the baseline hydrology of the site. GLIFWC and other tribal staff argued, beginning in 2008, that the basic hydrology of the mine site was poorly characterized, making conclusions regarding water quality, quantity, wetland impacts, and water treatment needs unreliable.

Development of the first DEIS: 2008-2009

Between 2008 and 2009, GLIFWC staff reviewed several iterations of the PolyMet EIS document. In July of 2009, the Complete Preliminary Draft EIS (DEIS) was released. GLIFWC and tribal staff commented extensively on this draft and a first DEIS was issued in October of 2009.

The October 2009 DEIS presented challenges for tribal agencies and staff. One of the benefits of cooperating agency status was that differences of opinion with the lead agencies had to be included and discussed in the document. However, exactly how those comments and opinions would be represented was not clear. Tribal staff developed extensive comments on the 2009 DEIS text and the analysis underlying the document, and was assured by the ACOE that tribal perspectives and analysis would be included verbatim in the document. After significant discussion and negotiation, the ACOE was able to facilitate the inclusion of tribal comments as both footnotes and in a separate chapter. This episode underscored the difficulties that GLIFWC and tribal agency staff encountered while advocating for a more robust environmental analysis of the project.

The review of the 2009 DEIS by the public and other agencies was extensive. GLIFWC and other tribal staff reissued many of the comments that had been prepared for previous versions of the DEIS and were still relevant, as well as new information and analysis. Ultimately the Environmental Protection Agency (EPA), which reviewed the EIS, gave it the worst approval rating available, indicating that in the EPA's opinion both the proposed project and the document that was supposed to describe the impacts of that project were unacceptable. The EPA expressed many of the same concerns that tribal staff had been raising for the previous two years. The EPA's rating meant that a new DEIS needed to be prepared before a final EIS could be completed.

Development of the Supplemental DEIS: 2010-2013

The failure of the 2009 DEIS motivated the lead agencies to make structural changes to the process. First, the U.S. Forest Service joined the process as a lead agency because of the land exchange that is an integral part of the project. The project is proposed to be built on what is currently Forest Service land. In the 2009 DEIS, it was simply assumed that the land exchange would occur. In addition, the EPA and Grand Portage joined the process as cooperating agencies. A Communication and Coordination Protocol (CCP) was developed during this time in an attempt to describe each agency's role and responsibilities, but the tribal cooperating agencies found it too restrictive and did not endorse it. Nevertheless, they remained cooperating agencies actively participating in the process.

The first step in 2010 toward developing the Supplemental Draft Environmental Impact Statement (SDEIS), was to form Impact Assessment Planning (IAP) groups that would provide recommendations to PolyMet on the analysis that would (See GLIFWC assesses impact, page 8)



A portion of the processing facility at the PolyMet plant site. The old taconite processing facility would be converted to process copper ore.



Timeless rewards in a northern sugarbush

By Charlie Otto Rasmussen, Staff Writer

On the Bad River, Wis.—Nestled in the hardwood river bottoms south of Odanah, an old iskgamizigan (sugarbush) is new again with the arrival of four tribal members and a lot of gear. From a winding woodland trail of slush and snow, down a steep grade to the river, it takes some effort to get to the High Landing camp. Once there, it takes no time to settle in.

“It’s nice out here,” says Dan Wiggins, high-stepping through the April snowpack under a skeletal canopy of hard maple. To the left a cherry-chocolate thread of moving water separates the frozen river from its north bank; a beaver lodge bulges off to the right, emerging from a frozen backwater. “Easy access is nice too. We’ve done that.”

Wiggins, Vincent Bender and Jerome Powless—all in their 30s—entered their third sugarbush season together in search of productive grounds away from plowed roads and frequented sites. They found a good one at the venerable High Landing and recruited Dan Powless Jr., Jerome’s younger brother, to help.

Weeks before the first drop of sap landed, the crew set-up camp utilizing the deep snow to sled-in equipment including a hefty evaporator unit. At the base of the high bank they fashioned a plank of wooden pallets, bridging a watery recess to a bent wood, fifteen-foot hoop house that provided storage and shelter.



Blue plastic collection bags hang from maple trees as Dan Wiggins surveys the High Landing Sugarbush along the Bad River. (Photo by Charlie Otto Rasmussen)



Dan Powless Jr. loads split firewood into a maple sap evaporator near the Bad River in early April. It typically requires 35-40 gallons of refined maple sap to make one gallon of syrup. (Photo by COR)

The first days of April delivered the best sap flows at the sugarbush, followed by on-again-off-again activity depending on temperatures. When temps dip below the freezing mark at night and rise back up on sunny days, pressure develops inside the tree driving wiishkobaaboo (maple sap) through the narrow taps.

“You appreciate maple syrup a lot more after you’ve put in the work,” Wiggins says, unhooking a blue plastic bag from under a metal spile. The small, heavy-duty bag contains a few pints of sap. Wiggins empties it into a nearby 30-gallon container, one of several that serve as a way station for collected sap. More than 200 blue bags set at chest height appear throughout the hardwoods; a handful of trees feature sap collection apparatus Jerome Powless jerry-rigged with tubes, PVC pipe and empty Culligan containers.

Back at camp, angling sunlight catches the dense white steam billowing from the evaporator. A cast iron stove box beneath the pan delivers wood heat, keeping the sap at a steady simmer. Wiggins returns to contribute more wishkobaaboo to the steel evaporator pan; the younger Powless produces a white t-shirt which they employ to strain stray bits of debris from the sap before adding to the thickening liquid. “Every year we make adjustments; learn a trick or two to make it go more smoothly,” Wiggins said. “This is the first year we’ve used bags. I like them. Metal buckets rust; they don’t last unless you immediately clean them out.”

Wiggins has children to tend to that evening and work in morning; he leaves Powless to tend to the evaporator, feeding it split firewood well into the night. The whole crew rotates in and out on a daily basis. Most days after school their kids swarm the sugarbush, toting containers of sap back to camp. On weekends the men boil sap around the clock, sharing stories and consulting mobile phones for news from back home. (See Northern iskgamizigan, page 8)

GLIFWC project assesses risk of invasive plants to native plants

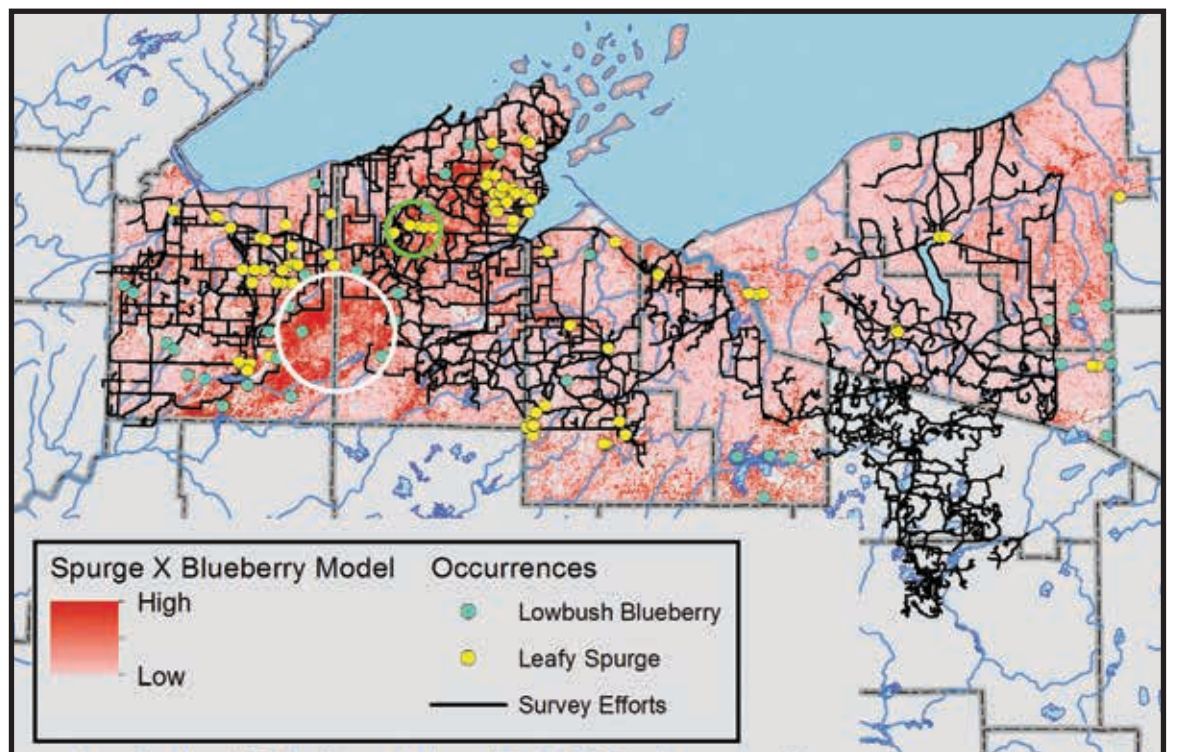
By Miles Falck, GLIFWC Wildlife Biologist

Odanah, Wis.—Several hundred non-native terrestrial and wetland plants are now established within the Ojibwe ceded territories. These non-native plants vary in their potential to spread and degrade native plant communities. With limited resources available to manage invasive plants, objective tools are needed to help identify which species pose the greatest threats to native plant communities and a process to prioritize and target invasive plant management efforts.

The goal of the invasive plant risk assessment to tribal resources project was to quantify the risk of non-native invasive plants to culturally important native plants within six contiguous counties of Wisconsin and western Upper Michigan bordering Lake Superior. Models were developed by correlating species occurrence data with environmental variables such as soil texture, landcover, annual precipitation and temperature extremes to predict the distribution for several non-native and native plants. The risk of a non-native plant to a native plant was evaluated by combining the models in GIS. The resulting model identifies where both plants are most likely to thrive, and hence, compete on the landscape.

The standard GIS format of the model output facilitates the overlay of additional spatial data relevant to management. In the case of invasive species, these data include introduction points (e.g. ports, campgrounds, trailheads), vectors (e.g. roads, rivers, utility corridors), known invasive species occurrences, and land ownership. GIS can be used to visualize this information and discern patterns in introduction and spread that can be used to plan an appropriate management response.

The graphic (right) illustrates the relative risk that leafy spurge may pose to lowbush blueberry across the project area. The dark red areas indicate where conditions are most suitable for both leafy spurge and lowbush blueberry. Past



surveys for invasive plants are displayed in black. The white circle shows where additional surveys for leafy spurge may be warranted because it is highly suitable habitat and past surveys did not cover this area. The green circle identifies some relatively small leafy spurge sites in the middle of a large area of suitable habitat. These sites should be a high priority for control because they are small and relatively easy to control, but could spread far in the absence of any management. (See Invasive plants, page 8)



GLIFWC assesses impact of Polymet proposal on treaty rights & resources

(Continued from page 6)

be needed for the SDEIS. Tribal staff were included in the process of identifying issues that needed to be addressed in the SDEIS, but, for most IAP groups, were excluded from decision-making on the actual data collection and analysis that would be needed to address those issues. Consequently, many of the same weaknesses that were evident in the 2009 DEIS, such as a lack of baseline hydrologic data and water quality modeling deficiencies, are still present in the 2013 SDEIS.

One example was the analysis needed to assess impacts to wetlands from drawdown of the water table. The broad consensus of the wetland IAP group was that this impact needed to be characterized through robust modeling of groundwater drawdown. This is a basic analysis that is done for many other mining proposals. The three cooperating tribes, GLIFWC, 1854 Treaty Authority, Minnesota Pollution Control Agency, U.S. Fish and Wildlife Service, and U.S. Forest Service all supported the idea. Ultimately, the analysis was deemed by the lead agencies to be too difficult and was not a part of the SDEIS.

After the initial identification of issues in the IAP process, the lead agencies developed technical data packages and management plans. Those were the foundational documents on which the SDEIS was based.

Gradually the proposed project changed from the initial proposal of 2007 and the revised proposal of 2009. A water collection system around the proposed stockpiles and the tailings basin was included and the collected water was proposed to be routed to two water treatment plants. The most reactive waste rock was proposed to be backfilled into one of the mine pits. The EPA asked for the installation of groundwater wells at the mine site to better characterize water quality and additional data collection for surface water quality was conducted. Despite these improvements, the proposed project was still expected to require perpetual capture and treatment of water in order to avoid violating water quality standards. In addition, the water capture systems must operate at extremely high efficiencies (greater than 90% effectiveness) in order to avoid violating water quality standards. These efficiency rates were not supported by available literature or examples.

Despite obstacles, GLIFWC and tribal staff were able to provide extensive comments on many of the data packages and management plans used in developing the SDEIS. In 2013, staff began developing independent analysis of the project for inclusion in the SDEIS.

The SDEIS, released in November of 2013, was notable in that it included a chapter (Chapter 8) that was devoted entirely to detailing the major differences of opinion between the tribal agencies and the lead agencies on the potential impacts of the project. SDEIS Appendix C included supporting materials and independent analysis prepared by the cooperating tribes and the two intertribal agencies on baseline hydrology, water quality and perpetual treatment, cumulative impacts, mercury impacts, wild rice, dewatering of wetlands, noise and vibration, impacts to cultural resources, and alternatives to the mine plan.

New issues arise

After the release of the SDEIS, GLIFWC staff identified additional issues that had not been commented on previously. For example, new information from the MNDNR confirmed GLIFWC's contention, first articulated in 2008, that hydrology at the mine site was not well characterized and that the amount of water moving through the system was underestimated by a factor of approximately three. The implications of this error were substantial in that it cast doubt on calculations of surface and groundwater impact from mine pit dewatering, water treatment needs, and the assumption that wetlands are not connected to groundwater. In reviewing the SDEIS sections dealing with the hydrology of the tailings basin area, staff discovered that inaccurate geology had been used in the model that was used to predict seepage rates at the tailings basin. This cast doubt on the estimates in the



Ling Temco Vought (LTV) Emergency overflow basin. PolyMet proposes to dispose of its hydrometallurgical tailings at this location. The hydrometallurgical tailings are the most hazardous and reactive materials that would be produced at the mine and would require perpetual maintenance to prevent environmental damage in this wet environment.



North face of the Ling Temco Vought (LTV) tailings basin. PolyMet would deposit its tailings on top of this existing basin. Thousands of gallons per minute of high sulfate water is currently seeping out of this facility and into the surrounding wetlands and streams. If PolyMet tailings are deposited on the top, water from those tailings would seep out as well. A seepage capture system is proposed to try to limit that discharge.

SDEIS of seepage flow rates and flow directions from the tailings basins. Because of this, the transport of contaminants to surface waters to the east of the tailings basins was not considered. Research into the functioning of seepage capture systems at other projects in the United States led GLIFWC to question the efficiency of the engineered seepage capture systems and point out that these systems must function in perpetuity. Without nearly complete capture of seepage from the project, water quality standards in surrounding surface and groundwater would be violated.

Towards a final EIS

At this time, the lead agencies are sorting through approximately 50,000 comments submitted by the public and tribal, state and federal agencies. Once the comments are sorted, the lead agencies will evaluate the comments and draft responses. Finally, any additional analysis and/or data collection, prompted by the comments, will be planned and executed prior to the release of the Final Environmental Impact Statement (FEIS).

Throughout the PolyMet EIS process, GLIFWC and tribal staff have worked closely with the federal and state agencies to develop a better understanding of the potential impacts of the project. That cooperation has resulted in the collection of additional water quality data for groundwater and the smaller public waters in the area, identification of waters subject to the Minnesota 10 mg/L sulfate standard, establishment of water quality evaluation and compliance points at most of the public waters in the area, monitoring of the transportation corridors for spillage of ore, and reevaluation of the quantity of flow in the Partridge River.

GLIFWC staff will continue to work with tribes and with state and federal agencies to assess the environmental impacts of this project and the implications of those impacts on treaty rights and resources.

Northern iskgamizigan

(Continued from page 7)

Meltwater jumped the banks of Bad River in mid-April and ended the season with a hurried withdrawal back up the slippery bank. In the end they drew 600 gallons of sugary water from the maples, making 16 gallons of prized syrup for family and friends.

Said Wiggins after bottling the last quart in a glass jar: "When that syrup is in your hand...that's something."

Invasive plants

(Continued from page 7)

This project has enhanced the capacity of GLIFWC staff to understand and evaluate the relative threats of invasive plants to culturally important native plant species.

A total of 23 invasive species models, 12 native models and 16 invasive/native co-occurrence models were created. The models, metadata, and final report are available on GLIFWC's website at <http://invasives.glifwc.org/models>.



Find us on Facebook

<https://www.facebook.com/GLIFWC>



ATTENTION: Campers!

By Alex Wrobel, GLIFWC Forest Ecologist

GLIFWC member tribes exercising their treaty rights may camp for free on most campgrounds in the Chequamegon-Nicolet, Ottawa, Hiawatha, and Huron-Manistee National Forests. Permits are issued through the Native American Game & Fish Applications (NAGFA).

There is currently no camping agreement for Michigan state properties, Wisconsin state properties, Minnesota state properties or county properties, so your tribal camping permit issued through the NAGFA system is valid ONLY for the above four National Forest campgrounds.

It is your responsibility to know the ownership of the campground where you plan to stay. If you have questions with this please contact Alexandra Wrobel at GLIFWC at 715-682-6619.

Prior to camping:

You must obtain a tribal camping permit through your tribal registration station or GLIFWC. You will be issued a paper permit (similar to previous years). This permit will include a tribal camping permit number (see below) that you will use to fill out the envelope at the campground.

If you will be using other areas of the National Forest that require a parking permit, you can also obtain this from your registration clerk or GLIFWC.

The parking permits are hung from the rear view mirror and have the GLIFWC logo on them. These do not expire and can be used beyond this season. The number that is on your parking permit is a number unique to you in the NAGFA system. You can find this number at the top of your paper permit next to "NAGFA ID #." This is different than the number you will use for the camping envelope.

Arriving at the campground:

Follow the camping registration procedures at the campground. Generally, this involves providing information requested on a registration form or envelope. You do not need to place anything inside the envelope.

See illustration on how to fill out the fee envelope below:

During your stay:

You are required to follow all posted campground rules and regulations, and note that some rules may differ between campgrounds. Below are examples of posted rules:

Campground Rules and Regulations

The following rules and regulations apply within this Forest Service Campground.

- Registration and payment of fees for use of a camping unit must be done within 30 minutes from time of arrival.
- At least one person must occupy a camping unit during the first 24 hours after camping equipment is set up.
- Camping for longer than 14 consecutive days is prohibited.
- Leaving camping equipment unattended for more than 24 hours is prohibited.
- Entering or remaining in a campground between 10 PM and 6 AM, except for persons who are occupying such campgrounds, is prohibited.
- Parking or leaving a vehicle outside a parking space assigned to ones own camp unit is prohibited. No parking on the shoulder of the access road anywhere in the campground.
- Using a developed camp unit by more than eight (8) people per site is prohibited. No camping off designated sites within campground.
- Possessing, parking, or leaving more than two vehicles, except for motorcycles or bicycles, per camp unit is prohibited. Please follow posted permitted vehicles for camp units at the registration station.
- Being publicly nude is prohibited.
- Saddle, pack, or draft animals are prohibited in the campground.
- Quiet hours are from 10 PM to 6 AM. Please respect your neighbors. No radios, generators, or loud discussions during this time.
- Discharging or igniting a fireworks or explosives on National Forest System lands and sites is prohibited.
- All dogs must be on a leash or crated and under physical control. They may not be left unattended on a camp unit.
- Dogs and saddle, pack or draft animals are prohibited on public beaches.

Violations of these prohibitions are punishable by a fine of not more than \$5,000 for an individual or \$10,000 for an organization, or imprisonment for not more than 6 months, or both. (16 USC 551; 18 USC 3559 and 3571)

Recreation Fee Permit
 Detach this permit stub from envelope and display on vehicle dashboard this side up. If camping, attach permit to campsite post ensuring it is clearly visible.

VALID ONLY AT THIS SITE FOR THE DAY(S) PAID BEGINNING: Purchase Date: **Date of registration**
 No. of Days Paid: **Specify number of days registered for site.**

Recreation Fee Envelope
 TO VALIDATE, COMPLETE THE FOLLOWING

U.S. currency and checks drawn on U.S. banks accepted. Please do not fold bills or checks. Make checks payable to USDA Forest Service.

1. Amount Enclosed 2. No. of Day(s) Paid 3. Time and Date Purchased
 4. Vehicle License No. 5. State 6. Home Zip Code 7. Selected Camp Unit No. 8. No. In Party
 9. Other Charges 10. Golden Age or Golden Access Passport No. 11. Planned Departure Date

1. Fill in "tribal permit" here
 2. Indicate number of days. Maximum is 14 days.
 3. Fill in date of arrival
 4. Enter permit holders vehicle plate; 5. State of plate; & 6. Home zip code
 7. Unit # here
 10. NAGFA Permit Number
 11. Specify departure date

1. Enter "Tribal Permit."
2. Indicate only the number of days you plan to stay. Do not enter 14 days if you do not intend to stay for 14 days. Let the campground concessionaire know if you plan to be gone during the days.
3. Enter your date of arrival.
4. In spaces 4-6 enter the permit holder's vehicle information.
7. Enter the campground unit where you will stay.
10. This is where you will enter the number located on your permit next to your camping stamp.

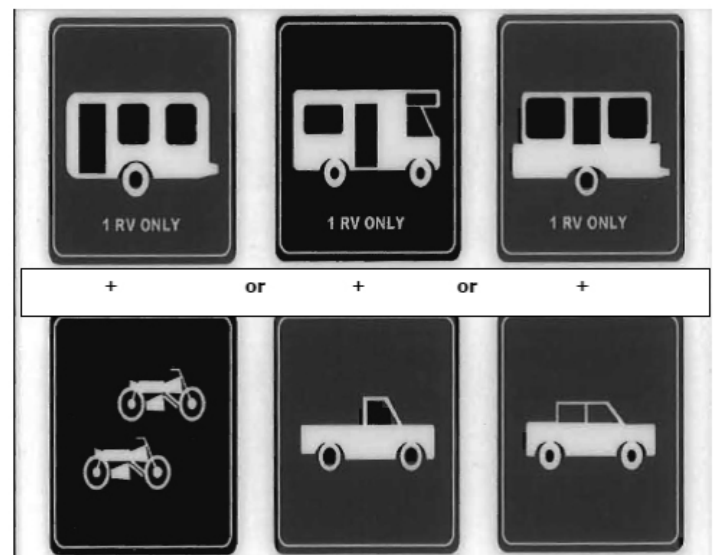
Example permit:

2014 - 2015 Season
 Game & Fish License No. 11530
 NAGFA ID #: 2763 Status: BML
 Name: JOHN DOE
 Address: 123 Any Street Bismarck, ND 58501
 Phone: 701-000-0000 Hunter Safety #:1234
 Advanced Marksmanship #:
 Trapper Identification #: 2763
 CAMPING/NATIONAL FOREST
 #75042 NATIONAL FOREST CAMPING
 2014 - 2015 Season

11. Enter your date of departure.

ATTENTION

Only 1 RV or pull behind trailer is permitted PER CAMPSITE. Only TWO additional vehicles may be on a site with an RV or pull behind trailers. Those with tents may have a maximum of THREE vehicles parked on site. A maximum of 8 people per site still applies.



Help keep sites from growing in size. All vehicles must be parked on parking spur and tents placed within the site. Thank you for your cooperation and enjoy your visit.





Cooperative National Forest management, harvest shapes MOU

By Charlie Otto Rasmussen, Staff writer

Lac du Flambeau, Wis.—Fifteen years after forging the Tribal/Forest Service Memorandum of Understanding (MOU), its administrators said that the historic agreement has helped elevate relations between GLIFWC member bands and National Forest managers in the ceded territory.

“Our MOU is something I brag about,” said Mic Isham, GLIFWC Board of Commissioners Chairman at the February 5 annual meeting. “I’m trying to get counties to look at it as a model.”

While the MOU pact is not applicable to county forests, it does spell-out guidelines for the treaty harvest of wild plants and other forest products on National

Forests; it also provides a foundation for cooperative work between agency biologists and law enforcement officers.

“The work that this MOU represents is amazing,” said Kathleen Atkinson, USDA Regional Forester. Under the MOU, interagency biologists carry out marten (waabizheski) research and study the impacts of logging on herbaceous plants. Law enforcement officers conduct joint patrols and work to stop illegal growers from destroying forestland to produce marijuana. The USDA Northern Research Station is also a signatory member of the MOU and helps to incorporate TEK, or traditional ecological knowledge, into how forests are understood and managed by all stakeholders.

MOU annual meetings are typically held in October; however, scheduling conflicts, and ultimately the federal government shutdown, forced officials to postpone the 2013 meeting until February.



Tribal representatives opened the MOU meeting with a pair of songs on the GLIFWC drum. USDA Forest Service officials appear seated in the background. (Photo by COR)

VITF moves to pursue gathering and saving seeds

By Sue Erickson
Staff Writer

Odanah, Wis.—The Voigt Intertribal Task Force passed a motion at its April meeting to pursue a Memorandum of Understanding (MOU) with the University of Minnesota’s North Central Research Station as a step towards preserving native seeds.

The move to preserve seeds is stimulated by the destruction of millions of native ash trees, both aagimaak/black ash and baapaagimaak/white ash, by the voracious emerald ash borer (EAB), an exotic beetle originating in Asia. In 2013 the beetle was found in Superior, Wisconsin, in the heart of the ceded territories, so the threat to native ash is imminent.

“Collecting seeds and putting them in long-term storage is a way of preserving the genetic diversity needed to recreate location populations in the event the EAB completely destroys the ash resource in the ceded territories,” states GLIFWC Forest Ecologist Alex Wrobel. Wrobel explains that seeds can remain viable for up to 20 years if properly dried and stored at a constant temperature and relative humidity.

Native seeds can be collected and sent to the North Central Research Station where they would be cleaned and dried and ultimately sent to a large national seed bank, the National Center

for Genetic Resources Preservation in Ft. Collins, Colorado. The MOU essentially assures that the tribes retain ownership of the seed and also will be the only contact for requests for seed withdrawal.

“Ash trees continue to be an important resource for the Ojibwe people, who have incorporated ash into a variety of utilitarian and artistic hand-crafted items, such as baskets, push poles, bows, skis and cradleboards,” Wrobel says.

While the threat to native ash is at the forefront of concern currently, there has been a movement underway to secure seeds from a variety of native plants, such as pumpkins, squash and corn, whose integrity can be threatened by genetically modified varieties currently being sold and planted.

To address this issue, a federal bill stemming from the New Mexico delegation was introduced in December, 2013 that would provide federal grants for research, education and training to preserve the integrity of Native American seeds used for cultural, religious, agricultural and other purposes. The Native American Seeds Protection Act (H.R. 3782) and its companion in the Senate (S.2116) would also provide more seed storage facilities if they are passed.

(For a powerful presentation on the importance of native seeds, view Winona LaDuke’s presentation “Seeds the Creator Gave Us” on YouTube.)

Firewood: Plan now for home heating

Following the successful launch of a tribal firewood gathering site on National Forest land, GLIFWC officials are encouraging woodcutters to plan for the 2014-15 season as soon as possible.

“It’s a process that takes considerable coordination between the tribal community and property managers,” said Alexandra Wrobel, GLIFWC Forest Ecologist.

Treaty harvesters should first determine tree species, firewood volume, and desired location.

Through a provision in the 1999 Tribal/Forest Service Memorandum of Understanding the ceded territory’s four national forests provide firewood gathering opportunities in Wisconsin and Michigan. GLIFWC staff is also consulting with tribal elders to learn more appropriate applications of TEK into firewood harvest plans.

Recently, some tribal firewood locations were sited within planned timber management activities. For example, designated restoration parcels characterized by overcrowded or crooked trees can be an ideal spot to cut and collect firewood. Foresters call the practice “timber stand improvement,” but in this case, culled trees leave the forest for tribal wood stoves.

“It’s a nice way to fill the need for home heating in tribal communities while completing forestry practices on national forest lands,” said Mary Rasmussen, US Forest Service tribal liaison. Dramatic fluctuations this past winter in the price of propane gas—commonly used to heat northwoods homes—makes wood a notable alternative fuel to consider.

Lac du Flambeau members fired up chainsaws at the first tribal gathering tract in late 2012, removing select hardwoods from the Chequamegon-Nicolet National Forest. Rasmussen and LdF representatives marked the occasion with an outdoor pipe ceremony.

Contact Wrobel @715.682.6619, ext. 2125 to get started on a tribal firewood parcel.

Regional Forester completes first year, joins tribes at MOU table

By Charlie Otto Rasmussen, Staff writer

The head forester in the Eastern Region participated in the Tribal/Forest Service MOU (memorandum of understanding) meeting last February.

“The rich history between the Forest Service and area tribes is impressive,” said Kathleen Atkinson, attending her first gathering with Ojibwe treaty bands. “I look forward working with the tribes to continually improve our government-to-government relationships.”

Atkinson assumed the forester post a year ago after three decades of work on national forests in Georgia, Florida, Louisiana, Arizona and South Dakota’s Black Hills, plus duty in Washington DC. She said relations between the Forest Service and American Indian tribes have improved significantly during her career, pointing to the success of the MOU as an example.

“It’s not an easy process, doing things that work for everybody,” she said. “We’re focused on meeting needs, not just completing a goal.”

The MOU was forged in the late 1990s to outline the exercise of treaty rights on national forests within the 1836, 1837 and 1842 Treaty ceded territories. Tribal and USDA Forest Service officials meet annually to review progress implementing the agreement, which includes forest product harvesting and cooperative research projects.

Now stationed at the Regional Office in Milwaukee, Atkinson grew up on a 120-acre farm in southwest Michigan. Her education includes a Bachelor degree in Forestry from the University of Michigan, and a Master in Public Administration from the University of South Dakota.



Kathleen Atkinson. (Photo by CO Rasmussen)



High winter severity index in Wis. suggests higher than normal deer/elk mortality

By Jon Gilbert, PhD, GLIFWC Wildlife Biologist

Odanah, Wis.—There is no doubt about it that this winter has been long and cold. Even those hardy individuals who enjoy outdoor winter activities were ready to see spring come this year. My guess is that our ungulate denizens, those deer and elk, of the northwoods were also eager to see green grass and young leaves after the deep and lasting snow cover challenged their survival throughout the ceded territories. This includes the ceded territory in Minnesota and stretches to the eastern Upper Peninsula.

Everyone wonders how large a toll winter took on these valuable herds. The methods used to measure winter severity vary as one moves from Minnesota to Wisconsin and then to Michigan, but they all use a combination of snow depth and minimum temperatures. In Wisconsin, the number of days the snow is deeper than 18 inches and the number of days that the minimum temperature is below zero are tallied. If the sum of these two measures, from December 1 through April 30, is above 100, the winter is classified as severe. If above 120, it is called 'very severe.' This year average Winter Severity Index (WSI) value was 135, among the highest ever recorded.

When WSI values reach the very severe level, we expect to lose deer (and other wildlife) to over winter mortality. Generally the fawns are most susceptible, followed by adult bucks (who lose their fat during the rut), and then adult does. Over winter stress also can influence the number of fawns produced the following spring and their survivability. Winter can be hard on deer this far north.

Deer and elk that live in the north must be adapted to survive long cold winters with lots of snow. Severe winters like we have just experienced serve a purpose to weed out maladapted animals, those who cannot survive these harsh conditions. It is these conditions which make the deer herd strong. But it is important also that wildlife managers can respond to these conditions when considering harvest levels in the coming year.



Wisconsin waawaashkeshiwag (deer)

There have been changes implemented in Wisconsin deer management this year as a result of the Deer Trustee Report and the implementation of the recommendations it contained. One important change involved the adoption of counties as deer management units, discontinuing the use of the old unit system. This involved changing population estimates from the old units to the new county-based units. This was a complex task, but did not change the apparent outcome of the effects of winter on deer populations. Deer populations will be lower in the fall of 2014 than they were in the fall of 2013 in most of the counties in the ceded territory (this will not be true in farmland counties).

In most years as deer populations go from post season (early winter) through all of the winter, deer populations decline as deer die. When spring time comes and fawns are born, the population takes a jump upwards. Then fawns die during the summer, and the population declines again. Usually there are more deer alive just prior to the hunting season than were alive just after the previous year's hunting season. However, this year it is expected that there will be fewer deer in September than were here in last December.

The results of the severe winter and the effects on population levels means that antlerless deer harvests should be reduced. The Wisconsin Department of Natural Resources (WDNR) and GLIFWC are working together to ensure that the new management system, which is in place after the Deer Trustee Report implementation, continues to protect and enhance deer populations in the ceded territory.

Wisconsin omashkoozoog (elk)

In much the same way that winter severity affects deer, it can have similar effects on elk. But elk can tolerate deeper snow and colder temperatures than deer. They have longer legs to navigate the deep snow, and their large body size provides for a larger surface area: volume ratio which helps to conserve energy. But even the elk felt the effects of winter this year. Several young animals have died due to starvation, one of the only years in which starvation mortality has been documented.

In March 2014 biologists from the WDNR, US Forest Service, GLIFWC and several tribes met to review the Wisconsin elk population status and to make a recommendation for a hunting season in 2014. According to the WDNR rules, the elk stipulation between the tribes and DNR, no elk hunting season can occur until the elk population exceeds 200 animals. As simple as this task appears, it is (See Deer/Elk mortality, page 23)

Chi-biboon sparks emergency deer feeding in Minn, Fond du Lac rez

By Charlie Otto Rasmussen
Staff Writer

Cloquet, Minn.—After three months of unyielding heavy snows and frigid temperatures, residents of the Fond du Lac Reservation (FDL) came to the same conclusion: the local deer herd needs a helping hand. With vocal support from tribal members—backed by non-natives living on the eastern Minnesota reservation—FDL officials joined the state's emergency deer feeding program.

"It's impressive to see the number of people wanting to help deer this year," said Mike Schrage, FDL wildlife biologist. "There have been all sorts of people that I wouldn't normally have contact with."

One sure takeaway is that many northlanders are partial to white-tailed deer. The more nebulous deduction is the impact emergency feeding will actually have on local herd numbers.

"Some deer died in spite of our feeding, while others would have made it anyway," Schrage explained. "Some deer we certainly helped, and pregnant does may have gone into fawning season in better condition. In spite of some initial concerns that wolves would find the deer feeding sites and take advantage of the situation, I've heard no reports of wolves keying into those sites at Fond du Lac."

The feed looks like rabbit pellets, and other commercially available animal forage, but it's specifically formulated

with vitamins and mixed grains for wild deer.

Beginning in early March, FDL Natural Resources staff and community volunteers distributed 5,000-6,000 pounds of feed each week until late April. More than twenty backwoods drop-spots scattered across the 101,000-acre reservation received weekly allocations of the deer chow. Schrage estimates that 300-400 deer visited the sites on a weekly basis.

"We punched in trails with snowmobiles away from roads, generally in areas with heavy conifer cover. For the most part it didn't take deer long to locate the food," Schrage said.

The Minnesota Deer Hunters Association coordinated feeding efforts in hunting zones where the Winter Severity Index (WSI) exceeded 100 by February 15. The area includes public lands in both the 1837 and 1854 Treaty ceded territories. In Minnesota, the WSI is factored by tallying days with snow depth greater than 15", plus the number of days with temperatures below zero. The bulk of the emergency feed went to locations north-by-northwest of the reservation, bypassing the Arrowhead region where wildlife managers want to keep deer densities low to help reduce disease transmission from whitetails to moose.

Minnesota's emergency deer feeding program was born out of the severe double-whammy winters of 1995-96 and 1996-97 when northern residents



A Fond du Lac Natural Resources technician and a white-tailed deer eye each other at an emergency feeding site on the FDL reservation. (Mike Schrage photo). Inset: Commercially processed deer feed contains vitamins and mixed grains. (COR)

called on the Department of Natural Resources (DNR) to rush feed snow-bound whitetails. The state tacked on a 50-cent surcharge to each deer hunting license and earmarked the money for emergency feed and whitetail disease testing. DNR authorities, however, gave the 2014 initiative a lukewarm reception, citing concerns about the spread of disease among concentrated deer, and

the inability of the effort to make much of a difference in the deer population at the broad landscape level.

Said Schrage: "We don't have any positive disease results to worry about in this part of Minnesota. The money was already there, and feeding certainly has helped some deer. Overall I think it's been a positive experience. People feel better for trying to help."

Update on climate change in the ceded territories

By Jen Vanator, GLIFWC Great Lakes Program Coordinator and Esteban Chiriboga, GLIFWC GIS Mapping Specialist

Odanah, Wis.—Back in the spring 2006 issue of the *Mazina'igan*, we tried to present an overview of the climate change issue. Namely, what is it? How will it affect tribes and treaty resources? Why should we worry? At that time, the best we could do was provide an overview and some generalized conclusions about what to expect. Now, we can do a bit better.

There have been vast advances in the science of modeling and predicting climate change effects and there have been advances in the ability to describe the expected changes at scale that makes sense to most of us. Sadly, there has also been an increase in the level of noise and confusion regarding the issue that is the result of an effort to deny that climate change is occurring. This article will attempt to provide some clarity on both of these issues and will provide a summary of GLIFWC's work on climate change.

Is climate change real? Or is it a hoax?

From a scientific perspective, the ongoing denial of the reality of climate change is disturbing. The refusal to accept climate change is based on a number of irrational beliefs that are not worthy of a response (things like government conspiracies and ecoterrorism). There are two arguments against climate change predictions that are worthy of a response. First, that computer models that are used to make predictions are incorrect and second, that the warming that has been recorded over the last few decades is part of long term natural cycles of the Earth.

On the first argument, all computer models have error and no single model can claim a 100% accurate track record on predicting changes in climate. That is why the predictions of future climates always rely on a combination of dozens of these models, basically an average of their output. These models have been available for many years. Comparisons between aggregated model results and actual measured data across the world have validated the modeling effort. In a nutshell, some models predict lower temperatures and some models predict higher temperatures than what has been observed. However, despite this variability, the overall predicted climate change signal is accurate (Figure 1 IPCC 2014).

The second argument also fails when scientifically examined. Extensive analysis has shown that there is a 0.1% chance that Mother Nature is solely responsible for the degree of global warming that the planet has experienced since 1880. Put another way, there is a 99.9% confidence that climate change is real and caused by human activity. (Lovejoy, 2014)

Lovejoy is not alone in drawing these conclusions. From November of 2012 through December of 2013, approximately 2200 climate change articles were published in peer-reviewed journals. Only one of these concluded that man made climate change did not exist. (Powell, 2014)

There is a 99.9% confidence that climate change is real and caused by human activity.
—Lovejoy, 2014

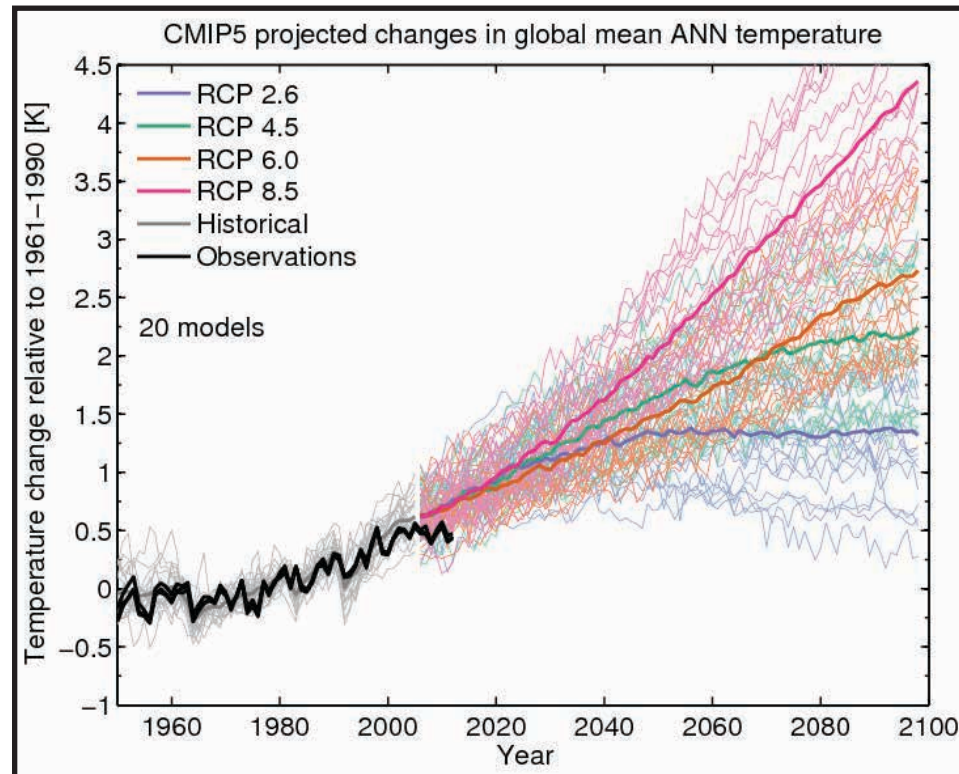


Figure 1. Graph comparing climate model output with observed temperature data. The measured temperatures (black line) falls within the range of variability of the various model outputs and provides confidence that the models provide reasonable predictions of future climates.

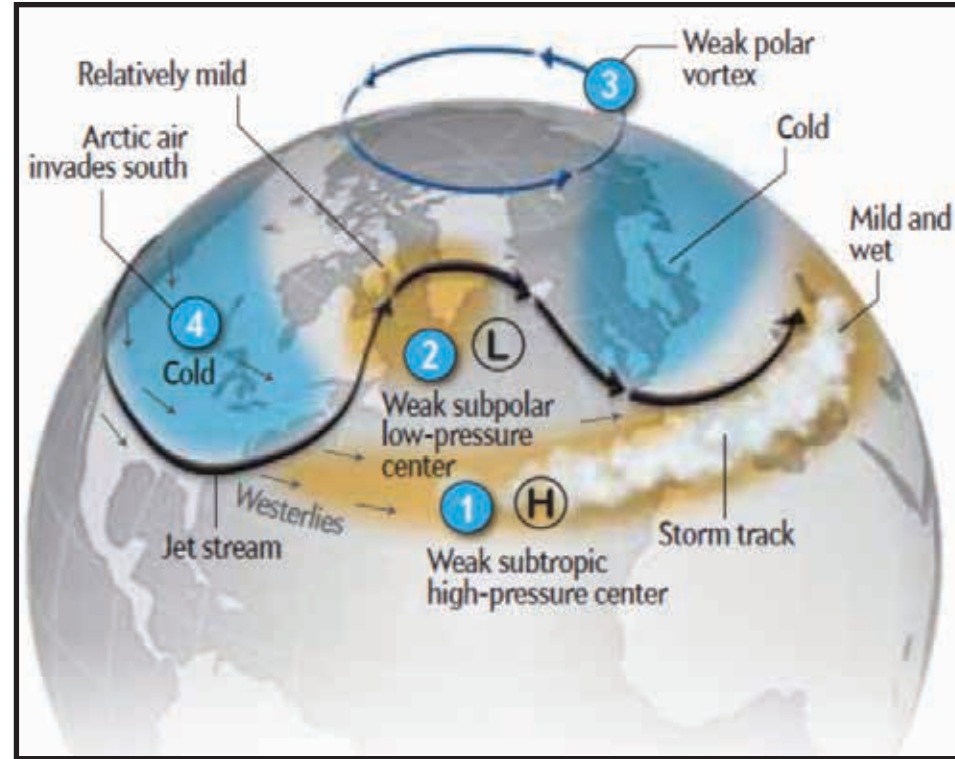


Figure 2. An illustration of the weak polar vortex (3) which leads to arctic air moving further south than normal (4).

So, why was this winter so cold?

By all accounts this past winter season was very cold. Anishinaabeg Gichigami was completely frozen for much of the winter and dangerously cold air temperatures of -30°F were not uncommon. At a glance, this cold seems to contradict the assertion that the planet is getting warmer and that climates are changing. However, while the Great Lakes region was very cold, the planet as a whole still experienced very warm temperatures. In fact, the January-March global temperature average winter was the 4th warmest ever recorded.

Even the cold weather could be an indication that climates are changing. One of the most obvious signs of climate change is increasing instability in the atmosphere and an increase in extreme weather events, including extreme cold temperatures. This last winter, the media gave a lot of coverage to the “polar vortex” that was blamed for the cold. While it's accurate to say that the cold was the result of polar air moving into the ceded territories, the polar vortex is a different feature altogether.

The polar vortex is a name given to a wind pattern that circles around the arctic. The wind pattern forms at the border of the frigid arctic airmass and the warmer airmass to the south. Once in a while, the vortex becomes weaker and this allows the arctic air to move further south than usual. The critical point is in describing the reasons that cause the polar vortex to weaken. Data indicates that the more arctic ice melts during the summer, the weaker the polar vortex becomes the following winter. This is because liquid water radiates more heat into the atmosphere than ice does and this heat disrupts the polar vortex (Figure 2).

It is well known that arctic ice has been disappearing more and more every summer due to climate change. This trend is expected to continue because the arctic is warming very quickly and therefore it is reasonable to expect many return visits of frigid arctic air to the Lake Superior region in the future. (Greene, 2012)

Climate change in the ceded territories

The Wisconsin Initiative on Climate Change Impacts (WICCI) was one of the first groups in the world to attempt to characterize the effects of climate change on specific places and resources. Until recently, models of climate change scenarios have been global in scale, which is not of much use in natural resource management. Scientists from the University of Wisconsin have downscaled the global climate change models to specifically assess the expected changes in climate across the ceded territories.

The data consists of two parts. First, Professor Dan Vimont of UW-Madison conducted the downscaling of 12 global climate models to a much finer scale. The results provide insight into the climate change impacts that the ceded territories will experience over the next 100 years. Second, Professor Chris Kucharik of UW-Madison developed a collection of most of the available climate data (e.g. temperature and precipitation records). This dataset of weather observations was used to investigate climate changes that have occurred from 1960 to the present and to provide a comparison for the downscaled models. The results have been peer-reviewed, and there is very good agreement between the observed data and the modeled predictions.

The results indicate that the ceded territories are likely to undergo some significant changes in the next 50 years. Using Wisconsin as an example, since 1950, the state's average temperature has increased by 1°F; however, this statewide number

does not reflect some regional differences in the effects throughout the ceded territory. The western half of the Wisconsin ceded territory has warmed more than the eastern half. Precipitation has also changed with a general trend towards dry conditions along Lake Superior.

The data indicates that climate change effects will become more pronounced over the next 50 years. There is a 95% probability that a 4 to 6 degree average temperature increase will occur in the next 50 years. The most pronounced effects are predicted to occur during the winter season where an increase in temperatures of 6 to 8 degrees is forecast. Summer temperatures are predicted to increase by 4 to 6 degrees. Changes in precipitation are also expected with a general trend towards drier summers and decreased snow in winter. These numbers vary depending on the scenarios used to estimate the amount of CO2 in the atmosphere, but it is clear that some changes have already occurred and more significant changes will occur (WICCI, 2011).



A culturally important resource, manoomin (wild rice) could be impacted negatively by climate change. (Photo by CO Rasmussen)

An interactive web page (www.wicci.wisc.edu) is available where one can view the different scenarios and the predicted effects during different seasons. As mentioned earlier in this article, extreme temperature and precipitation events are expected to become more common.

In addition to many other climate change initiatives, GLIFWC staff are currently working on a project that will characterize what the expected changes in temperature and precipitation mean for many of the resources that tribes harvest with the hope that this will provide managers at GLIFWC and tribal natural resources agencies with a tool that can be used to prepare tribes for future climates.

More details on the other projects GLIFWC is undertaking are provided below.

GLIFWC work on National and Binational climate change initiatives

GLIFWC staff was active in the production of the National Fish, Wildlife, and Plants Climate Adaptation Strategy—a national, government-wide strategy meant to coordinate federal, state, tribal, and local activities addressing the expected climate impacts on fish, wildlife, and plants. The Strategy was publicly released last year, and GLIFWC staff has since been working as part of the Strategy's Implementation Working Group to develop a plan to implement the Strategy. The goal of the implementation plan is to encourage the Strategy to be incorporated into as many climate change plans and actions as possible—those of federal, state, and tribal governments, as well as any other entity developing a plan.

GLIFWC staff has been assisting the chairwoman of one of its member tribes—Chairwoman Karen Diver of the Fond du Lac Band of Minnesota—in her role on the White House's State, Local, and Tribal Leaders Task Force on Climate Preparedness and Resilience. The Task Force was created to provide recommendations to the President on how the federal government can help tribal, local, and state governments prepare for and recover from the effects of climate change.

GLIFWC staff has also been active in addressing climate change in the implementation of the new Great Lakes Water Quality Agreement (“GLWQA”) between the United States and Canada. The GLWQA established a Great Lakes Executive Committee (GLEC) to help implement, coordinate, and review programs and activities that are undertaken pursuant to the Agreement. The GLEC is made up of representatives from the two federal governments; state, provincial, tribal, and (See Climate change initiatives, page 23)

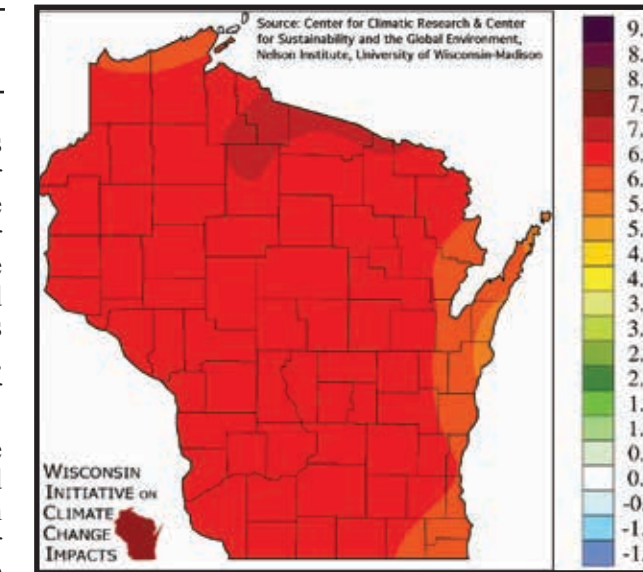
Climate change threatens the soul of Wisconsin tribes

By Gregory Hitch & Nicholas Hunter
For *Mazina'igan*

Odanah, Wis.—For thousands of years indigenous people in Wisconsin hunted, fished, and gathered for subsistence and trade. These activities in part define Wisconsin tribal cultures, including the Lake Superior Ojibwe. However, scientific and observable evidence indicates human-induced climate change is upon us and is tearing at the cultural and ecological fabric that knits Ojibwe communities together. Manoomin, or wild rice, is cited in the Ojibwe origin story and is central to their spirituality, but may be threatened by climate change.

For our Environmental Studies Capstone Course at the University of Wisconsin-Madison, we traveled to the Bad River Ojibwe reservation and met with tribal elders Hilary Butler and John Denomie to better understand the human and cultural impacts of climate change. The Bad River community is experiencing the frontline of climate change impacts; if this is not addressed, their culture, economy, and identity could be irrevocably altered.

Fishing and gathering transcend simple subsistence practices. They are spiritual as well as economic, bringing the community together through stories and the sharing of ecological knowledge. However, according to the Lake Superior Climate Change Impacts and Adaptation Report, more intense rainfall events will trigger increased runoff pollution making water less suitable for wild rice habitat. This runoff also facilitates the introduction of invasive species and increases silt-



Projected Change in Wisconsin's annual average temperature (°F) from 1980 to 2055.

ation, threatening the Kakagon-Bad River Sloughs, a Ramsar Wetland of International Importance.

Extreme changes in water levels due to drought and flooding have already occurred on the reservation and are projected to intensify. Butler, a long time wild rice harvester, spoke of the first time the Kakagon Sloughs were closed: “In 2012 we had big storms that uprooted the plants before they had established themselves... There just wasn't any rice out there for people to harvest... I'm sure that had to do with climate change.” Elders such as Butler have Traditional Ecological

Knowledge (TEK) from experience spanning decades and generations. TEK is crucial to understanding the profound changes occurring and will help guide future restoration projects.

Lake Superior coastal sloughs are also threatened by drought: “The first year they closed [Kakagon Slough], the water levels were way down,” Butler told us “you could walk on the muck, where usually there was open water.” Furthermore, warmer water temperatures in inland lakes can impact wild rice. Finally, the ecological resources the Ojibwe relied on for centuries are simply no longer dependable. As Denomie, also a longtime wild rice harvester shared, “One year it might be excellent, plenty of rice for everybody. The following year it could be a bad season because of water fluctuations, climate, temperature, especially in northern Wisconsin.”

Human-induced climate change is upon us and will be felt by all, but the Bad River Ojibwe are already feeling the impacts. This is an issue of environmental justice as climate change is falling hardest upon those least culpable for polluting the atmosphere. The Bad River Ojibwe have resisted industrialization on their reservation to preserve land, water, and wildlife habitat. Nevertheless, their cultural identity and economic livelihood is at risk due to pollution from the industrialized world. This is just another reason, on a mounting list, of the absolute necessity for action on climate change.

Editor's note: This article was submitted as part of a Nelson Institute for Environmental Studies capstone, entitled: Water Stewardship and Sovereignty in the Bad River Ojibwe Community instructed by Jessie Conaway.



Ishpaagoonikaa/Deep Snow Camp teaches winter survival

By Jordan McKellips GLIFWC Warden

Lac du Flambeau, Wis.—Imagine snowshoeing in the glistening northwoods enjoying the awesome surroundings, when you realize that you are lost deep in the snow-covered forest. Would you be able to survive? For how long?

Youth from six different tribes across Wisconsin and Michigan now have a better understanding of how they would survive in a harsh winter environment if circumstances required it. They spent a weekend on the Lac du Flambeau (LdF) reservation in early February experiencing outdoor winter survival and traditional ecological knowledge during GLIFWC's third annual winter cultural camp, Ishpaagoonikaa/Deep Snow Camp.

"The camp's goal is to get youth unplugged from modern technology that can fail, and get them plugged into the outdoors and their grandfathers' and grandmothers' ways of living with the land to survive harsh northern winters. Youth engage in treaty harvests and traditional skills that will promote their relationship with the Earth and all its relatives, and also with themselves," said GLIFWC Outreach Officer and Camp Director Heather Naigus.

Youth, who were split into three groups—hunters, fishers and gatherers learned how to survive the elements of harsh winters by finding food, making heat and creating shelter. The camp encourages healthy eating, so campers also learned how to prepare traditionally harvested foods.

LdF Tribal Chairman Tom Maulson welcomed the students to the reservation with an opening ceremony on Saturday. Bob Shimek of the White Earth reservation in Minnesota also shared a story on how the snow snake game was started and its cultural importance to tribal peoples. Shimek has been teaching the traditional way of the snow snake since 1992.

Outside in the elements, GLIFWC officers guided youth in traditional spearing through the ice. They also learned about trapping and furs with the assistance of retired DNR Officer Mike Mackenzie. Lac Vieux Desert member and wisdom sharer Roger LaBine engaged students in fishing using traditional tip-ups made from a cedar decoy. The evening was filled with pre-colonial cooking from the GLIFWC Traditional Foods Program and Ethnic Theater. Shimek and Fond du Lac member Nikki Crowe assisted the students in creating their own snow snakes, made from red maple.

On Sunday, immersed in the crisp, frigid air, campers created winter shelters, built fires, and participated in an exciting game of snow snake, where their newly created snakes were put to the test.



GLIFWC Enforcement Chief Fred Maulson demonstrates fire-starting as part of the lessons in survival during the Ishpaagoonikaa/Deep Snow Camp last winter. (Photo by Jordan McKellips)

Next year, GLIFWC's Ishpaagoonikaa Camp will travel to a new reservation, as it will rotate between GLIFWC tribal communities every year.

Don't forget about summer camp! Onji-Akiing Summer Cultural Camp is coming up July 21-25, 2014 (see page 15).

Winter games return to LdF

By Charlie Otto Rasmussen
Staff Writer

Lac du Flambeau, Wis.—While the Winter Olympics produced plenty of drama and excitement in Russia, a whole lot of kids will tell you the real action was in northern Wisconsin at the third Bibooni-Ataadiwin.

"We have a great time. It's always fun to do these kind of cultural activities," said Nicole Staley-Wayman, Lac du Flambeau Public School 7th grader. "I enjoy coming back here every year."

Staley-Wayman plus nearly 400 local students participated in this year's Ojibwe Winter Games (Bibooni-Ataadiwin) at YMCA Camp Nawakwa on Big Crooked Lake. The old-school outdoor competition—including the snow snake

game, atlatl, spear-and-hoop, archery and snowshoe races—welcomed fifth-eighth graders. Buttoned down in full winter-wear, students from the Lac du Flambeau (LdF) School vied for trophies awarded to the top three boys and girls in each event.

"The kids are learning our history, our language, getting exercise and at lunch, having a healthy, traditional meal," said LdF's Wayne Valliere, a program coordinator. On February 19 LdF seventh graders worked up hearty appetites for a lunch that included venison, wild rice and potatoes—indigenous foods homemade by Patti and Amber Mitchell.

Program coordinators outfitted contestants with stunning hardwood gear gathered from nearby ceded territory forests. Lac du Flambeau's oak ridges

yielded raw material for atlatl launchers and arrows; snow snakes were born from Chequamegon-Nicolet hard maple; and reservation woodlands provided black ash for lacrosse sticks, which featured woven leather netting

A new event to Bibooni-Ataadiwin, lacrosse made its first appearance on the reservation in century. Valliere said the last organized lacrosse match occurred in 1910 when Lac du Flambeau hosted Bad River. It didn't take long for the present generation to pick up the game's fundamentals—to catch, carry, pass, and ultimately shoot a ball into the opponent's goal.

"They took to it like a duck takes to water," Valliere said. "They had a blast."

During a winter that launched 'polar vortex' into the regional lexicon, the 2014 games were especially well timed as temperatures made a rare climb into the teens during much of camp-week. "Kids have been stuck indoors a lot this winter. This is something they really needed," he said.

On day five, however, Old Gaa-biboonik (the one who makes winter) staged a comeback, closing area schools and preventing students from nearby Lakeland School District from joining the games.

Trapping: It's no game

At one stop on the round-robin style Bibooni-Ataadiwin, competitive spirits were put aside as students took in a fur trapping demonstration. The how-to talk covered equipment and common trapping scenarios on northwoods traplines.

Instructors Riley Brooks from GLIFWC, and Department of Natural Resources' Julie Brooks, both conservation officers, stressed the importance of avoiding non-target animals. A leg-



Launching a snow snake. (COR)

hold trap set in a shallow dirt hole, for example, is one of the most common methods for catching carnivores. The wardens said that bait used to lure fox and coyotes must be concealed.

"You can't have exposed bait like venison meat scraps," said Riley Brooks as he covered the circular impression of a trap set in the ground with an evergreen branch. "A balsam branch does a nice job covering it up. We do this to protect birds of prey—hawks, eagles, owls—that could spot it from the air."

Through education and closely following regulations, young people can successfully pursue a lifetime of trapping and enjoy a great winter activity in the outdoors. "Traps must be checked at least every 24 hours to prevent undue suffering for the animal. If a non-target animal like a dog gets caught in a leg-hold trap, you'll be able to release it in good shape," Brooks said.



GLIFWC Officer Riley Brooks (center) explains how birds-of-prey use their excellent eyesight to locate food. Riley told the seventh-graders to cover baited traps with an evergreen bough to avoid unintentionally catching birds like hawks. Julie Brooks, Wisconsin DNR officer (left), joined Brooks at the trapping instruction station. (Photo by Charlie Otto Rasmussen)



Enforcement happenings

By Sue Erickson, Staff Writer

In-service training

All GLIFWC wardens participated in the annual in-service training with the Wisconsin Department of Natural Resources. Held at Fort Hood on February 11-13, the training is required and fulfills the training standards for the Department of Justice. The training focused on evasive driving, arrest tactics and qualifying with firearms.

LdF Youth Expo

Chief Fred Maulson and Warden Roger McGeshick participated in the 2014 Youth Expo at Lac du Flambeau on March 26. The event attracts many community members and is a good opportunity for outreach. GLIFWC officers had the GLIFWC airboat present and provided informational materials to attendees. In addition to Enforcement; LaTisha Coffin and Owen Maroney from GLIFWC's traditional foods program, Mino Wiisinidaa! Let's Eat Good, were also present with nutritional information.

Ice caves

GLIFWC wardens assisted the Apostle Island Park Service with monitoring the record number of visitors to the ice caves near Cornucopia, Wisconsin this winter. Well over 100,000 visitors from all over the world made their way to this natural, winter wonder. Wardens made the GLIFWC airboat accessible if needed and also provided its mobile command trailer around the clock at Mary's landing in case of emergencies. GLIFWC wardens were also present on the weekends to assist the Park Service in assuring public safety.

Community one-on-one

Enforcement Outreach Officer Heather Naigus did a tour of GLIFWC member reservations recruiting youth for Camp Onji Akiing this summer. She touched base with the kids at tribal schools or tribal Boys and Girls Clubs. She said a firsthand account and a little one-on-one helps kids and parents understand what camp is all about. The camp is designed for about 40-50 participants.

Snow shoe snow day!

By Native Youth Author Maranda Maulson

FdL Reservation, Minn.—There were a lot of “snow days” this year. On one of them, instead of cramming algebra into my head, I traveled to the Fond du Lac (FdL) reservation in Minnesota for a lesson on the traditional ways of my people—snowshoe making! Through this snowshoe making experience, I met many wonderful people and learned so much more about the honorable black ash tree.

This hands-on class was put together by Nikki Crowe, an FdL member, who is the Thirteen Moons: Fond du Lac College Extension Program Director. She is cute as a button, and her program helps connect the community to our natural relatives who have strong ties to Ojibwe culture. The main instructor was John Geissler, Director of Boulder Lake Environmental Center. He also works with Nikki through the Minnesota Master Naturalist Program. Geissler said that his interest in snowshoe making started as an experimental hobby. Without any plans, he made a cool jig for bending wood just by lining up snowshoes on a platform, and then hammering in little pieces of wood according to the curve of the snowshoe.

The black ash tree was used to make our snowshoes' frames. First, the straight grain is soaked for seven days. Next, it must set in a box full of hot smoke, like when a person goes into a sauna. This will help bend the wood into the jig to create the frame. This must be done within 10 minutes while the wood is still hot. The pieces are then drilled together using copper nails after they are fitted to the snowshoe shape. After the process of shaping the snowshoe, it must sit 2-3 days if in the winter months or a month if in the summer. Geissler and Fond du Lac Elder Bob Danielson made the black ash snowshoe frames we were given over a 3-week span.

I, along with 21 attendees, had fun chatting away about our Ojibwe ways as we sowed the inside of our frames with tough paracord. I will say it takes a lot of patience at first, but once I found my rhythm, I started really enjoying the process.

An interesting fact I learned about black ash trees is that they were most prevalent in Michigan but now, because of the emerald ash borer (EAB), Minnesota has the most healthy trees. EAB first arrived from Asia in Detroit, Michigan in 2002 and decimated the healthy ash population. This forest pest loves ash trees and has no natural predators here. EAB are ash killers!

I love learning about my culture, and this class taught me so much, most of all, to be proud of my heritage and to treat everything as a precious gift. It's like Danielson said, “The past helps us maintain our identity, and we must keep spreading our traditions.” It is my responsibility to keep practicing my traditions, pass it on to others, and promote respect for all my relatives, human and other.

Camp Onji-Akiing July 21-25, 2014

GLIFWC is excited to announce our 2014 Cultural Summer Camp Program: Onji-Akiing for grades 5-7!

A collaborative effort between GLIFWC and the USFS, Onji-Akiing (From the Earth) is a cultural outdoor adventure-based camp that focuses on natural resource career exploration and treaty rights. This camp is held at beautiful Camp Nesbit, nestled in the heart of the Ottawa National Forest in Sidnaw, Michigan, also home to the calling loons of Lake Nesbit.

Leadership and service learning activities are important aspects of this program. Activities also focus on group cooperation and communication, problem-solving, self-confidence, leadership, physical exercise, spiritual growth, social skills, as well as respect and responsibility to self and community. Hands-on experiential activities include a group obstacle course, high ropes course, sweat lodge, fishing, archery, swimming, canoeing, animal and plant wisdom, cultural exploration, and cooperative games.

Centered on the Medicine Wheel, this camp explores Native American traditional ways and traditional ecological knowledge, but also learning in the areas of forestry, biology, fisheries and botany. Youth will work with staff from GLIFWC and the USFS. This camp is free of cost. Deadline for accepting applications is June 20, 2014, and it fills up fast, so early applications are welcomed.

Clip & mail ✂

Registration Form

Lake Nesbit Environmental Center
Sidnaw, Michigan
July 21–25, 2014

Participant Name _____
 Address _____
 City _____ State _____ Zip _____
 Email _____
 Grade _____ Age _____
 Tribe Affiliation _____ (if none, leave blank)
 Phone #() _____

Please attach another sheet of paper with a short essay (at least 100 words) on why you want to attend Camp Onji-Akiing. Include any special achievements and how this camp might help you in school, your community, and with any life goals.

Please attach one letter of recommendation from an adult, not related to you, about why they think you should attend the camp and will benefit from it.

Students are accepted on the basis of their essays, recommendations, and space availability. In the event you are accepted, you will be expected to sign a statement saying that you will participate fully in all activities and parents/guardians will have to complete and sign health forms and permissions for all camp activities.

For questions or concerns, please contact:

Heather Naigus Fred Maulson
 906-458-3778 715-682-6619 ext. 113
 hnaigus@glifwc.org fmaulson@glifwc.org

Mail application, essay and letter of recommendation to: GLIFWC, Attn: Camp Registrations, PO Box 9, Odanah, WI 54861 or Heather Naigus, 253 Silver Creek Road, Marquette, MI 49855

Deadline for accepting applications is June 20, 2014



John Geissler, Director of Boulder Lake Environmental Center in Minnesota, works with Maranda Maulson as she constructs a pair of snow-shoes. The workshop attracted 22 attendees and was organized by Nikki Crowe, Fond du Lac's 13 Moons program. (Photo by Heather Naigus)



Boldt 40: Tribes remember treaty struggle, affirmation in Washington state

Squaxin, Wash.—“They gassed us, clubbed us, dragged us, beat us. Those were hard times,” said Puyallup elder Ramona Bennett, recalling the brutal treatment of tribal fishermen and their families by state enforcement officers during the treaty fishing rights struggle of the 1960s and '70s.

The struggle led to the landmark 1974 ruling by federal Judge George Boldt in *U.S. v. Washington*. Boldt's ruling upheld the treaty-reserved salmon harvest right of the tribes, establishing them as co-managers of the resource and affirming the tribal right to half of the harvestable salmon returning to their historic fishing sites.

Tribes gathered in early February to celebrate the 40th anniversary of the Boldt decision with a daylong symposium looking at the past, present and future of *U.S. v. Washington* and tribal treaty rights. “This was the same time as the peace strikes and the civil rights movement,” Bennett said. “There was a change going on and we got to be part of that change.”

The Fish War of the 1960s and '70s was actually the second Treaty War, said Muckleshoot tribal member Gilbert King George. “Research has shown that families who fought in the second Treaty War are, in most cases, direct descendants of the warriors that fought in the first Treaty War of 1855 to '56. We won both wars, no matter what they tell you in history.”

Muckleshoot elder Leo LaClair recalled helping to get the word out about the treaty fishing rights struggle. Seeking witnesses to the violence being shown to treaty tribal fishermen and their families, he invited Dr. Evans Roberts of the American Friends Service Committee and University of Washington Medical School, to attend a “Fish-In” protest on the Nisqually River.

“What he saw was a terrible, violent confrontation,” LaClair said. “It was a horrific scene.” The experience sparked Roberts to draft *Uncommon Controversy*, the first book to detail the treaty fishing rights struggle. A companion book, *Treaties on Trial*, soon followed. Together, the two books provide a comprehensive look at the treaty fishing rights struggle and the Boldt decision. At the Boldt 40 celebration, Indian activist Hank Adams—who organized most of the Fish War protests—shared a story about a confrontation on the Nisqually River involving his good friend, Northwest Indian Fisheries Commission Chairman Billy Frank Jr. Frank had been fishing off-reservation, just upriver from his home at Frank's Landing. He was returning with his catch when he saw a few dozen state fish and game enforcement officers lining the opposite bank. When the officers launched two fast boats to intercept him, Frank gunned his skiff toward the landing and yelled to Adams onshore: “Get the gun!” Get the gun!”

Adams grabbed the rifle and headed toward the landing, but stopped when he saw the enforcement officers, and dove for cover behind an abandoned car. “I used my military training to use my rifle butt to break the fall, but when I hit the ground, the gun went off,” he said. “Then my hand slipped from the rifle and I cut it on a broken bottle.”

At the sound of the shot, officers on the two boats dove for cover and began motoring blindly down the river, right past Frank.

As Frank was unloading his catch, the county sheriff and a half-dozen deputies arrived at the landing with lights and sirens. Urging calm, he noticed Adams' bleeding hand and provided first aid, then left with his deputies. “That day Billy was able to hang on to his fish and his nets, but that wasn't usually the case,” Adams said.

It was the testimony of elders during the *U.S. v. Washington* trial that helped clinch Boldt's ruling, said professor Charles Wilkinson, an Indian law expert who teaches at the University of Colorado. “Most spoke in their own languages. Judge Boldt, ruling on the basis of justice in its most luminous dimensions, accepted the elders' testimony and took it into consideration. The elders' testimony brought the whole story together.”

“The truest and most profound fact about the Boldt decision is that it was conceived and accomplished by Indian people. The transcendent meaning of the Boldt decision was to uphold the treaty rights of Northwest tribes, but it was also a national case about national obligations and values. The decision was a gift to all of America.”

(Excerpt reprinted with permission from the Northwest Indian Fisheries Commission.)

“It started before me and before my parents; before all our moms and dads and grandmas and grandpas. They knew what they had to do. They lived here; they never moved. This is their home. That's our food [salmon] that comes up the river.”

—Billy Frank Jr, Nisqually tribal member

Walking on: Co-management visionary Billy Frank Jr. left mark in Ojibwe Country

When Henry Buffalo, Jr., a young Red Cliff tribal attorney, embarked on a search for native people successfully managing off-reservation natural resources in the early 1980s, he found Billy Frank Jr. and the Northwest Indian Fisheries Commission (NWIFC). Buffalo was laying the groundwork for what would ultimately become the Great Lakes Indian Fish & Wildlife Commission (GLIFWC) and, in Frank, Jr., found a mentor who “opened up a world of possibilities” for tribes developing the infrastructure to exercise treaty rights.

Frank, longtime NWIFC Chairman and member of the Nisqually Tribe, walked on May 5 at age 83. From Buffalo—GLIFWC's first chairman—to current chair Michael J. Isham, Frank is remembered as unselfish, gracious, and dynamic.

“Indian Country has lost a great leader,” said Isham, GLIFWC Board of Commissioners Chairman. “I have lost a great friend and teacher. His impact promoting Indian treaty rights is immeasurable, and the positive impact for Indian Nations will be everlasting.”

A sister agency to NWIFC, GLIFWC celebrates the man and the substance of his message. Throughout his exceptional life, Billy articulated the symbiotic relationship between people and their homelands across Turtle Island.

Consider Frank's emblematic worldview: “I don't believe in magic. I believe in the sun and the stars, the water, the tides, the floods, the owls, the hawks flying, the river running, the wind talking.

They're measurements. They tell us how healthy things are. How healthy we are. Because we and they are the same. That's what I believe in.”

Frank championed co-management of natural resources—building bridges between individuals and governing agencies for the betterment of ecosystems and all the cherished resources contained within. In the early years of a three-decade NWIFC chairmanship, he brought that message to the Ojibwe treaty tribes of the Great Lakes in the 1980s.

“Billy gave people a vision of what could happen, and the value of working together,” said George Meyer, current Executive Director of the Wisconsin Wildlife Federation.

As former attorney and lead negotiator for the Wisconsin Department of Natural Resources, Meyer and a delegation of tribal leaders and state legislators traveled to western Washington in September 1988 to see co-management in action.

“It was a chance for us to spend time together in a relaxed setting and discuss the resources,” Meyer said. “We knew it all came down to the resources—about fish and habitat and wildlife.”

That legacy lives on today both in the Pacific Northwest and upper Great Lakes regions. Said GLIFWC Executive Administrator James Zorn: “Billy helped foster modern management structures that allow for an unprecedented, highly valuable understanding of shared natural resources. For that we can all be grateful and celebrate his life's work.”

—CO Rasmussen

Treaty rights icons meet at Boldt celebration

Wisconsin Ojibwe treaty activists LCO's Mike and Fred Tribble, along with gaiashkibos traveled to Washington state last February to salute the efforts of Nisqually member Billy Frank Jr. and others during the 40th anniversary of the Boldt decision—a federal court ruling that affirmed off-reservation rights for treaty tribes in western Washington.

Authorities arrested Frank more than 50 times in the 1960s-70s for exercising reserved rights off-reservation. During that period Washington state officials imposed netting restrictions on Puget Sound tributaries to limit salmon harvests. Frank and other tribal members in the region ignored the state rules, leading to arrests, protests and sometimes violent confrontations. The era became known as the Fish Wars and culminated with the 1974 Boldt decision.

Less than a month after Boldt, the Tribble brothers were arrested for spearing walleye just outside the Lac Courte Oreilles reservation in Wisconsin, launching litigation that led to the *LCO v. Wisconsin* or *LCO* decision.

For tribes that ceded northern Wisconsin to the United States through treaties, the 1983 *LCO* decision provided court-protection to hunt, harvest and fish off-reservation. The following year, treaty tribes in Wisconsin, Minnesota and Michigan created GLIFWC to implement treaty harvests and manage natural resources in the Ojibwe ceded territory.

Northwest Indian Fisheries Commission, a sister agency to GLIFWC, hosted the Boldt event at Squaxin Island on February 5.

—CO Rasmussen



Lac Courte Oreilles Ojibwe treaty activists Mike and Fred Tribble (right) and gaiashkibos, former LCO chairman (far left) traveled to Washington state last February to celebrate Boldt 40 and salute the efforts of Nisqually member Billy Frank Jr. who walked on three months ago. (Photo by Deborah L. Preston)



LCO students seek giigoonyag through the ice

Lac Courte Oreilles, Wis.—The cold weather subsided long enough for the students of Lac Courte Oreilles (LCO) K-12 schools to tackle the frozen waters of Grindstone Lake, Sawyer County. On February 18th, middle school and high school students took to the ice and tried their hand at harvesting giigoonyag (fish).

The February fishing event is an ongoing curriculum at LCO Schools that blends a mainstream curriculum to a culturally relevant event. “The first step in the process is to have students and teachers just observe the event,” states Jason Bisonette, who works as a curriculum developer for the school. He continues, “Many of our students and teachers have never sat in a dark shack and seen how a decoy works in the water.”

Creating a curriculum that revolves around winter spearing takes input from all of the stakeholders at the school. Discussions with the science teachers ranged from hydrology and water quality to molecular bonds that are required to form ice.

Offering asemaa (tobacco) before stepping on the ice on February 19th, 3rd through 5th graders were able to don their aagimag (snowshoes), jig with poles as well as sit in the dark shack, with a seasoned winter spearer, George Morrow Jr. “Many of our younger students have never ice fished before,” Bisonette added, when asked of the importance of a school-wide field trip. “Our challenge is to build a curriculum that is relevant to the federal mandates, but more importantly is building a curriculum that teaches young people how to be Ojibwe.” Bisonette later explains that many students at the school do not have access to the necessary gear, equipment and knowledge that is critical to many traditional outdoor activities.

The day concluded with GLIFWC Warden Lauren Tuori providing a quick lesson about ice safety. Wearing her cold water safety gear, she jumped into the frigid water, through a hole that was cut. She explained to the students that they should “never travel on the ice without an adult” and to always be very cautious when on the ice.



Enjoying a day on the ice, Lac Courte Oreilles youth get acquainted with the skill of ice fishing. From the left are: Nate Quaderer, 4th grade; Isaiah Tainter, 4th grade; Sage Stands-Christianson, 5th grade, and Sabrina Hudson, 5th grade. (Photo by Linda Tennis)

Ready for blast-off with NASA at Fond du Lac

Grant launched to get Native youth into science fields

By Sue Erickson
Staff Writer

Fond du Lac Reservation, Minn.—Work has already begun on launching an exciting three-year grant awarded to the Fond du Lac Tribal and Community College (FDLTC) from the National Aeronautics and Space Administration (NASA). The grant focuses on climate change impacts and improving the

STEM skills of Native youth while encouraging them to enter STEM related careers. STEM refers to science, technology, engineering and math, and these are areas which are significantly lacking in Native students while also being careers needed by the tribal communities.

“We propose to increase knowledge of climate change impacts on Ojibwe lifeways and encourage students from middle school to college to enter STEM fields building on past successes, incor-

porating NASA research and opportunities, and creating new partnerships,” states Courtney Kowalczak, principle investigator for the grant and FDLTC Environmental Institute director.

The grant will use Fond du Lac’s (FdL) existing gidakiimanaaniwigamig “gidaa” camps that have been ongoing at Fond du Lac and feature monthly 3-day camps for youth as well as a week long camp during the summer. It also intends to use and build upon the G-WOW model that explores the impact of climate change on tribes using both modern science and traditional ecological knowledge (TEK).

Partnering with the NASA, North Star AISES, GLIFWC, FdL Resource Management, Cedar Creek Long Term Ecological Research Center (LTER) and “Gikinoo’wizhiwe Onji Waaban” (Guiding for Tomorrow) or “G-WOW”, the grant will pursue immersing students in STEM activities through research, science fair projects and involvement as summer interns in STEM careers. Students will develop their projects and also benefit from contact with researchers as mentors and role models either at the camps or in the field.

In the course of the three years, the grant targets Native students and educators across the ceded territories. Students from grades 5-12 and undergraduates will participate in research addressing

the effect of climate change on ceded territory natural resources, adding their findings to the G-WOW online database.

Kowalczak notes that it is critical to gear learning strategies to the needs of Native American students. She says research indicates the support of family and mentors, the connection with nature, and seeing the value of an ecological career were key facts in the academic pursuit of the students who were motivated to pursue ecological fields.

In the third year the grant also includes a one-week professional development institute for teachers from Native communities in the Upper Midwest region. The institute will strengthen teacher’s climate science content knowledge as well as help them build their capacity to engage Native students and their communities in climate science education. The workshops will utilize global, national and regional climactic data provided by NASA.

“This is a huge and extremely exciting project,” says Kowalczak. “To have NASA research available, for our kids to work with these scientists as well as the researchers within tribal agencies, to be able to outreach throughout the ceded territories, and ultimately to bring back more understanding of climate change—this is a phenomenal opportunity! We are ready to launch!”



Students from Fond du Lac’s gidakiimanaaniwigamig project study core samples taken from wild rice lakes in the region. (Photo reprinted from <http://gidakiimanaaniwigamig.isd2142.net/>)

Attention teachers!

Want to address CLIMATE CHANGE in your classroom? Check out the 4-day G-WOW Changing Climate, Changing Culture Institute held at the Northern Great Lakes Visitor Center, Ashland, Wisconsin. Great information, great ideas for place-based learning and STEM! See page 23 for details.



Mino Wiisinidaa demos end Cook book/DVD in production

By Owen Maroney
ANA SEDS Community Dietitian

Odanah, Wis.—Overall, it was a cold and snowy winter but that did not freeze the “Mino Wiisinidaa” project. Despite the numerous snow storms and sub-zero temperatures, project staff completed 17 food demonstrations, between October 1st and March 31st, with five tribes in Wisconsin and Michigan. In each community tribal members also braved the harsh winter

weather to attend the demonstrations and learn more about traditional foods, their health benefits, and how to prepare them.

On March 31st, the food demonstration portion of GLIFWC’s Administration for Native Americans (ANA) “Mino Wiisinidaa (Let’s Eat Good!)—Traditional Foods for Healthy Living” project ended on a high note working with Lac Vieux Desert (LVD) youth at the recreation center.

Twenty youth, ages 5-13, headed to the recreation center to learn about wild rice from LVD tribal member Roger LaBine. Also during the demonstration, they helped make sumac berry ade (a lemonade and berry flavored beverage), made their own wild rice berry salad, and enjoyed decorating their own chef hats. This demonstration, similar to the other food demonstrations project staff have hosted over the past year and a half, was full of great people, a lot of learning, and good memories.

As project staff switches gears to focus on completing the cookbook and accompanying instructional DVD, Mino Wiisinidaa staff would like to say “Chi Miigwech” to the organizations and organizers in all of GLIFWC’s 11 member tribes that helped coordinate more than 40 food demonstrations and to everyone that came out to support and learn!

Now is typically the time of year that hibernation ends, but in some ways the opposite will be true for project staff as they lock themselves away to furiously work on the cookbook: making edits, designing layouts, and adding photos.

Filming for the instructional DVD that will accompany each of the 3,000 cookbooks is already underway. On the DVD, project staff and guest chefs will guide you through selected recipes from the cookbook, address food safety, and teach the beginner some advanced culinary skills used in the cookbook.

“Cooking can be intimidating at any level, whether you are experimenting with a new ingredient, style of cuisine, or just starting out,” says LaTisha Coffin, project coordinator. For many people, the ingredients and methods in our cookbook will be new. To make this less intimidating we are creating an instructional DVD so that a knowledgeable guide will be walking,

step by step, with audiences to make the recipes successfully and enjoyably.”

The cookbook with instructional DVD will be ready to distribute this fall. Check out the next issue of the *Mazina’igan* and GLIFWC’s Facebook page for more information about how to get your copy. Can’t wait until the fall for some recipes? Neither can we! Keep an eye on the GLIFWC’s Facebook page for upcoming instructional videos.

Mino ayaag! Giga-waabamigom dagwaaging! Be well! We will see you in the fall!

Lemon Baked Fish

Original concept from
Greg Johnson, Lac du Flambeau

Prep Time: 20 minutes
Cook Time: 15 minutes
Total Time: 35 minutes

Serving Size: 4 ounces
Yield: 4

Ingredients

1 tablespoon **sunflower seed oil**, divided
1 each lemon, cut into ¼” slices, divided
1 each shallot, diced, divided
1 tablespoon fresh chives, minced, divided
1 tablespoon fresh dill, divided
1 pound skinless, boneless fish fillet, divided (**northern pike, lake trout, white fish**, etc.)

Directions

- Using a 9x13” baking dish, layer half the oil, lemon, shallot, herbs, and fillet and repeat.
- Position the oven rack so that the fish will be 4-5 inches below the broiler.
- Broil on high heat for 10-15 minutes or until fish flakes easily.

Nutrition Facts

Amount Per Serving		% Daily Value
Total Fat	20g	40%
Sat Fat	1.5g	3%
Trans Fat	0g	0%
Cholesterol	60mg	12%
Sodium	60mg	12%
Total Carb.	5g	10%
Fiber	5g	10%
Sugars	2g	4%
Protein	13g	26%
Vitamin C	20%	40%
Iron	10%	20%

Exchanges: Fat - 0.0
Meat Medium Fat - 2.00

Bold = Indigenous food
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.

Wintergreen Tea

Original concept from
Becky Lemieux, Bad River

Prep Time: 15 minutes
Cook Time: 45 minutes
Total Time: 1 hour

Serving Size: 1 1/2 cup
Yield: 5

Ingredients

2 quarts Hot Water
40 each Dried or fresh **wintergreen** leaves, ¼ inch strips

Directions

- Pour water into a large sauce pan and bring to a rolling boil. Once boiling, turn off heat.
- Stir leaves into the water. Steep uncovered for 30-45 minutes, or until reddish in color and flavor is as strong as desired. Stirring occasionally.
- After steeping, use a strainer to remove leaves.
- Serve hot or cold & sweeten with maple syrup.
- Cover tightly and keep for up to one week.

Wintergreen oil, which is on the leaf before boiling, contains an aspirin-like compound. Upon boiling, the volatile oil evaporates, leaving trace amounts of this compound. People on medications affected by aspirin should be aware, however, when consumed in moderation, it is unlikely there will be any interaction.

Clip & Save ✂

2014 GLIFWC Enforcement youth activities/education

Class	Date	Place	Contact
ATV Safety	June 9, 12	Red Cliff	Mike Soulier 715.209.0093 Jim Stone 715.292.3234
ATV/Snowmobile	July 21-15,	Lac du Flambeau	Jonas Moermond 715.562.0026 Riley Brooks 715.562.0300
Take a kid fishing	August 2014	Mille Lacs	Robin Arunagiri 715.889.0734
Hunter Safety	August 18, 25 & 26	Lac du Flambeau	Jonas Moermond 715.562.0026 Riley Brooks 715.562.0300
Hunter Safety	August 18-19	Red Cliff	Mike Soulier 715.209.0093 Jim Stone 715.292.3234
Hunter Safety	September 5-6	Mille Lacs	Robin Arunagiri 715.889.0734
Hunter Safety	September 8, 10, 12, 15, 17 & 19	St Croix	Brad Kacizak 715.562.0030
Hunter Safety	Sept. 27-28	Lac Courte Oreilles	Mike Popovich 715.292.7535 Lauren Tuori 715.292.8343
ATV/Snowmobile	October 6, 8, 9, & 10	St. Croix	Brad Kacizak 715.562.0030
ATV/Snowmobile	December 6-7	Lac Courte Oreilles	Mike Popovich 715.292.7535 Lauren Tuori 715.292.8343

All dates are tentative and subject to change. For updated information on these events and others please be sure to check our website at www.glifwc.org, visit us on **Facebook** or call your nearest GLIFWC warden.



Chefs in the making at Lac Vieux Dessert. (Photo by Owen Maroney)

Diver leads tribal planning

(Continued from page 1)
“Tribes are so homelands-based. We can’t just follow resources like moose up into Canada,” said Diver, hopeful that action can be taken to stave-off the more disruptive effects of a warming aki in the upper Great Lakes region. “The whole point of our forefathers creating the ceded territory was to have access to resources that support our cultural and religious practices.”

“Tribes exist as part of broader communities. What happens in tribal homelands can’t happen in vacuum,” she said.

Get greener

While climate change is already underway, researchers say that without reining in fossil fuel emissions, annual temperatures will continue to rise and alter ecosystems. For Ojibwe people the loss of hallmark plant and animal species—key underpinnings of seasonal hunting and gathering cycles—would disrupt everything from cultural traditions to food systems.

Meanwhile, the Task Force on Climate Change and Resilience is currently wrapping up its preliminary recommendations due out in spring, and will issue a final report to the Administration in August.

For more information on climate change and the ceded territory visit the award-winning “Gikinoo’wizhiwe Onji Waaban” (Guiding for Tomorrow) or “G-WOW” Initiative at www.g-wow.org.



Zorn highlights GLIFWC staff accomplishments at annual meeting

Employee recognitions for each 5-year anniversary



GLIFWC staff with employment anniversaries through the 20-year mark: John Coleman (Environmental Biologist–20y), Missy Berlin (Accountant–20y), Mike Soulier (Conservation Officer–15y) and Fred Maulson (Chief Conservation Officer–10y).

Inset: Accountant Annette Crowe received a Pendleton blanket to mark her 25 years with GLIFWC. (photos by Charlie Otto Rasmussen)



Additions to GLIFWC's rare 30+-year club: Susan Erickson (Public Information Director), Henry "Butch" Mieloszyk (Inland Fisheries Technician), and Jonathan Gilbert (Wildlife Biologist). Each one received a monetary award in recognition of their service. (COR)

GLIFWC welcomes new staff

New procurement officer focuses on tracking

Wildlife biologist brings experience, local knowledge

Mike Christiansen, a Red Cliff tribal member, joined GLIFWC ranks as the property and procurement officer on January 6, 2014. One of his first responsibilities is to develop a tracking system for GLIFWC's property and equipment utilizing the SAGE Fixed Asset Tracking software. The system utilizes a scanner to identify tagged property, Christiansen is currently testing the system. He also will handle aspects of GLIFWC travel.



Prior to coming to GLIFWC, Christiansen worked for the Red Cliff Band in the Accounting Office as a grants accountant. While working for the tribe, he also had some experience with property procurement procedures.

Christiansen graduated from Lac Courte Oreilles Ojibwe Community College with an associate degree in small business management in 2008. In 2012 he received certification in financial administration of federal grants following a two-day training in Denver. He also attended a mini conference on Office of Management and Budget circulars in 2012.

Christiansen resides on the Red Cliff reservation and devotes much of his down time to his four-year old daughter, Autumn, enjoying adventures to a variety of places like parks and fairs. He also volunteers time in the community, such as with Food Share and the Salvation Army.

Bikes are his hobby. He enjoys free-style biking, builds bikes, and intends to get one built for Autumn this summer.

—SE

Journeyman wildlife researcher Nick McCann is laying down roots in far northern Wisconsin as a biologist for GLIFWC. The Purdue University PhD graduate brings a diverse blend of work experience and education to the Commission—including research on the Chequamegon-Nicolet National Forest studying waabizheshiwag (martens) and ojijag (fishers) for his dissertation.



The northeast Illinois native first earned a BS: Biological Aspects of Conservation at University of Wisconsin, then went on to criss-cross Turtle Island taking up short-term work. Near Rhinelander, Wisconsin he surveyed maangwag (loons); studied gidagaa-bizhiwag (bobcats) in southern Iowa; waabiziig (tundra swans) in North Carolina; headed down by the equator to work with sea turtles off Costa Rica; then returned north to Montana to participate in bizhiw (lynx) research. In northeast Minnesota McCann conducted field research on the interrelationship between waaboozoog (snowshoe hares) and bizhiw while completing his MS degree at University of Minnesota-Duluth.

At GLIFWC, McCann is one of four wildlife biologists. He's becoming familiar with the broad scope of ceded territory wildlife management before taking on specific resource projects.

McCann and his wife Marissa, a recent University of Minnesota chemistry instructor, relocated to Ashland, Wisconsin.

—COR



Our trees are under attack!



Join the fight to stop the Emerald Ash Borer (EAB)

EAB facts

The Emerald Ash Borer (EAB) is an invasive insect. This means that the EAB is not from this area, and it can take the food and water from another species that has always lived there.



The beetles are metallic green and are 1/2 inch long and 1/8 inch wide. The adult beetle can live for only two to three weeks. As you can see from the picture of the penny, the adult beetles are very small, but they are causing big problems for ash trees. (Photo of EAB on penny by Howard Russell, Michigan State University, Bugwood.org.)

EAB is a beetle that came to the United States from Asia. This beetle probably arrived in the United States in wood packaging materials. The EAB has killed millions of ash trees throughout North America since it was discovered in 2002. This beetle attacks all types of ash trees.

How does the EAB affect the ash trees?

The EAB feed only on ash trees. The EAB affects healthy as well as unhealthy trees.

Emerald Ash Borer eggs hatch in seven to 10 days. After hatching, the immature EAB, called larvae (pronounced lahr-vee), create S-shaped tunnels under the bark. These tunnels cut off the flow of water and nutrients the tree needs to survive, and eventually the tree dies. EAB larvae do the most damage to the trees.



When adult beetles exit a tree in May through July, they leave a D-shaped exit hole in the bark. The adult EAB feeds on the leaves of the ash trees.



Emerald Ash Borer larvae. (Reprinted from emeraldashborer.info)

To the Right: EAB S-shaped tunnels. (Photo by C. Asaro, Virginia Department of Forestry, Bugwood.org)

What can you do?

The EAB can move short distances on its own by flying from tree to tree. It moves long distances by catching a ride in ash trees or ash firewood that is moved by people. The adult EAB do not usually fly far from where they emerge from the tree if there are more ash trees nearby. The EAB is mostly spread long distances by people moving it. **Don't move firewood!** To find out if EAB is in your state go to: www.emeraldashborer.info/map.cfm#sthash.VbNfY8rK.dpbs



EAB adult emerging from D-shaped hole. (Photo by Missouri Department of Conservation.)

To learn more about EAB visit:

- <http://stopthebeetle.info/>
- <http://emeraldashborer.info>
- <https://datcpservices.wisconsin.gov/eab/>
- <http://www.youtube.com/watch?v=KJqnfWecZ9U>

Circle the firewood your family should choose:



Firewood you brought with you from a long way away



Firewood you bought near or at the campground

EAB Word Search!

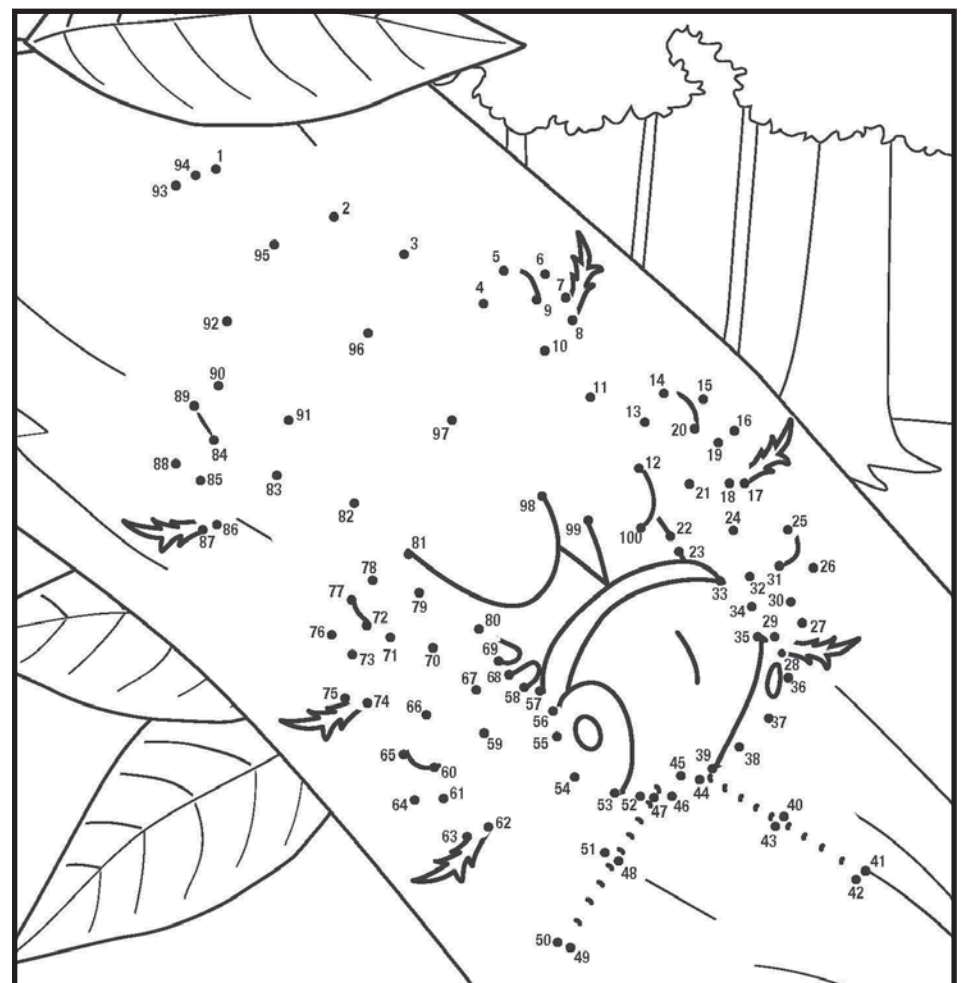
S	K	C	A	T	T	A	E	N	J
X	S	E	L	L	J	V	Z	E	U
E	A	H	U	E	I	V	F	E	N
B	A	D	A	S	A	B	I	R	E
H	A	V	A	P	E	F	R	G	A
O	S	V	R	E	E	G	E	X	M
F	N	A	T	A	G	D	W	I	T
I	A	L	R	L	L	A	O	Z	S
G	E	T	R	E	E	N	O	S	E
D	S	H	A	P	E	D	D	T	P

ADULT
ASH
ATTACK
BEETLE

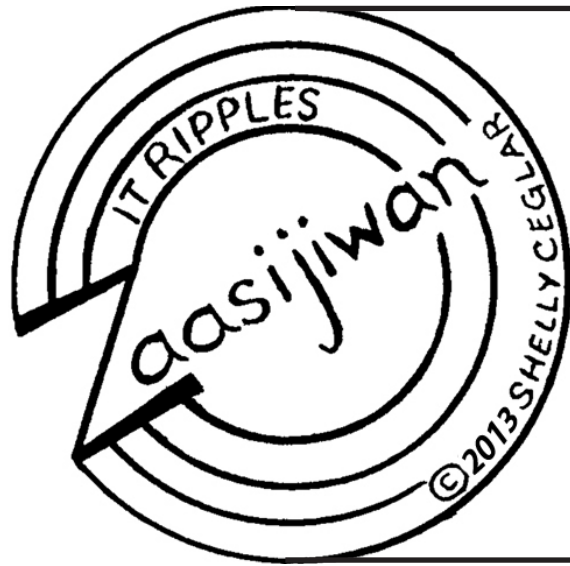
D-SHAPED
EAB
FIREWOOD
GREEN

LARVAE
LEAF
PEST
S-SHAPED

HINT: Hyphens are not used in the word search puzzle.



Something bad might be hiding under the bark of your firewood! Connect the dots to see... (Reprinted from United States Department of Agriculture Animal and Plant Health Inspection Service.)



Niibin Anishinaabewakiing. It is Summer in Indian Country.

“Nindede ikido, “Noongom daga gichi-anokiidaa! Abaate dash aabawaa. Naadin i’iw bimiskwa’igan. Ninanaa’i’aanaan wa’aw akikoons. Gaawiin bimibizosii. Ziibiing niwii-giigooyikemin. Daga miijimikanjigan naazh! Gaa! Zagapijiganing ninabagijiishin. Niwii-naadin boodaajii’igan. Baanimaa wii-bakazhaaweyan ingiw giigooyag, gitigaaning niwii-binaakwe’ige. Megwaayaak iwidi waasa awesiiyag anokiwig. Gibooni’aawaag. Giganawenimaanaanig. Gimiigwechiwenimaanaanig. Miigwech!”

(“My father he says, “Today please let’s all do great-work! It is warming up and it is mild weather. Go get that screwdriver. We will fix it this outboard motor. It is not running. On the river we are going fishing. Please bait, go get it. No! On the trailer I have a flat tire. I will go get it the tire pump. Later when you will clean those fish, in the garden I will rake. In the woods over there in that far direction wild animals they are working. You all leave them alone. We all take care of them. We all give them thanks. Thank you!”)

<p>Bezbig—1</p> <p>OJIBWEMOWIN (Ojibwe Language)</p> <p>Double vowel system of writing Ojibwemowin. —Long vowels: AA, E, II, OO Waabooz—as in father Miigwech—as in jay Aaniin—as in seen Mooz—as in moon</p> <p>—Short Vowels: A, I, O Dash—as in about Ingiw—as in tin Niizho—as in only</p> <p>—A glottal stop is a voiceless nasal sound as in A’aw. —Respectfully enlist an elder for help in pronunciation and dialect differences.</p>	<p style="text-align: center;">VTI-verb transitive-inanimate Ganawendan! Take care of, protect it!</p> <p>Ninganawendaan zaaga’igan. I take care of the lake.</p> <p>Giganawendaanan nibi dash aki. You care and protect water and land.</p> <p>Oganawendaanan ziibi dash ziibins. S/he protects them the river and creek.</p> <p>Giganawendaamin zaaga’iganan. We all protect them the lakes.</p> <p>Giganawendaanaawaan maskiigoon. You all take care of them the swamps.</p> <p>Oganawendaanaawaa manoomin. They protect the wild rice.</p>	<p>Niizh—2 <i>Circle the 10 underlined Ojibwe words in the letter maze. (Translations below)</i></p> <p>A. <u>Dibikad</u>. Midaaso diba’igaans ishkwaaw niizho diba’iganed.</p> <p>B. <u>Baakinan</u> waasechigan imaa. <u>Bizindan!</u> Bizaan!</p> <p>C. Awiya gaagiigido waasa iwidi. <u>Ninzegiz</u>. Awan.</p> <p>D. <u>Gego</u> zegiziken! Naadin <u>giwaabooyaan!</u> Ginoondam ina?</p> <p>E. Nimbiizindawaa ishkode-<u>odaabaan</u> ishkode-odaabaanakanaang.</p> <p>F. Ho! <u>Ayaawag</u> bineshiyag agwajiing. Ningii-goshkokaa.</p> <p>G. <u>Inashke!</u> Giwaabamaag ina anaangoog? <u>Anaangoog</u> minik. Aaniin minik? Ningodosagoons.</p>
<p>Niswi—3</p> <p>IKIDOWIN ODAMINOWIN (word play)</p> <p>Down:</p> <ol style="list-style-type: none"> It is warming up. please later lake and <p>Across:</p> <ol style="list-style-type: none"> No! It is mild weather. in the garden far, in that direction 	<div style="text-align: center;"> </div> <p style="text-align: center;">Online Resources ojibwe.lib.umn.edu www.glifwc.org/</p>	<p>Niiwin—4 VTI Root Commands</p> <p>ending in -in, -en, -oon</p> <ul style="list-style-type: none"> •Miijin!—Eat it! •Biinitoon!—Clean it! •Biidoon!—Bring it! •Nanaa’itoon!—Fix it! <p>Nimbiinitoon(an).—I clean it. (them) Gibiinitoon(an).—You clean it. (them) Obiinitoon(an).—S/he clean it. (them) Nimbiinitoomin.—We clean it/them. Gibiinitoomin.—We all clean it/them. Gimiiijinaawaa.(n)—You all eat it. Omiiijinaawaa.(n)—They eat it.</p> <p>These only use inanimate (non-living) nouns. Nimiijinan miinan. Nimiijin wiyaas. Howah! Mii’iw.</p> <p>Goojitoon! Try it! Translation below.</p> <ol style="list-style-type: none"> Nimbakade. _____jiibaa-waad _____ wiyaas omaa. _____ganawend _____ manoomin zaaga’iganing. _____biinitoo _____ miiziiwigamigong wiindak. <p>4. Aaniindi ezhaawaad? Noongom omaa nindishkwii. _____biidoon mitigo-makak waakaa’iganing.</p> <p>5. Niibing _____ganawend _____ jiimaan. Zaaga’iganing giigooyike dash onanaa’itoon i’iw jiimaan.</p>

Translations:

Niizh—2 A. It is night. It is ten minutes after two o’clock. B. Open the window there. Listen! Be still! C. Someone is talking far over there. I am scared. It is foggy. D. Don’t be scared! Get your blanket! Do you hear? E. I hear him/her that train on train tracks. F. Oh! They are there birds outside. I was startled. G. Look, behold! Do you see them? the stars? Stars so many. How many? A thousand.

Niswi—3 **Down:** 1. Abaate 2. Daga 3. Baanimaa 4. Zaaga’igan 8. Dash **Across:** 5. Gaa 6. Aabawaa 7. Gitigaaning 9. Waasa

Niiwin-4 1. I am hungry. I am cooking it meat here. (Nin- -aan.) 2. They take care of it the wild rice at the lake. (O- -aanaawaa) 3. We all clean it the bathroom when it is dirty. (Gi- -min) 4. Where are they going? Today here I am staying behind. I am bringing it the wooden crate in the house. (Nim-) 5. When it is summer he takes care of it the boat/canoe. At the lake he fishes and he fixes that boat. (O- -aan)

There are various Ojibwe dialects; check for correct usage in your area. Note that the English translation will lose its natural flow as in any world language translation. This may be reproduced for classroom use only. All other uses by author’s written permission.
Some spellings and translations from The Concise Dictionary of Minnesota Ojibwe by John D. Nichols and Earl Nyholm. All inquiries can be made to **MAZINA’IGAN**, P.O. Box 9, Odanah, WI 54861 lynn@glifwc.org.



Leo LaFernier, longstanding VITF representative, walks on

Respected ogichidaa (warrior) & gekinoo'amaaged (teacher)



Odanah, Wis.—The Great Lakes Indian Fish & Wildlife Commission (GLIFWC) recognizes the many contributions of Leo LaFernier Sr., Red Cliff's representative to the Voigt Intertribal Task Force (VITF) and a humble but legendary warrior, who passed January 13 at the age of 80. His service to the VITF spanned thirty years, including the formative and strife-ridden years as GLIFWC's member tribes first exercised their off-reservation treaty rights. Affectionately known as "Uncle Leo," he was a quiet, but strong advocate for Native people, Native rights and the natural resources.

"Leo was a great friend, a real mentor and role model for me," said Lac Courte Oreilles (LCO) Tribal Chairman Mic Isham, who is also the Chairman of GLIFWC's Board of Commissioners. "On behalf of the LCO Tribe and GLIFWC, we thank Leo and acknowledge his many years of fighting for and protecting treaty rights on behalf of Red Cliff and all of the great Ojibwe Nation. Leo is a legend!"

LaFernier was also elected to the Red Cliff Tribal Council for numerous terms, serving as vice-chairman for many of those. "The loss of Leo is deeply felt by the Red Cliff Tribe," said Red Cliff Tribal Chairwoman Rose Gurnoe-Soulier. "Our community was so

fortunate to benefit from his talents and wisdom. He was truly gifted, very fair-minded, and an excellent mediator and ambassador for our Tribe. A man of high integrity, we were proud to have him represent us!"

LaFernier, who grew up on the Red Cliff reservation and depended on hunting and fishing for subsistence as a youth, was deeply respectful of nature and carried that respect along with his spirituality into the many GLIFWC functions. His prayers opened many meetings. He sat vigil at numerous four-day, Sacred Fires for GLIFWC events; he shared his Pipe. He brought sound reason and vision to discussions. He was always there.

Leo garnered the respect and admiration of his colleagues as an ogichidaa, protector of the community. This is evidenced by a 2012 VITF resolution recognizing his accomplishments and dedication.

"We have lost a beloved friend and wise teacher whose legacy will endure with all of us here at GLIFWC," stated GLIFWC Executive Administrator James Zorn. "He had only love and respect for all people and Mother Earth. Our world is a much a better place because of his vision and leadership in protecting the land, the water and all living things." —SE

Ceded Territory News Briefs

Minnesota Senate "Wolf Data Bill" stalled in committees

St. Paul, Minn.—Minnesota's Senate Committee on Environment and Energy passed the "Wolf Data Bill," Senate File 2256, in mid-March. The bill provides the Minnesota tribes the opportunity to allow or disallow hunting and trapping of wolves on tribal lands.

The bill would also temporarily suspend the ma'iingan (wolf) hunt in the state in order to implement Minnesota's Wolf Management Plan. This would include providing data on all known wolf deaths and illnesses, a map of wolf-livestock conflicts, and establishing and disseminating Best Management Practices to be used by the livestock owners to reduce wolf-livestock conflicts to include non-lethal methods.

It also provides for an annual census and an assessment of the public knowledge and attitudes towards ma'iingan. A bottom-line wolf population figure is set at 1,600 wolves in the state.

The bill was referred to the Senate Committee on State and Local Government where it was amended to include a State Wolf Plan Review Advisory Council and passed as amended. The Advisory Council would be composed of 17 representatives from a variety of sectors, including two from tribes.

View the bill at: www.revisor.mn.gov/bills/bill.php?b=Senate&f=SF2256&ssn=0&y=2014

Klapel appointed as new Mille Lacs Commissioner of Natural Resources

Mille Lacs, Minn.—The Mille Lacs Band appointed Susan Klapel as the Band's new Commissioner of Natural Resources, an office formerly held by Bradley Kalk, who is currently serving as the executive director of the department.

Klapel brings with her experience in environmental issues as well as law enforcement, having served the Band both as a police officer and a conservation warden. She also served as an investigator for the Mille Lacs Band Gaming Regulatory Authority.

Klapel will be overseeing the Band's Department of Natural Resources and Environment staff and activities. Both she and Kalk will be working directly with GLIFWC on issues pertaining to off-reservation treaty rights and resources.

Tribal hatcheries receive state grants, commit to stocking

Madison, Wis.—Three GLIFWC member tribal hatcheries and six private hatcheries received grants from the Wisconsin Department of Natural Resources (WDNR) to improve their hatchery operations this year to produce more oga (walleye). The grants are part of the Wisconsin Walleye Initiative aimed at enhancing the walleye fishery in Wisconsin lakes. Recipients must commit to stocking in Wisconsin in the next three years.

Tribes receiving the grant include the Mole Lake/Sokaogon Band for \$298,900; the St. Croix Band for \$283,255 and the Lac du Flambeau Band for \$432,154. GLIFWC worked with the WDNR in recommending lakes for stocking in 2014.

Moose maintain tenuous hold in NE Minnesota

Cloquet, Minn.—More mooz (moose) showed up in the latest aerial survey conducted in northeast Minnesota, but researchers caution that the one-year uptick does not represent improving conditions for the struggling herd.

"What's very clear from 10 years of data is that we have a moose herd in decline," said Fond du Lac Wildlife Biologist Mike Schrage. Results from the 2014 survey conducted by the Minnesota Department of Natural Resources, Fond du Lac Band and 1854 Treaty Authority produced a population estimate of 4,350 animals. Biologists approximated moose numbers at around twice that number just eight years ago.

State and Ojibwe treaty tribes cancelled their moose seasons last fall out of concern for the health of the herd. Biologists agree that hunting has not been a significant driver in the herd decline; a mix of factors including heat stress from warmer annual temperatures, parasitic brain worms, and ticks are believed to be taking a toll on moose. While the Bois Forte Band has already closed the off-reservation moose season to its member for 2014, Fond du Lac, Grand Portage and state authorities have yet to announce a decision on issuing any harvest tags.

Gichigami barrel project update

Red Cliff Reservation, Wis.—From the limited amount of preliminary data, results show no immediate cause for concern regarding the safety of water and fish consumption. Therefore, citizens of the region should continue to follow existing guidelines for Lake Superior. However, the tribe fully intends to address any concerns listed in the Final Results and Summary Report expected to be published in August of 2014.

Asian carp eggs found in Lynxville, Wisconsin

Lynxville, Wis.—Asian carp eggs, including late-stage embryos nearly ready to hatch from the egg, were recently identified in samples collected by U.S. Geological Survey (USGS) scientists in 2013 from the Upper Mississippi River as far north as Lynxville, Wis.

"This discovery means that Asian carp spawned much farther north in the Mississippi than previously recorded," said Leon Carl, USGS midwest regional director. "The presence of eggs in the samples indicates that spawning occurred, but we do not know if eggs hatched and survived or whether future spawning events would result in live fish."

Great Lakes Governors and Premiers take steps to combat aquatic invasive species

Chicago, Ill.—The Great Lakes Governors and the Premiers of Ontario and Québec recently announced bold actions to combat the threat of aquatic invasive species in the Great Lakes-St. Lawrence River Basin.

At the center of these actions is the announcement of a Mutual Aid Agreement that will empower the States and Provinces to act collaboratively and share staff and expertise in the event of a serious regional threat from aquatic invasive species (AIS). This innovative agreement provides the States and Provinces with a powerful tool to combat the introduction and spread of aquatic invaders.

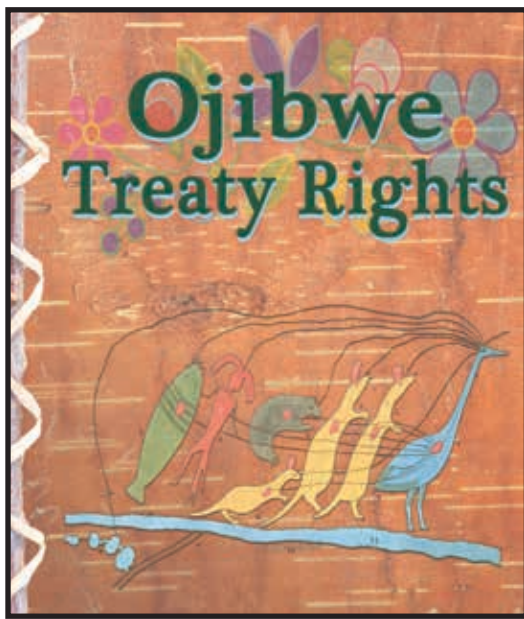


Educational materials

Recently updated! GLIFWC's Ojibwe Treaty Rights

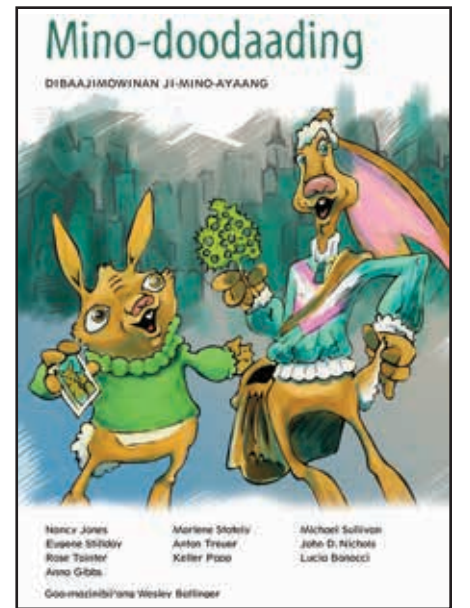
Having fun with the language

By Jennifer Burnett, GLIFWC Outreach Specialist



Often referred to as Treaty Rights 101, *Ojibwe Treaty Rights* has been updated and has a new look. This 55-page booklet provides basic information about the treaty rights of GLIFWC's eleven member tribes who retained the right to hunt, fish and gather on ceded territories. It relates treaty history, legal background and explains how treaty rights are currently managed in the states of Minnesota, Wisconsin and Michigan. Appendices include the treaties as well as a chronology of legal proceedings. Available online through GLIFWC for \$3.00 plus shipping and also downloadable. Go to www.glifwc.org and click Education Materials on the menu bar.

Perfect for children of all ages, *Mino-doodaading* is a collection of Ojibwemowin stories told by first language speakers. The monolingual format of the book is perfect for use in Ojibwemowin immersion settings and as a useful resource for vocabulary and grammar patterns for those learning Ojibwemowin. This sequel to the award-winning *Awesiiyensag*, *Mino-doodaading* features three original stories that showcase traditional Anishinaabe values with a modern twist, such as the importance of family, friendship, and respecting elders' wisdom, relatable to people of all cultures. Edited by a panel of highly esteemed Ojibwe second language professionals working in collaboration with first language speakers, this book exemplifies the movement to encourage indigenous language study and expression in writing.



Mino-doodaading is delightfully illustrated by GLIFWC Language Specialist Wesley Ballinger and makes the book enjoyable even for those with limited Ojibwe language knowledge. Copies of the book can be purchased from Birchbark Books in Minneapolis, Minnesota or ordered online at www.birchbarkbooks.com for \$16.

Deer/elk mortality

(Continued from page 11)
difficult. There is no simple way to count or estimate the number of elk around Clam Lake. Managers struggled with this decision and examined several different methods to estimate the elk population. Although they were all slightly different, none had an estimate above 200 elk. Thus the recommendation from the committee was not to hold an elk hunt in 2014. There was some uncertainty about this recommendation as certain assumptions about elk mortality and calf production were made. At that point in March information to suggest that winter effects

would be significant this year was not available. In the six weeks since that meeting evidence has been found that winter did take a toll on calf survivorship this year, and that likely there will be effects on this year's calf production. All of this reduces the uncertainty biologists had about their assumptions and recommendation. While both the deer and elk herds are currently enjoying the return of green food on the landscape, there is no doubt that old man winter put them, as well as us, to the test as northwoods residents!


Climate change

(Continued from page 13)
municipal governments; First Nations, and Métis. The GLEC has developed ten subcommittees to perform the work required by the GLWQA, including a Subcommittee dedicated to climate change. The climate change subcommittee is directed to coordinate efforts to identify, quantify, understand, and predict climate change impacts on the Great Lakes, and share information that Great Lakes resource managers need to proactively address these impacts. This work includes compiling information about Great Lakes climate change knowledge; coordinating across the ten annexes to assess and identify critical hydroclimate and climate change information needs; engaging on a regular basis with other subcommittees and key decision makers in the Great Lakes basin; and addressing identified priorities and gaps in hydroclimate and climate change information. While GLIFWC staff does not sit directly on the climate change subcommittee, GLIFWC will monitor its work both by virtue of its seat on the GLEC, and through staff participation on the subcommittee that serves a coordination and oversight role among the other nine subcommittees. GLIFWC staff was also instrumental in developing and serves as co-lead of a Traditional Ecological Knowledge team to work with the subcommittee dedicated to science, which will also coordinate with the climate change subcommittee.

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G-WOW Changing Climate, Changing Culture Institute
July 14-17, 2014
Northern Great Lakes Visitor Center, Ashland, WI



A 4-day professional development institute to help educators increase their climate literacy and ability to guide students in investigating climate change. In this institute you will learn how to:

- Integrate place-based evidence of climate change with the latest climate research
- Evaluate the impacts of climate change on the environment, cultures, and communities
- Guide students in developing climate change service learning projects
- Develop and share climate change curriculum with other educators
- Infuse Ojibwe traditional ecological knowledge and language components



Where: Northern Great Lakes Visitor Center, Ashland, WI, surrounding coastal communities and tribal lands

Who: Classroom teachers, community youth educators
Enrollment limited to 25 participants. **Applications due June 6th**

What Will You Learn?

Day 1: Building Climate Change Competencies: Northern Great Lakes Visitor Center, Ashland, WI
Explore what's up with our climate with scientists, resource managers, and cultural specialists. Investigate climate change using historic and projected research and learn how to apply these tools in your teaching.

Day 2: Investigate the Issue-Field Research: Chequamegon National Forest and Bad River Kakagon Sloughs, Odanah WI
Investigate scientific research being conducted on climate change impacts on northern forests and investigate coastal climate impacts on the Bad River Kakagon Sloughs, wild rice, and the cultural practices of the Lake Superior Ojibwe.

Day 3: Exploring Climate Change @ Stockton Island-Apostle Islands National Lakeshore, Bayfield WI
Sort out the climate change "controversy." Take a "climate walk" to learn how climate change is affecting Lake Superior and the Apostle Islands. What can we do to adapt to a changing climate?

Day 4: Taking Action: Red Cliff Tribal Fish Hatchery and Legendary Waters, Red Cliff, WI
How are we planning for climate change impacts on coastal resources and people? Learn how to apply the G-WOW model as one tool to teach about climate change. Develop a climate change service learning project.

Cost: FREE!
\$400 teacher stipend & credit is available. Morning coffee, snacks, lunches provided. Educators completing the Institute are eligible for financial support to bring their students to a "Coastal Climate Camp" field experience!

Questions?
For more detailed information, detailed agenda, and registration materials go to <http://fyi.uwex.edu/nglvc/> and click on "G-WOW Institute" or contact Cathy Techtmann, UW-Extension, 715.561.269, email catherine.techtmann@ces.uwex.edu

Sandy Lake Ceremony set for July 30

Join us as GLIFWC commemorate the sacrifices of Anishinaabe ancestors at Sandy Lake in 1850 when over 400 perished as part of an effort to force removal to the Minnesota territory.

The annual Sandy Lake Ceremonies are slated for July 30 at the Sandy Lake Recreation Site near McGregor, Minnesota. The ceremony and feast are scheduled for noon and are preceded by a paddle across Sandy Lake, which is set for a 9:00 a.m. start.

All are welcome. For information: Contact GLIFWC at 715-682-6619.

Mikwendaagoziwag: They are remembered



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MAZINA'IGAN STAFF:
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Susan Erickson..... Editor
Lynn Plucinski..... Assistant Editor
Charlie Otto Rasmussen..... Writer/Photographer

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

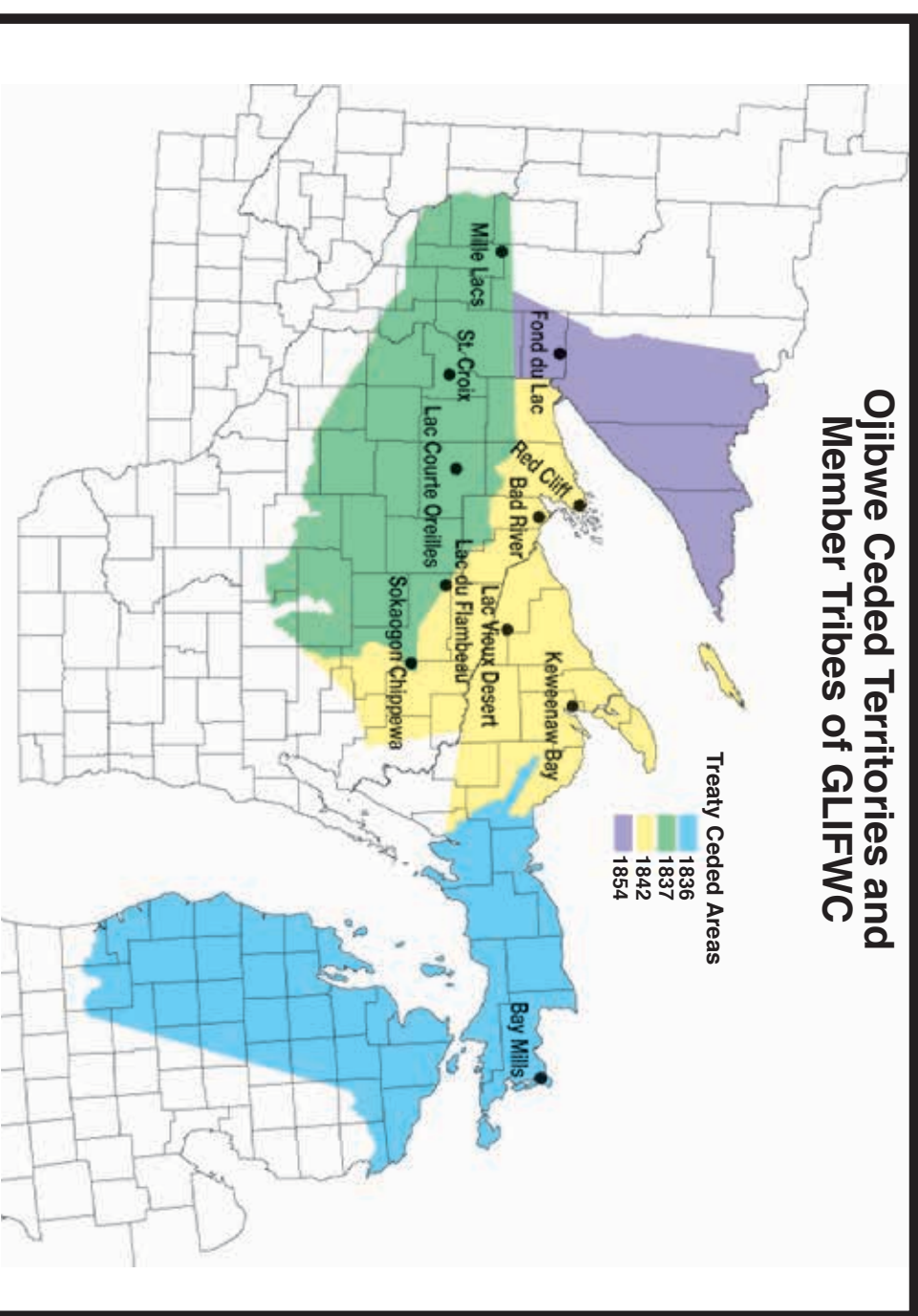
Subscriptions to the paper are free to United States and Canadian residents. Subscribe online at: www.glifwc.org; write **MAZINA'IGAN**, P.O. Box 9, Odanah, WI 54861; phone (715) 682-6619; or e-mail: lynn@glifwc.org.

If you have moved, or are planning to move, please keep us informed so we can keep our mailing list current. If you plan to be away for an extended period of time, please let us know so we can suspend your subscription until you return.

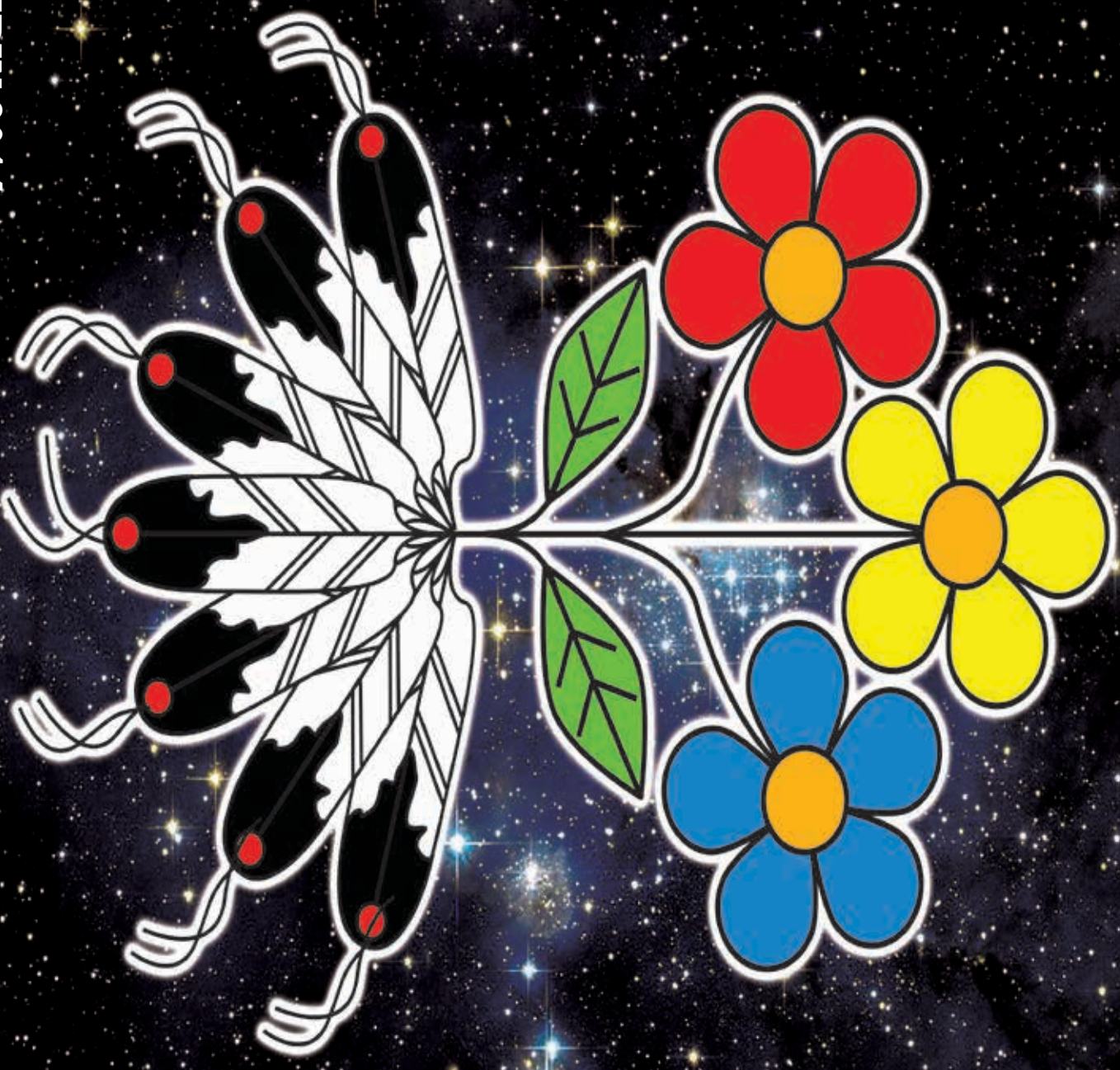
Although **MAZINA'IGAN** enjoys hearing from its readership, there is no "Letters to the Editor" section in the paper, and opinions to be published in the paper are not solicited. Queries as to potential articles relating to off-reservation treaty rights and/or resource management or Ojibwe cultural 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.

Ojibwe Ceded Territories and Member Tribes of GLIFWC



Mazina'igan
A Chronicle of the Lake Superior Ojibwe



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