Mazina'igan
A Chronicle of the Lake Superior Ojibwe
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Stars align in '09

Treaty fishermen set walleye harvest records

By Charlie Otto Rasmussen
Staff Writer

Odanah, Wis.—Robust walleye populations–check. Gradual ice melt–check. Mostly calm nights–check. Throw in a dash of jacked-up food prices and you've got the makings for something exceptional.

In spring 2009, Ojibwe inland fishermen turned a variety of ingredients into a record walleye harvest across the ceded territory. Modern day tribal harvests reached new highs in Minnesota and Wisconsin while the Lac Vieux Desert Band tallied its best season to date in Upper Michigan with nearly 5,000 walleye speared.

"Participation was high in most regions, and conditions were favorable for much of the time," said Joe Dan Rose, GLIFWC Inland Fisheries Section Leader. "It was just a really good season."

Spearers in Wisconsin landed 32,200 walleye over a three-week period from 180 ceded territory lakes. The previous high mark of 30,700 walleye occurred in 2007. Treaty spearers have breached the 30,000 walleye ceiling only four times in 25 seasons.

Bad River members kicked off the season April 10 at Lake Wissota, a Chippewa River impoundment straddling the southern edge of Wisconsin's 1837 territory. Over the following two weeks, lakes to the north and east successively opened to spearing.

In Minnesota where treaty fish harvests are measured in pounds, netters and spearers from eight tribes tallied 100,888 lbs. of walleye from Lake Mille Lacs, surging past 2008's record of 88,184. While treaty fishermen have access to dozens of additional walleye lakes in the 1837 Minnesota territory, Rose said tribal efforts are focused on Mille Lacs Lake where its large walleye population provides the best fishing opportunities.

"Most tribal members are fishing for large, extended families and incur significant travel and lodging expenses," Rose said. "From an efficiency perspective, choosing a single lake like Mille Lacs makes a lot of sense."

Limited fishing by Mille Lacs, Sokaogon and Red Cliff members in **(See Big numbers, page 12)**

First-year spearer Candice Chapman brings in her eleventh walleye of the season. The 29-year-old Lac du Flambeau member fished Oneida County's Dam Lake. (Photo by Charlie Otto Rasmussen.)

On the offensive: Garlic mustard under attack

GLIFWC participates in invasive weed eradication

By Sam Maday
For Mazina'igan

Mellen, Wis.—Target: Garlic mustard! In an effort to control garlic mustard, yet another invasive species, the Northwoods Cooperative Weed Management Area (NCWMA) organization gathered at Copper Falls State Park on Thursday May 21. The event named Garlic Mustard Control Day was one of many group projects.

The NCWMA coordinates various events throughout Wisconsin. Garlic Mustard Control Day was one of those events. Colleen Matula of the Wisconsin Department of Natural Resources (WDNR) in Mellen, Wisconsin hosted it.

"My primary goal is for us to pull mainly the second year plants. They will be about a foot tall and just beginning to flower," said Matula. "Only about 10% of the seedlings will survive, so we do not have to worry about those just yet."

Garlic mustard.

What is garlic mustard? It is an invasive species that is native to Europe. A biennial herb that likes cool weather, it is found mainly in forested areas.

It spreads rapidly by its seed, which is small and easily transportable. "It can easily be caught in the mud of someone's shoe," says Miles Falck, Great Lakes Indian Fish & Wildlife Commission (GLIFWC) wildlife biologist.

Falck has worked extensively with invasive species in the treaty ceded territories, mapping and compiling data on invasive species for nearly ten years. He has also developed a comprehensive invasive species site, a work in progress, available at GLIFWC's website, www.glifwc.org.

Garlic mustard is spreading throughout the state from southern and eastern Wisconsin. It is becoming a serious problem because it displaces native vegetation.

About fifteen staff from various groups helped at the pull. Upon arriving at the site, it was discovered that the garlic mustard, being true to its reputation, had spread throughout the site. The degree to which it had multiplied was greater than anyone expected. So the challenge was on!

Despite the early morning rain, the day turned out to be a cool breezy day for the pullers. Working hard for three hours, the volunteers cleared as much of the prolific weed as they could before stopping for lunch.

The NCWMA is actually a consortium—a group of many organizations and departments coming together in an effort to manage and coordinate projects to combat invasive species in northern Wisconsin.

The organizations involved included the National Park Service, U.S. Forest Service, WDNR, Bad River Natural Resources Department, and GLIFWC. This relationship was established because previous efforts to control invasive species were limited by the administrative boundaries of the differently owned lands in the area.

Workers would use herbicides or pull invasive species up to a state forest border, then stop. Other workers would see no point in clearing one area of the invasive species, because it was not their job to do anything about the species across administrative boundaries. Weeds do not respect or obey these boundaries. In order for any progress to be made, there had to be a way around these obstacles, Falck says.

All of the groups involved with NCWMA signed a memorandum of derstanding. Even though these separate **(See Garlic mustard, page 7)**

Minwaajimo Telling a Good Story: Preserving Ojibwe Treaty Rights

Celebrating GLIFWC s 25th Anniversary

Symposium Overview

The day and a half symposium, held on the grounds of the Bad River Lodge and Casino in Odanah, Wisconsin, will be structured with morning and afternoon presentations and shared breaks and meals. Come early to enjoy the opening ceremony July 28, 2009. And don't miss the opportunity to join in the informal conversation around the ceremonial fire opening day and each evening. The symposium will be structured around four focus areas:

Legal Issues/History

This section will tell the story of the various court cases in recent times that helped reaffirm treaty rights in Wisconsin, Michigan, and Minnesota. Highlighted will be how key cases were crafted and brought through the court system, why self regulation was designed the way it was, and how the Great Lakes Indian Fish & Wildlife Commission (GLIFWC) emerged as a result.

Socio-Economic Issues

This section will tell the story of how implementation of treaty rights took place over the last 25 years in the face of the myths and misconceptions that fueled the anti-treaty movement and stirred unfounded controversy. The claim that treaty rights harmed tourism will be examined within the context of the changes occurring in the sport hunting and fishing industry nationally.

Biological/Natural Resource Management Impacts

This section will tell the story of the facts and data behind the biological impacts of treaty rights implementation and the overall implications for natural resource management in the ceded territories. Discussed will be GLIFWC's contributions to co-management, stressing key natural resource environmental programs, key players, and their lasting importance.

TribalCom munities

This section will tell the story of the importance of modern-day treaty rights affirmation and implementation to tribal communities. Highlighted will be the importance of treaty rights, their vital role in the tribal communities, the inter-generational transfer of knowledge, and the establishment of tribal court systems through the reaffirmation of tribal sovereignty.

Continuinge ducation creditsa vailable

For more information

Conference information: GLIFWC's Website at *www.glifwc.org*, click on Minwaajimo Treaty Symposium (or Big Top Chautauqua). Call GLIFWC at 715-682-6619 or e-mail *pio@glifwc.org.*

Hotel reservations: AmericInn (715) 682-9950; Hotel Chequamegon (715) 682-9095; Super 8 (715) 682-9377 or Best Western (715) 682-5235.

Save the Date ~ July 2, 2009

Comec elebrateG LIFWC s
25thAn niversarya tt he
BigT opCh autauqua(near Bayfield, Wis.)
OpenHou sea t4:30p.m .
Drum&P ipeCe remony
Slideshow/ P resentations
Socializewit hG LIFWCs taff and guests
Communityfis hboildin nera t5:00p.m .
BillMille rwit ht heBlu eCa nvas Orchestra at7:30p.m .
Freec ommunity event!!
Comec elebratewit hu s!!

Minwaajimo

Telling a Good Story: Preserving Ojibwe Treaty Rights

July28-30,2009

OpeningCe remony1:00p.m . July 28th

Presentationss tarting 9:00 a.m. July 29th

BadR iverCa sino & Convention Center, Odanah, WI

Registration form (please print). Pre-register by July 13, 2009 for a chance to win a Pendleton Blanket!

Name:_____

Phone/Address_____

Affiliation/School:_____

Email address:_____

Number of Attendees:_____ T-shirt Size(s):_____

Clip and mail to:
Great Lakes Indian Fish & Wildlife Commission
PO Box 9 • Odanah WI, 54861
Register On-line at: *www.glifwc.org*
Register by Phone: (715) 682-6619

Tentative Symposium Agenda

July 28, 2009

7:00 a.m. — Sunrise Ceremony
1:00 p.m. — Symposium Opening Feast, Pipe Ceremony, Drums
6:00 p.m. — Informal Gathering at the Fire

July 29, 2009

7:00 a.m. — Sunrise Ceremony
9:00 a.m. — Legal Issues Panel
10:30 a.m. — Break
10:45 a.m. — Biological/Natural Resource Management Impacts Panel
12:15 p.m. — Lunch
1:00 p.m. — Biological/Natural Resource Management Impacts Panel continued
2:30 p.m. — Break
2:45 p.m. — Socio-Economic Issues Panel
6:00 p.m. — Feast
7:30 p.m. — Informal Gathering at the Fire

July 30, 2009

7:00 a.m. — Sunrise Ceremony
9:00 a.m. — Socio-Economic Issues Panel, continued
10:30 a.m. — Break
10:45 a.m. — Tribal Communities Panel
1:00 p.m. — Symposium Closing Feast, Pipe Ceremony, Drums

July 31, 2009

7:00 a.m. — Sunrise Ceremony
8:00 a.m. — Extinguish Ceremonial Fire

On the cover

Leander Cloud, GLIFWC computer network administrator, was one of several GLIFWC staff participating in an effort to rid areas of Copper Falls State Park of the spreading invasive plant, garlic mustard. Cooperating with adjacent private landowners, the Northwoods Cooperative Weed Management Area organization planned and coordinated the event. (Photos by Sam Maday.)

GLIFWC, fisheries comanagers share “Partners in Conservation Award”

By Charlie Otto Rasmussen, Staff Writer

Washington, DC—Members of the Joint Assessment Steering Committee (JASC) accepted a prominent accolade from U.S. Secretary of the Interior Ken Salazar May 7. For their successful work in protecting fishery resources and reducing user conflicts in Wisconsin, the JASC received the “Partners in Conservation Award” at a ceremony at Interior headquarters in Washington, D.C. It was one of 26 national awards to honor individuals and organizations that achieve natural resource goals in collaboration and partnership with others.

“The Partners in Conservation Awards demonstrate that our greatest conservation legacies often emerge when stakeholders, agencies, and citizens from a wide range of backgrounds come together to address shared challenges,” Salazar said. “The participants in the Casting Light upon the Waters—Joint Assessment Steering Committee have moved Wisconsin’s walleye fishery from the focus of violence and conflict to one of national renown as one of the country’s best managed fishery resources.”

Members of the Joint Assessment Steering Committee met with federal resource officials to accept the Partners in Conservation Award May 7 in Washington, DC. The Steering Committee created Casting Light Upon the Waters, an interagency effort to assess northern Wisconsin walleye populations and provide public outreach. From left: Mike Smith, Deputy Director, BIA; George Skibine, Assistant Secretary for Indian Affairs; Robert Jackson, BIA Regional Biologist; Tom Maulson, Voigt Intertribal Task Force (VITF) Representative; Secretary of the Interior Ken Salazar; Mic Isham, VITF Chairman; Curt Kalk, GLIFWC Board of Commissioners Chairman; Charles Wooley, US Fish & Wildlife Service, and James Zorn, GLIFWC Executive Administrator. (Photo submitted.)

GLIFWC and its Wisconsin member tribes pooled their fisheries expertise with the Bureau of Indian Affairs, US Fish & Wildlife Service and Wisconsin Department of Natural Resources (WDNR) in 1990 to address public concerns that walleye populations were being changed by treaty spearfishing. One year later the interagency group known as JASC published their findings: ceded territory walleye numbers were healthy and unharmed by Ojibwe spearing .

Recognizing the multiple other impacts that influence fishery health like angling pressure, habitat degradation and shoreline development, the committee has continued coordinated fisheries surveys in the Wisconsin ceded territory as a safeguard. Since its inception, the JASC has published six reports that detail walleye exploitation rates and fishery survey data along with basic Ojibwe treaty rights information.

“It’s always wise to spend our money and resources on things we share in common,” said Mic Isham, Voigt Intertribal Task Force Chairman. “This award further recognizes GLIFWC and tribes as true partners in managing natural resources. We’ve come a long ways.” Prior to the Casting Light Upon the Waters effort, GLIFWC and WDNR had an oftentimes rocky relationship as tribal harvest seasons were being implemented.

The 26 Partners in Conservation Awards recognize conservation achievements resulting from the cooperation and participation of a total of 600 individuals and organizations including landowners; citizens’ groups; private sector and nongovernmental organizations; and federal, state, local, and/or tribal governments.

“These awards recognize the dedicated efforts of thousands of people from all walks of life, from across our nation—and from across our borders with Canada and Mexico,” Salazar noted. “They celebrate partnerships that conserve and restore our nation’s treasured landscapes and watersheds, partnerships that engage Native American communities, and partnerships that engage youth.”

The ÒPartners in Conservation AwardÓ is shared by:

- Administration for Native Americans
- Bureau of Indian Affairs
- Robert Jackson
- Mark Kuester
- Discover Wisconsin
- Great Lakes Indian Fish & Wildlife Commission
- Great Lakes Regional Collaboration
- U.S. Fish and Wildlife Service
- Tom Busiahn
- Francis Stone
- Voigt Intertribal Task Force
- Wisconsin Counties Association
- Wisconsin Department of Natural Resources

Tribal hatcheries release over 47 million fish

Tribe Hatchery/Rearing Component	Walleye Fry	Walleye Fgl.	Muskellunge Fry	Muskellunge Fgl.	Yellow Perch	Lake Sturgeon	Whitefish	Brook/Brown Rainbow Trout*	Lake Trout	White Sucker	Lake Herring	Total
Bad River	13,430,000	429,592			99,324							13,958,916
Grand Portage	140,000							201,000				341,000
Keweenaw Bay								42,284	28,442			70,726
Lac Courte Oreilles	420,000	67,937										487,939
Lac du Flambeau	13,700,000	173,471	89,035			1,500		72,864		4,000,000		18,036,870
Lac Vieux Desert	800,000											800,000
Leech Lake	10,064,250	247,242					224,425					10,535,917
Menominee		4,416										4,416
Red Cliff								37,500			361,760	399,260
Red Lake		10,600				12,000		20,000				42,600
Sault Ste. Marie	1,950,000	1,037,375										2,987,375
St. Croix		93,158										93,158
White Earth		115,880		565		13,000						129,445
TOTALS	**40,504,250**	**2,179,673**	**89,035**	**565**	**99324**	**26,500**	**224,425**	**373,648**	**28,442**	**4,000,000**	**361,760**	**47,887,622**

**Total number of one or combination of trout species*

GLIFWC s Mercury Maps

The evolution of an important tool to protect Anishinaabe from mercury and encourage harvest and consumption of ogaa (walleye)

By Matt Hudson, GLIFWC Environmental Biologist

Odanah, Wis.—One of GLIFWC's more recognizable publications over the past decade have been its mercury maps. Since 1996, these eye-catching, color-speckled maps have been an important tool for tribal members to make informed choices about where to harvest ogaa (walleye) and reduce their exposure to mercury.

The program is unique in many ways. For one it involves tribal members in collection of ogaa that get tested for mercury. They also provide key suggestions as part of GLIFWC's ongoing process of making the maps better and more useful to tribal members. The goal of the mercury maps has always been centered on providing a culturally sensitive tool for tribal members to continue to harvest and eat ogaa while protecting their health from potential effects of mercury. The maps focus on ogaa because they are the most commonly harvested fish by GLIFWC-member tribes from inland, ceded territory waters.

The maps recognize that harvesting and consuming fish are cultural lifeways and a form of subsistence for tribal members. They tend to consume more fish than other segments of the population and therefore are potentially at greater risk from health effects that may be caused by mercury in fish. That's why it's important that GLIFWC collect data on mercury in ogaa and other fish and provide information that meets the unique needs of its member tribes.

Having this information available can be likened to reading *Consumer Reports* about the safety and reliability of different cars or other products. The information allows you to get the facts before making choices about what you want to buy, or, in the case of the mercury maps, deciding where and what sizes of ogaa are most healthy to feed yourself and your family.

Since the mercury map program began in 1996, GLIFWC has worked to improve the maps and make them more useful to our target audience. We recently completed the finishing touches on a project funded by the United States Environmental Protection Agency (EPA) to improve and expand the maps and embark on an effort to inform and educate tribal members about the health risks of mercury and how to use the maps to avoid those risks.

Completing these efforts is an important step in the evolution of GLIFWC's mercury program and it provides an opportunity to look back at what we've learned over time.

KeyF indingsfr omG LIFWC sMe rcury Map Program

1. Tribal members consume more fish in conjunction with the spring harvest season than during other parts of the year.
2. Tribal ogaa harvest has not been negatively affected by the mercury maps.
3. There is evidence of increased awareness and some behavioral changes due to GLIFWC's work to inform tribal members about mercury in ogaa through its maps.
4. Our work indicates that young children (particularly those under age 5) are at greatest risk from mercury in harvested ogaa and that GLIFWC's mercury maps provide appropriate advice to reduce this exposure.

Paying off the warden? Actually, it's the other way around. Lac Courte Oreilles' Mic Isham accepts $10 in exchange for an in-the-round walleye. GLIFWC Warden Mike Popovich (left) and other officers purchased freshly speared walleye from select lakes as part of the annual mercury testing program. (Photo submitted.)

How it began

Tribal leaders expressed concern to GLIFWC about mercury in fish and its potential health effects to tribal members as spear harvesting began to pick up in the late 1980s. Other available advice on mercury in fish from states and the federal government did not consider the importance of fish to the culture and lifeways of tribal people.

In 1989, GLIFWC began collecting ogaa and testing them for mercury. In 1996, GLIFWC produced its first version of the mercury maps, which were published for each of the six GLIFWC-member tribes in Wisconsin. GLIFWC also entered into a memorandum of understanding (MOU) with Wisconsin Department of Natural Resources where both agencies agreed to share fish contaminant data.

The data sharing continues today and has expanded to Minnesota and Michigan. It allows GLIFWC and these other agencies to combine resources and provide more detailed information than would be available individually.

Fish consumption study

GLIFWC conducted a five-year study (1997 to 2002) of individuals from member tribes to develop estimates of fish consumption rates and patterns. Families that consumed fish were selected for the study. A total of 51 families from 10 member tribes (between nine and twelve families participated each year) recorded their consumption of fish harvested from water bodies in the ceded territory.

The weight of harvested fish consumed at each meal was recorded for each family member. The data clearly showed that tribal members eat more fish during and after annual spring harvest in April and May and less during the rest of the year (Figure 1). These were important data to collect because it showed us not only when tribal members are eating the most fish, but also how much they are eating. It allowed us to take a closer look at how to tailor our advice in the mercury maps more specifically to the needs of our member tribes, which was the focus of the next evolution in our program.

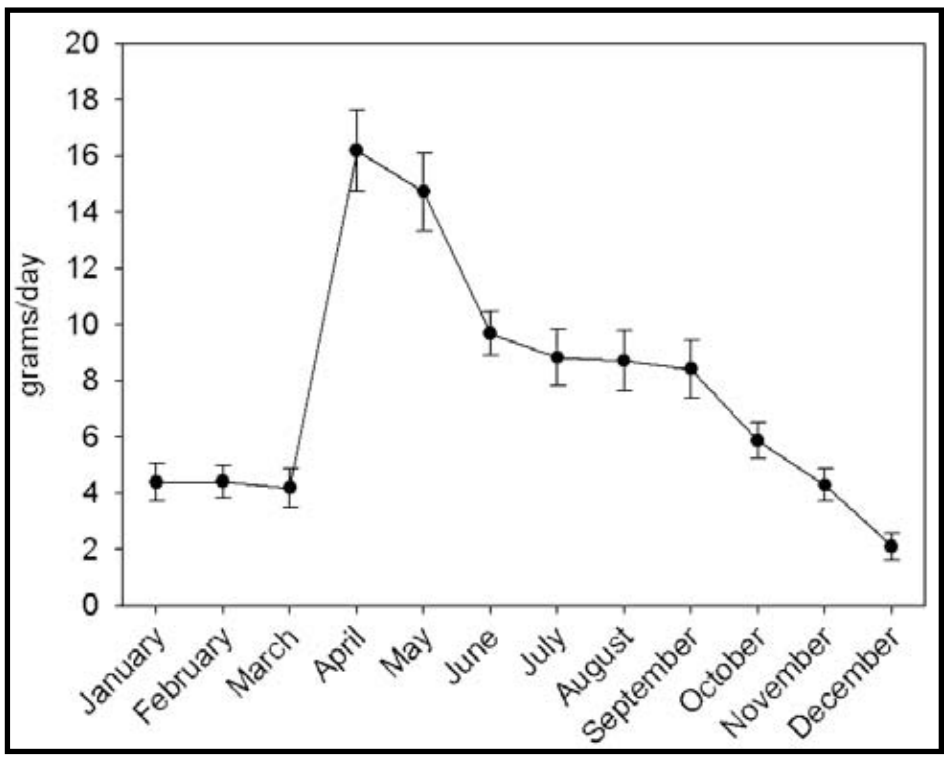


Figure 1. Mean monthly consumption rates (grams per day) of tribally harvested fish by 193 participants in the GLIFWC fish consumption study (N = 193). Circles represent the mean daily consumption rate during each month for all participants in study years 2-5. Error bars represent the standard error (DeWeese et al. 2009).

The STAR grant: Refining and evaluating the maps

Early versions of the mercury maps used a technique for establishing the color codes that was based on the understanding of mercury and how it affects human health at the time. In 2000, the National Research Council (NRC), part of the U.S. National Academy of Sciences, came out with a report backing what the EPA considered a safe level of mercury intake in the body, called a "reference dose" or RfD.

In order to bring its mercury maps in line with EPA's RfD and provide the most scientifically and culturally sound basis for providing fish consumption advice to tribal members, GLIFWC obtained funding from EPA through its Science to Achieve Results, or STAR, grant program. The "STAR" grant, as it became known among those familiar with the project, had a goal of "developing, implementing, evaluating, and documenting a comprehensive and culturally sensitive intervention program to reduce risks associated with subsistence-based consumption of **(See Protecting Anishinaabe from mercury contamination, page 20)**

GLIFWC and partners complete 18 adult walleye population estimates

By Mark Luehring, GLIFWC Inland Fisheries Biologist

Odanah, Wis.—Despite battling a variety of adverse weather conditions, snow being among them (see photo), Great Lakes Indian Fish & Wildlife Commision (GLIFWC) survey crews and partners from St. Croix, Mole Lake, and the U.S. Fish and Wildlife Service completed mark-recapture walleye population estimates on 18 lakes covering 18,350 acres in Wisconsin and Michigan in April.

The surveys included GLIFWC long-term study lakes: Siskiwit Lake (Bayfield Co.), Butternut Lake (Forest Co.), Squirrel Lake (Oneida Co.), Annabelle Lake (Vilas Co.), Kentuck Lake (Vilas Co.), Sherman Lake (Vilas Co.), Squaw Lake (Vilas Co.), and Bass-Patterson Lake (Washburn Co.).

Nine other lakes in Wisconsin were also surveyed including: Franklin Lake (Forest Co.), Lake Metonga (Forest Co.), Lily Lake (Forest Co.), Otter Lake (Langlade Co.), Muskellunge Lake (Oneida Co.), Butternut Lake (Price Co.), Big St. Germain Lake (Vilas Co.), Lac Vieux Desert (Vilas Co.), and Shell Lake (Washburn Co.). Finally, one lake in Michigan, Parent Lake (Baraga Co.), was surveyed.

Additionally, GLIFWC crews assisted the Wisconsin Department of Natural Resources in completing an adult walleye population estimate on the top spearing harvest lake in the ceded territory: 13,545 acre Turtle-Flambeau Flowage.

These population estimates help GLIFWC biologists monitor the health of walleye populations and will be used to set safe walleye harvest levels to ensure that walleyes will continue to thrive in the ceded territory.

Acknowledging the spirits of the water

By Sue Erickson, Staff Writer

Odanah, Wis.—When the water in the Bad and Kakagon Rivers finally flowed free of ice this spring, a small group of people gathered at the shore of the Kakagon to honor the spirits of the water, recognizing nibi (water) as both a life-giver and a potential life-taker.

It was a time to acknowledge and give thanksgiving for the gift of clean, pure water and the safety for all who work on or near the water.

Among those gathered were Bad River Hatchery crew members and some of GLIFWC's inland fisheries assessment crews—all anticipating the coming spring season with many working hours on northern lakes, rivers and the immense Gichigami.

Led by three local Midé women, Edith Leoso, Robin Powless and Sue Nichols, the ceremony began with a welcoming introduction and a burning smudge of sage. All participants were carefully smudged, as the air filled with the soft scent of the medicine. The women explained that this was a traditional, Ojibwe ceremony, which had for some time been ignored, but which they have sought to renew in recent years. They shared the teaching as they have done in the past, reciting their hopes that the stories, teachings will flow into the future—that what they heard might have an effect on individuals to become more conscious of all life, their relationship with the universe and to encourage individuals to walk in a respectful manner.

Tobacco ties, small bundles of colored cloth containing a pinch of asemaa (tobacco), were tied in streamers and attached to floating sticks to be offered into the water.

A "spirit dish," with tiny samplings of the food spread out for a feast following the ceremony, was offered to the water. Finally, four representatives were selected to release the completed prayer sticks into the water following a traditional song to the water spirits.

The river's strong current caught each of the prayer sticks, carrying them upstream—the brightly colored ties trailing as the prayers of the people entered the water.

Recognizing the spirits of the water and seeking a safe season, Edith Leoso, Bad River tribal member and Three Fires Midé Kwe, led the 2009 spring Water Ceremony at the Bad River Hatchery landing on the Kakagon River. Following the preparation of prayer sticks in the hatchery building, participants went to the water for the actual ceremony.

Above to the left: ***From a boat on the river four men representing the children and the community released the floating sticks with their tobacco ties into the water following ceremonial songs and a prayer. Participating are: Shawn Miller and infant, Henry (Butch) Mielozyk, Hilary Butler and Bob Powless Sr., all Bad River tribal members. (Photos by Sue Erickson.)***

Where, oh where, have all the smelt gone? Where, oh where, can they be?

By Bill Mattes, GLIFWC Great Lakes Biologist

Chequamegon Bay, Wis.—What happened to all the smelt? This is a question I often hear in the spring of the year. My answer is always the same—they were eaten! They be in the bellies of predator fish, that is where they be!

Smelt are not native to the Great Lakes. Smelt came to Gichigami (Lake Superior) in the 1930's after being stocked into an inland lake connected to Lake Michigan. They invaded around the same time as sea lampreys (see graph).

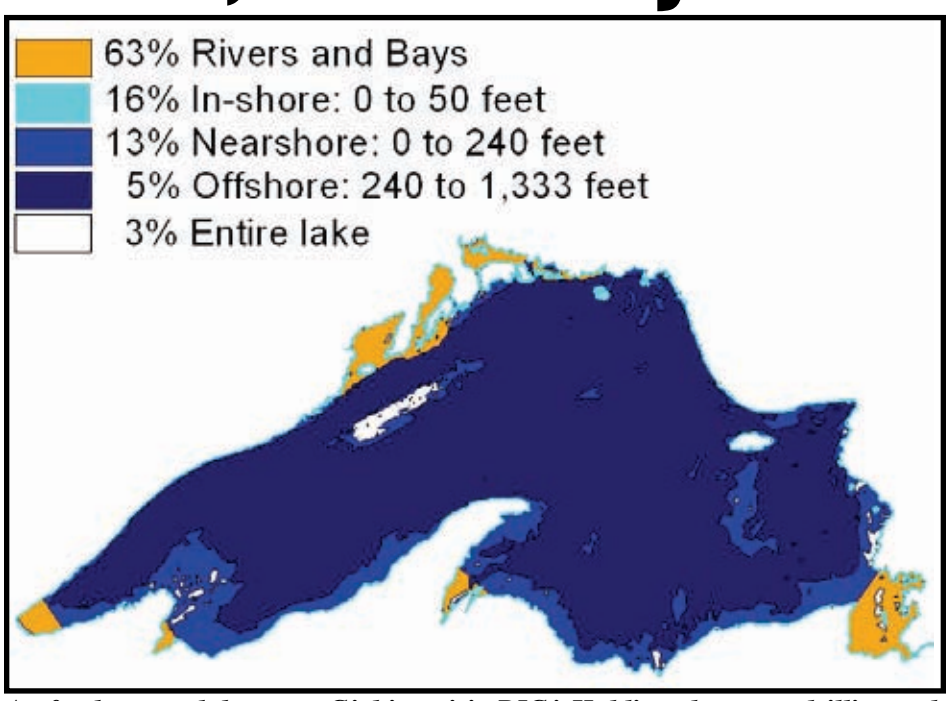
At first there were small numbers of smelt, but then the lake changed. Sea lampreys usurped lake trout as the top predator. Meanwhile, other in-shore predators, like brook trout, were gone either due to sea lamprey or habitat destruction, and yet other in-shore predators, like chinook salmon, were not yet introduced. With predator numbers declining, the smelt had a pretty easy life for a while.

Smelt numbers soared, as can be seen by the catch in commercial fishing which targeted smelt as more popular fish disappeared, such as walleye in Canada and cisco (a.k.a. lake herring) in the U.S. However, life for the smelt was about to change.

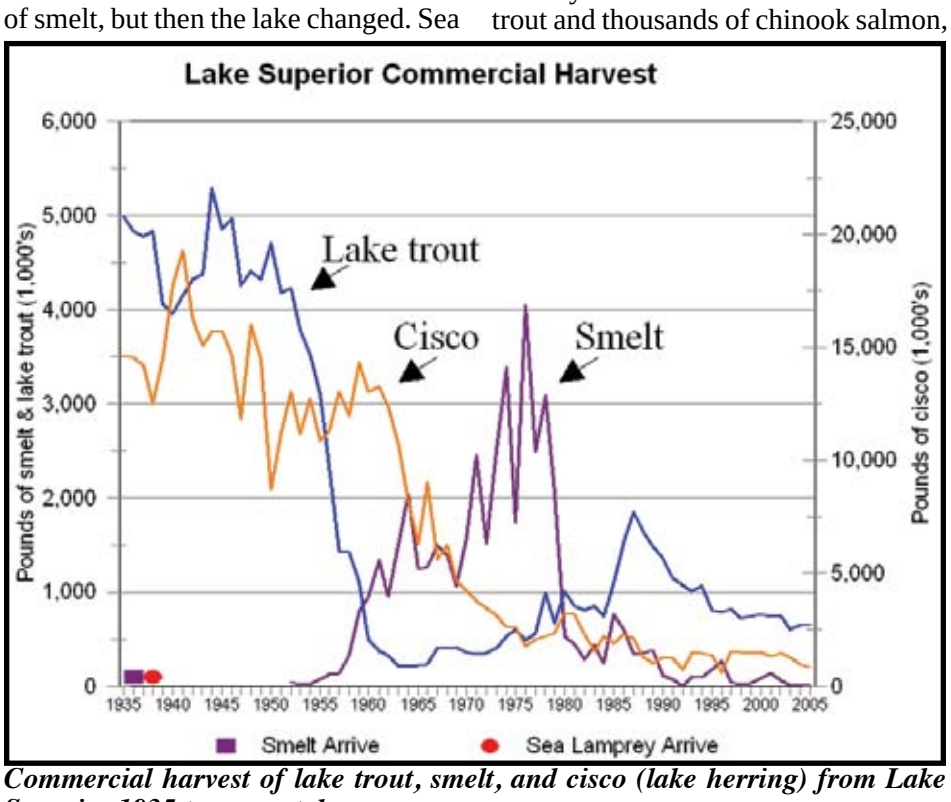
By the late 1970's millions of lake trout and thousands of chinook salmon, splake, walleye, and brown trout were being stocked into Lake Superior—and they were hungry! Smelt were the food of choice (and convenience) for these predators. Smelt were abundant in the near-shore waters where the predators were being stocked. Whereas the population of cisco, lake trouts' native food, was down due to fishing and lampreys (lampreys feed first upon smaller fish such as cisco before moving on to larger prey such as lake trout) and because the smelt numbers were high (smelt are known to prey upon young cisco), the smelt were the obvious mealtime target for the newly stocked fish.

During the 1990's, predatory fish in Lake Superior's near-shore waters, rivers, and bays grew to their highest levels since the sea lamprey invasion. It is the feasting of these predatory fish that has driven smelt numbers to their recent lows and most likely will keep them there.

The downside of this phenomenon is not having plenty of smelt for those spring smelt fries and little reason to participate in smelt fishing as a rite of spring. However, the upside of this is that smelt, an invasive species, are apparently being controlled and that is probably a good thing.



As fresh water lakes go—Gichigami is BIG! Holding three quadrillion gallons of water! But, as fresh water lakes go, the fish community is small. Of the ninety-nine species of fish found in Lake Superior over sixty-percent are found in rivers and bays; whereas only eight species are found in the majority of the lake—those waters greater than 240 feet deep. There are 157 different fish species found in Wisconsin.



Commercial harvest of lake trout, smelt, and cisco (lake herring) from Lake Superior 1935 to present day.

Matt Hudson, GLIFWC environmental biologist, extracts organ samples from walleyes harvested in the ceded territory this past spring. Laboratory testing of walleye organ tissue is part of an ongoing GLIFWC monitoring program to detect the fish disease viral hemorrhagic septicemia on inland waters. Fillets from the sampled walleyes were passed onto the Bad River Elder Center and served to senior tribal members. GLIFWC resource specialists strongly encourage tribal members to make sure their boatsÑ nside and outsÑ e free of excess water, plants and mud that may harbor VHS as well as harmful exotic invasive species. (Photo by Charlie Otto Rasmussen.)

A brook trout is a brook trout

USFWS denies ESA status to coaster brook trout

By Sue Erickson, Staff Writer

Washington, D.C.—Following a twelve-month review, the U.S. Fish and Wildlife Service (USFWS) announced that the coaster brook trout has been denied an endangered species status. The announcement on May 19 was in answer to a petition filed by the Sierra Club Mackinac Chapter, Huron Mountain Club and Marvin J. Roberson in 2006.

The "coaster" was denied endangered species status on the basis of criteria in the 1973 Endangered Species Act that relate to genetics and range.

According to Bill Mattes, GLIFWC Great Lakes section leader and fisheries biologist, the USFWS found that the coaster brook trout were not genetically distinct from other brook trout; therefore, the species as a whole is not endangered.

"The coaster brook trout is what's called a life history variant of the brook trout, varying in size, appearance, and particularly living habits Coasters can grow to over 20 inches in length, are often more silver in color, and spend most (if not all) of their life in the lake—unlike brook trout which spend all of their lives in streams. The genetic make-up of both lake dwelling and stream dwelling brook trout are the same. It's the environment in which they live that determines whether they show coaster characteristics or stream resident characteristics," Mattes says.

As far as range, the research found that brook trout, that occur as far east as the Appalachian Mountains and throughout the north and northwest, are still present in those areas, so their overall range has not diminished.

"The numbers of brook trout throughout their range seems to be diminishing due to several factors, such as the presence of competitive invasive species and warmer waters, either due to climate change or land use practices," Mattes says. However, brook trout are still present, and the numbers have not decreased to alarming levels in their historic range.

Unlike brook trout who never leave the streams throughout their lives, coasters live at least some of their life in the Great Lakes or in the ocean along the Atlantic coast of North America. In the Great Lakes, they usually spawn in the fall, swimming up tributaries to lay their eggs or sometimes using the shoreline. or possibly upwellings of spring water in the lake.

The Red Cliff and Keweenaw Bay Tribal Hatcheries have been working to re-establish coaster brook trout populations in Lake Superior.

Quaggam ussel invasion disrupts LakeMic higan food web

Willthe pa ttern repeat in Lake Superior?

By Bill Mattes, GLIFWC Great Lakes Biologist

Ann Arbor, Mich.—A dismal picture for the future of diporeia, a tiny shrimp-like organism which is forage for several valued Great Lakes fish species, was painted during presentations on the food web of Lake Michigan. The decline in the native shrimp followed the zebra mussel invasion, now both species are in decline due to the invasion of quagga mussels.

This was the conclusion of a presentation given to fishery managers assembled at the annual Great Lakes Fishery Commission sponsored lake committee meetings in Ann Arbor, Michigan last March.

Research indicates that quagga mussels reign supreme as the largest force in the food web of Lake Michigan, expanding from a population of zero only 20 years ago to more than 95% of the total density of animals found on the entire lake bottom—from the near shore waters to the very deepest areas of the lake (see photo).

In turn, diporeia numbers (see photo) are very low, and zebra mussel numbers are falling. Diporeia numbers dropped to near zero in much of Lake Michigan between the late 1990's and 2005 due to the invasion and expansion of zebra mussels. Now zebra mussel numbers are dropping throughout the lake due to the expansion of quagga mussels.

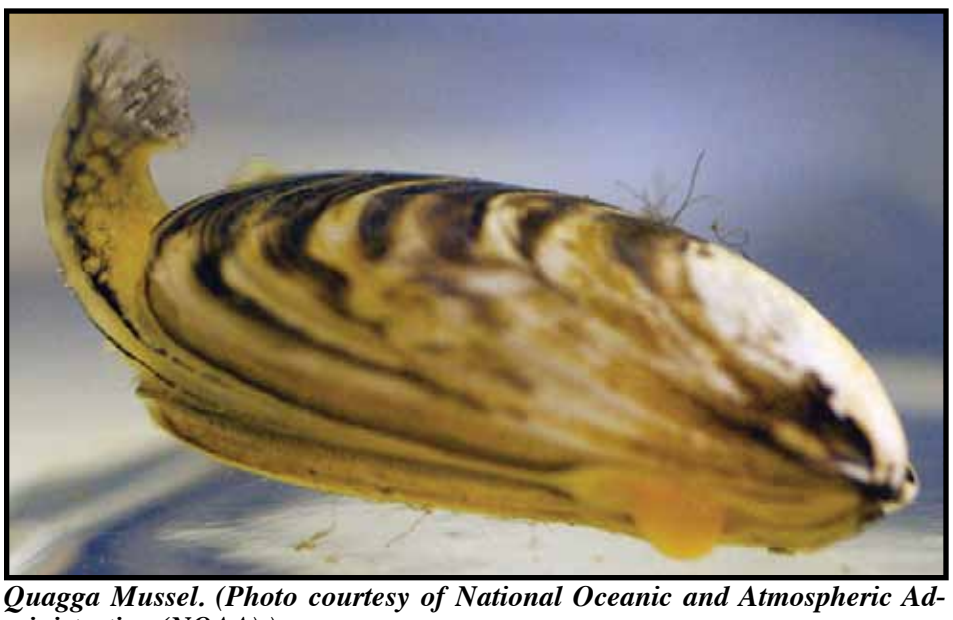
Quagga mussels are native to the Dneiper River drainage of Ukraine and arrived in the Great Lakes in the late 1980's via ship ballast water. A ballast tank sits within a ship and holds water to add stability to large ships when they're traveling with light loads. When ballast is emptied in the Great Lakes as ships take on cargo, exotic species like the quagga mussel are sometimes released along with the water.

Most likely the release was a mussel in its larval stage, or a veliger. Veligers drift with water currents for several weeks before settling to the bottom where they attach and grow into mature mussels. In areas such as the Dneiper River where quagga mussels live, veligers would be present and drifting in water that is sucked into a ship's ballast tanks.

All three—diporeia, zebra mussels, and quagga mussels—are found in Lake Superior. So far, zebra mussels have remained in low abundance throughout the lake and been confined to bays and the Keweenaw waterway.

Quagga mussels have only been reported from the Duluth-Superior harbor. Diporeia abundance in Lake Superior has always been fairly low as compared to the lower lakes (i.e. Lake Michigan). However, they are a food source for whitefish, herring, and young lake trout. This makes them an important component of Lake Superior's food web.

Only time will tell what role quagga mussels will play in Lake Superior.



Quagga Mussel. (Photo courtesy of National Oceanic and Atmospheric Administration (NOAA).)

Dioporeia. (Photo courtesy of NOAA.)

Mike Plucinski, Great Lakes technician, shows Northland College interns Brian Finch and Scott Braden the way along the edge of the Bad River Falls. The sea lamprey trap will be placed along the edge of the falls where it will fish for the next two months. The crew will check and empty the three traps daily. Twenty percent of the daily catch or up to fifty individual lamprey will be marked and released as part of a mark-recapture population estimate. The remaining male lamprey will be trasported to a sterilization facility and then released in the St. Mary's River. Female lamprey and recaptured lamprey are disposed of in a landfill. (Photo by Bill Mattes.)

Garlic mustard under attack

(Continued from page 1)

derstanding. Even though these separate organizations still needed each other's permission, this agreement gave the groups incentive to allow their staff to work on controlling invasive species across the administrative boundaries. The incentive was that putting the time and effort into controlling the invasive species on land across the administrative borders would save both time and money by preventing the invasive species spread onto other lands.

If the private landowners want to eliminate invasive species on their land, this group has the resources and information they need to help them. Landowner Roger Jaeger took advantage of the opportunity and gave NCWMA permission to pull garlic mustard on his land. In fact, most of the pull was done on his privately owned land, which is located in the Bad River watershed basin.

If nothing were done, garlic mustard would spread along Bad River down into Copper Falls State Park and even further onto the Bad River Indian Reservation.

Jaeger has lived in this area most of his life, growing up on this land. After moving away for a while, he moved back in 1996. "I walk around and am always looking at the plants and trees on my land," said Jaeger. However, he was not aware of what garlic mustard was or that it was invasive.

This was Jaeger's second year helping the NCWMA by allowing them on his land and helping with the pull. Jaeger says he wants this pull to become an annual event on his property because he wants to control the spread.

"The plant can completely take over," he says. "We are always looking for more volunteers. If we stay on the weed hard every year maybe we can actually get rid of it."

Falck considers the Garlic Mustard Control Day successful. "I'd say anytime you get a number of people to go pull weeds, it's a successful day!" Piles of garbage bags packed with pulled garlic mustard plants testified to the day's work. However, as the pull concluded, large patches of the tenacious garlic mustard remained unmolested. Hopefully, it will be removed by another spirited group of volunteers in the near future.

For more information on garlic mustard and other exotic plants visit GLIFWC's Exotic Plant Information Center at *www.glifwc.org/invasives*.

Ma'iingan off the Endangered Species List — *Again*

By Peter David
GLIFWC Wildlife Biologist

Odanah, Wis.— Yogi Berra could have been talking about wolves. "It's like deja-vu, all over again." As of May 4, 2009, the ma'iinganag roaming the ceded territory are once again off the federal list of threatened and endangered species. If this sounds vaguely familiar, it may be because you heard the same thing back in March of 2007.

Wolves spent a year and a half off the list, until a lawsuit by the Humane Society and other groups resulted in their relisting, on a ruling that focused not on ma'iingan's population status, but on the process the US Fish and Wildlife Service (USFWS) followed in delisting wolves.

The USFWS has now addressed that process issue—to its satisfaction at least—and proceeded with delisting once again, now under the new Administration. This action has some folks pleased: "It shows the Endangered Species Act is working, and will allow limited resources be focused on species that are really threatened;" "It will allow lethal control of that wolf that's been lethal to my calves." It has others convinced that the future for wolves is suddenly far more tenuous than it was under federal protection.

But another famous "Yogi-ism" is "It ain't over till it's over," and everyone working in wolf circles knows the issue of delisting is not over. Already, several parties have filed "intent to sue" papers, and the matter is certain to head to the federal courts again.

Personally, I am not a big fan of management by litigation. That is not to say it doesn't have it's place. I was pleased that the USFWS was sued—and lost—when their first effort to define and delist our local population of wolves (limited to Minnesota, Wisconsin and Michigan) included a geographic range that extended all the way to Maine. It was bad science, and appropriately challenged. But management by litigation is extremely inefficient, and our environment simply needs too much attention right now for us to be causal about how our limited resources to help it are directed. The courts ought to be the last resort.

GLIFWC's Voigt Task Force has not supported delisting ma'iinganag. However, I think that position is based less on a belief that the ceded territory ma'iingan population is still likely to face extinction, than on a strong conviction that wolves are so culturally significant that they deserve the protections that the Endangered Species Act provides even when they have technically "recovered" as defined by the Act.

So will the deadlock of litigation over ma'iingan management ever be broken? Well, maybe migizi can show us a way to move forward.

Ma'iingan.

In the United States, bald and golden eagles have received special protection for nearly 70 years under the Bald and Golden Eagle Protection Act.

This act exists not because the biology of these two species is so unique that it requires special laws to protect them, but because their cultural significance to the nation is so great. Maybe its time for a Ma'iingan Protection Act.

To some, this may sound like nonsense. And to a politician, it may seem unwise to show too much support for a species that has been vilified by some segments of the public for generations.

Yet there is a growing base of people that recognize that wolves have a legitimate ecological role on our physical landscape, and for some—a legitimate role in our cultural landscape as well.

It may be possible to find a new and unique status for wolves that falls somewhere between the Endangered Species Act on one end, and strictly state and tribal management on the other; a niche that those who love wolves, and those who contend with the hardship they sometimes bring, can agree upon.

Then, just maybe, it will be over.

Bald eagle remains

Migizi carcass stays in native hands via tribal laws, rights

By Charlie Otto Rasmussen,
Staff Writer

Odanah, Wis.—A bald eagle carcass discovered along northern Wisconsin's Potato River has been reunited with Keweenaw Bay member Jim St. Arnold following approval from tribal officials and formal notification to US Fish & Wildlife Service (USFWS) authorities.

With access to both bald and golden eagle remains highly restricted by federal laws, the case is unique and an affirmation of tribal sovereignty, notably on off-reservation public lands.

"A combination of treaty provisions, past court rulings and tribal laws clearly provide for tribal custody of a sacred resource like this eagle," said Kekek Stark, Great Lakes Indian Fish & Wildlife Commission (GLIFWC) Policy Analyst.

After a GLIFWC investigation and consultation with the USFWS, Keweenaw Bay member Jim St. Arnold retook possession of a bald eagle found dead along the Potato River. (Photo by Charlie Otto Rasmussen.)

The eagle had been in a GLIFWC evidence freezer for the better part of eleven weeks after St. Arnold reported the find and turned it over to Officer Vern Stone. Stone conducted a full investigation that included x-ray imagery to confirm the raptor had not suffered a gunshot.

In discussions with the USFWS—which manages eagle remains for use by American Indians—Stark spelled out the legal grounds for Keweenaw Bay officials to retain the eagle carcass for St. Arnold rather than sending it to the National Eagle Repository in Denver.

At the federal level, courts have affirmed that reserved treaty rights include the ability to gather virtually any animal species for cultural and religious purposes. The eagle was discovered on public land in the 1842 ceded territory. Tribal laws, furthermore, include similar provisions for possessing animals or animal parts.

Because threatened species like eagles are listed as tribally protected, members must have a permit from tribal authorities, Stark said.

"There was no evidence of foul play leading to the eagle's death and all the laws and codes are in place at the tribal level," Stark said. "Legal possession was streamlined in this case by working cooperatively with all the authorities involved."

Since the 1970s members of federally recognized tribes have acquired feathers, wings and entire eagles from the National Eagle Repository through an application process.

From historic times to the present—eagle feathers are used in native honoring, healing and naming ceremonies.

Something special

For St. Arnold, the significance of the eagle—or *migizi* in Ojibwemowin—reaches far beyond a legal precedent since Keweenaw Bay authorities issued a possession permit to St. Arnold last April. "It's a gift from that Spirit. It's something to be respected and honored," said St. Arnold, a traditional Ojibwe.

Before yielding the eagle to a GLIFWC evidence freezer, St. Arnold first performed a ceremony with friends and family. Singing and praying in Ojibwemowin, they offered thanks and welcomed the eagle into their lives. Of the four sacred Ojibwe plants, St. Arnold positioned sweetgrass, cedar and sage inside the migizi's beak. Assema (tobacco)—the fourth sacred plant—was smoked in a pipe.

"We're taught these things are gifts. Something like just an eagle feather lying on the ground is meant for a specific person," St. Arnold explained. "Others will walk past it but it's only seen by the one who should have it. It's very special."

St. Arnold has since devoted considerable thought into just how to use the gift. Whistles will be crafted from the bones; the wings will be spread into fans used in ceremonies and dancing, and a number of feathers will be gifted to individuals. "These things are only with us a limited time. It's not something to horde or accumulate, but to protect and pass on," St. Arnold said.

A tragic first

By Charlie Otto Rasmussen, Staff Writer

Reserve, Wis.—For the first time in the modern walleye spearing era, a tribal member has apparently drowned while fishing. Lac Courte Oreilles member Paul Dust Sr. went missing shortly after his small johnboat capsized in heavy waves the evening of April 18.

Dust was fishing the on-reservation waters of Big Lac Courte Oreilles Lake with his son Paul Jr. and friend Howard Bressette when the boat became swamped in the northeast portion of the lake. The teenagers—both LCO High School students—managed to swim to shore but the 44-year-old Dust Sr. never made it out of the water.

Great Lakes Indian Fish & Wildlife Commission wardens joined LCO tribal officers, Sawyer County Sheriff's deputies and crews from additional jurisdictions in a coordinated search for Dust into the night and again the following day. Searchers utilized a variety of methods over the following weeks including divers, side scan sonar, underwater cameras, draglines and cadaver dogs.

GLIFWC officers report that water depths to 80 feet have made the search more difficult on the 5,038-acre lake.

As of press time, Dust remains unrecovered. His wife Betty and three children survive him. Services and memorials are pending.

—Joe Morey contributed to this report

GLIFWC Enforcement's new mobile command unit provided a center for communications as well as for storing equipment and supplies during the 2009 spring netting season at Mille Lacs. Obtained in 2008 through a Community Oriented Policing Services grant, the unit remained at Mille Lacs throughout the season. (Photo by Fred Maulson.)

GLIFWC Warden Rabindran Arunagiri checks a net tag on a net lifted at Mille Lacs Lake. A new tagging system enforced for the season required two tags on each net. Nets retrieved in the morning were checked in order to be sure all set nets were brought in. (Staff photo.)

GLIFWC Enforcement staff serve in many roles during the busy off-reservation spring spearing and netting season. Monitoring the harvest and enforcing tribal codes is chief among duties; however, sometime wardens just plain have to help some folks out. Warden Mike Popovich was able to provide a helping hand to this Lac Courte Oreilles tribal member, a litle guy with a big fish, during the spring spearing season. (Photo submitted.)

2009 GLIFWC enforcement safety classes

Class	Dates	Tribe	Contact
Boating Safety	June 12-13	Bad River	Vern Stone (715) 292-8862
ATV Safety	June 19-20	Bad River	Vern Stone (715) 292-8862
Hunter Education	August 5-8	Bad River	Vern Stone (715) 292-8862
ATV/Snowmobile Safety*	June 18-20	Lac Courte Oreilles	Mike Popovich (715) 292-7535
Hunter Education*	July 22-25	Lac Courte Oreilles	Mike Popovich (715) 292-7535
Hunter Education	August 17, 24-25	Lac du Flambeau	Emily Miller (715) 892-6789
ATV Safety	June 25-26	Mille Lacs	Jim Mattson (320) 360-1357
Hunter Education	July 29-31	Mille Lacs	Jim Mattson (320) 360-1357
Hunter Education	June 8-16	Mole Lake	Roger McGeshick (715) 889-3200
Boating Safety	June 17-19	Red Cliff	Mike Soulier (715) 292-5320
ATV/Snowmobile Safety	June 24-26	Red Cliff	Mike Soulier (715) 292-5320
Hunter Education	July 13-15	Red Cliff	Mike Soulier (715) 292-5320
*	*	St. Croix	Matt Bark (715) 292-3738

****Safety classes will be held in conjunction with the Tribal Police Department. Contact your local GLIFWC warden for additional information.***

Regional warden enlisted for Wis.

With his recent appointment as a GLIFWC conservation officer, Jon Cooksey adds intertribal agency to his resume of government-related service. Cooksey logged three years in the US Army after high school, moved onto the Vilas County Sheriffs Department , then over to the Lac du Flambeau Tribal Police before spending the last eight years as a Wisconsin Department of Natural Resources service center supervisor.

Now Cooksey's workplace gets a whole lot bigger as he prepares to patrol the Western District of north central and northeast Wisconsin.

"I look forward to working in the many different areas that GLIFWC covers," Cooksey said. GLIFWC wardens are assigned to a specific reservation area or geographic region but typically travel to various locations within the ceded territories to assist other officers during busy periods.

Cooksey is currently completing Basic Recruit Training at Waukesha Technical College. *(COR)*

Mapping the past
Finding roots for today

By Sue Erickson, Staff Writer

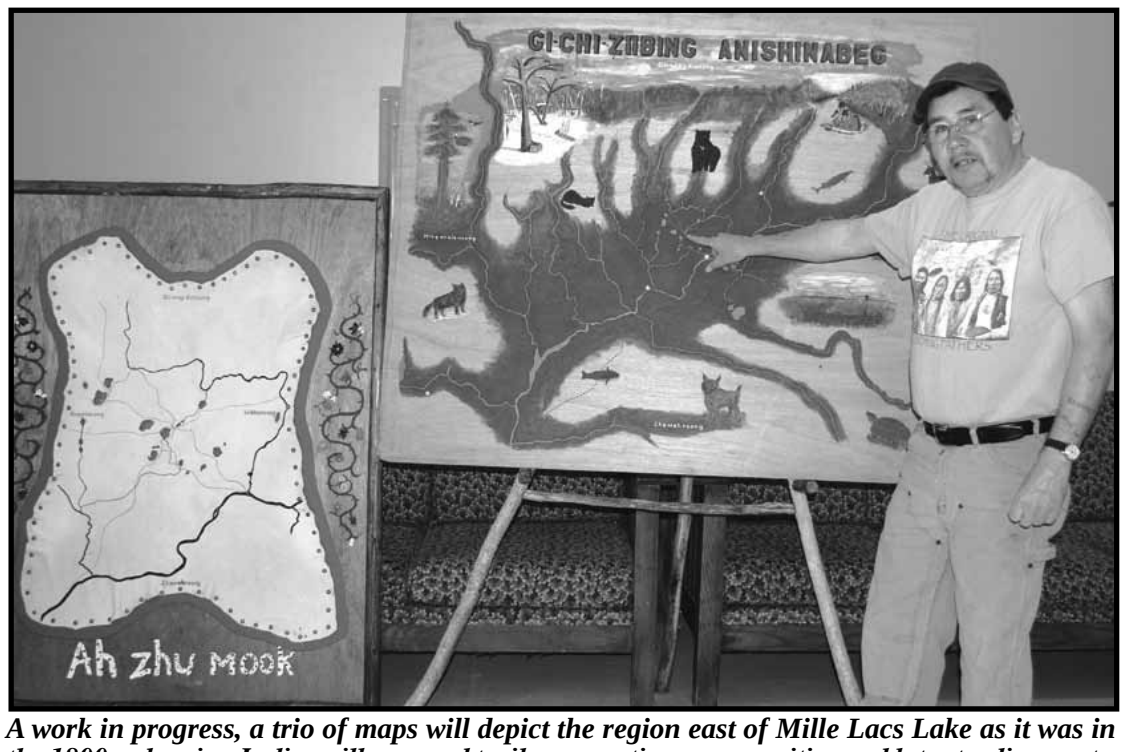
Rutledge, Minn.—Imagine looking at a map with no roads, no county lines, and no state lines! Only rivers, large and small, running like arteries through a vast region provide some orientation as to where you might be. Dave Matrious, or Bahdasigayd, knows most of the rivers, creeks, and lakes appearing on his early 1800s, regional map that depicts an area in what is now at the mid-section of eastern Minnesota and western Wisconsin.

Only water bodies, a few dotted lines indicating foot trails, and stars marking sites of old Ojibwe villages break the vastness of the territory. This was how it used to be.

Matrious, a member of the Sturgeon Clan is a Mille Lacs Band member and Resource Specialist/Instructor at the Band's Misizahga'igan Anishinahbay Language and Culture Grounds just south of Rutledge, Minnesota. He has undertaken the project to map out regional Ojibwe communities prior to development.

"The first reason I am doing this is to provide an academic and cultural history of our people because there is not much regional, cultural history out there," Matrious explains. He also believes it will help non-native people to understand the region's Ojibwe people and their long-standing connection to the land.

Matrious has been working on the mapping project for about a year and a half, relying on knowledge from elders along with extensive research to help locate trails and past villages. Only a few markers on the old trails remain visible today, so memories and old maps/surveys that showed Indian trails have been his main resource.



A work in progress, a trio of maps will depict the region east of Mille Lacs Lake as it was in the 1800s, showing Indian villages and trails connecting communities and later trading posts. The mapping project has been undertaken by Dave Matrious or Bahdasigayd, Resource Specialist/Instructor at the Misizahga'igani Anishinahbay Language and Culture Grounds near Rutledge, Minnesota. (Photo by Sue Erickson.)

In particular Matrious benefited from the recollections of Ojibwe elders such as Jim Clark, Albert Churchill, Leonard Moose, Beatrice (St. John) Taylor, Larry Amik Smallwood and others. Matrious lived in the area all his life with his parents, other community members, and relatives. Jim Clark, his half brother, inspired him to do the Ah zhu mook map, and the rest was a continuance of the project, he says. All the elders lived in the Ah zhu mook community, erroneously known as Lake Lena. Both Clark and Churchill have recently walked on.

Matrious also found help from Spooner resident Donald Monson, WDNR retiree who attended school with Matrious in Markville, Minnesota during the early 1960s. Monson provided information on the La Pointe (Madeline Island) to Fort Snelling trail. Other trails extend up to Superior, Wisconsin and Carlton, Minnesota, which is known as the Point Douglas Military Road.

So far Matrious has identified about twenty villages, each with cemeteries, along the major waterway of the Gichiziibing or the St. Croix River. The St. Croix River actually had three Ojibwe identifications, according to Matrious. From Namekagon to Lake St. Croix, it was known as Manoominikeziibing (wild rice river). The mid-section of the river was called Gichiziibing, and the lower St. Croix was Gebayagating (place of lost spirits). The latter name evolved from the many Ojibwe warriors lost there in battles with the Dakota and Fox who never received a burial.

One of the major villages in the 1800s was Zah gingg (water coming out place) adjacent to the intersection of the St. Croix and Tamarack Rivers. Here was a horse or oxen drawn ferry operated by Matrious ancestors. Some other identified villages include Agaaming (across the river), Head of the Rapids, St. Johns Landing, Little Yellow Banks, Big Yellow Banks and Maple Island. There were also large villages on the Snake River, which were inhabited by both Ojibwe and Dakota before the hostilities began. These were near Pine City. Many of the region's residents were part of the "Lost Tribe," or people who left Lac Courte Oreilles when the reservation was established, Matrious says. The villages were largely clan villages and probably composed of about 20-25 people on average.

Mille Lacs Band students from the Ga Shing Wakokag Charter School helped develop a map of the old Indian community, Ah Zhu mook, one of several Indian villages identified on a larger regional map depicting 1800s Ojibwe villages and trails. Helping at the Misizahga'igani Anishinahbay Language and Culture Grounds were, from the left: Bianca Roseland, Alex Matrious, Angel St. John, Mr. Ben Havelka (social studies teacher) and Dalton Roseland. (Photo submitted.)

Because the Language and Culture Grounds works extensively with tribal youth, they have had an opportunity to help with the actual mapping as part of a social studies and history lesson. Matrious' regional map is painted on a large board, approximately four by seven feet. But a smaller map depicted on a stretched tanned deer hide shows a close-up of the village Ah zhu mook, which students helped create. Mille Lacs Band has a charter school in Ah zhu mook called Pine Grove Leadership Academy or Ga Shing Wakokag. Students in the 6-8 grades social studies class received a presentation from Matrious and assisted with the making of the Ah zhu mook village map.

This is part of learning their roots, Matrious explains, learning where they came from. It's part of who you are, he says, and that is what makes the project so meaningful. As it happens, Matrious own family on his father's side lived in Ah zhu mook, so it has particular interest for him.

Another large wooden board represents the next map to be developed. This will focus on the region between the Snake River by Pine City, Minnesota and go west to Mille Lacs Lake. Matrious says there were many Ojibwe villages along the Snake River, but after the cession treaties, the people split, some leaving for Mille Lacs and many for the St. Croix reservation. He will be using Trygg land maps from Trygg Land Company, Ely, Minnesota to develop the Snake River map. Trygg was commissioned by the Bureau of Indian Affairs to survey treaty areas for the Indian Claims Commission, and those maps are available to tribes.

Matrious is looking forward to upcoming sessions at the Culture and Language Grounds when students will be coming in for weeklong experiences. The grounds are equipped for overnight camping and almost all traditional activities take place there, social and recreational. Students learn to harvest and prepare traditional foods like wild rice and maple sugar. These activities combined with hearing and using the Ojibwe language and learning their history give kids a great opportunity to connect with their roots and understand how a place is also part of their own identity.

For more information, Dave Matrious can be contacted at the Misizahga'igani Anishinahbay Language and Culture Grounds at: 320-233-6269.

Resource books

Some of the resources used by Matrious in his research include:

Against the Tide of American History—The Story of the Mille Lacs Anishinabe, Local Curriculum Committee, 1985.

Atlas of the Great Lakes Indian History by Helen Hornbeck Tanner, University of Oklahoma Press, 1987.

Cecilia: The Trials of an Amazing Ojibwe Woman, 1834–1892 by Lafayette Connor, Burnett County Historical Society, 2006.

Gidakiminaan (Our Earth), Great Lakes Indian Fish and Wildlife Commission, 2007.

John Sayers' **Snake River Journal**, 11804-1805 edited by Douglas Birk, Institute for Minnesota Archeaology, 1989.

Pine County and its Memories by Jim Cordes, Pine County Board of Commissioners, 1989.

Portage Lake by Maude Kegg, University of Minnesota Press, 1991.

St. Croix, Midwest Border River by James Taylor Dunn, Minnesota Historical Society Press, 1979.

The Memories of Center of the Moon, by Naagwigiizis, Jim Clark, Birch Bark Books, 2002.

Staying one step ahead of invasive species

Computer analysis attempts to predict potential ranges of selected invasives in the Lake Superior region

By GLIFWC Staff

Odanah, Wis.—The introduction of aggressive non-native species has become a major threat to biodiversity around the world. Yet society is just beginning to consider the environmental and economic costs associated with invasive species.

Plants in particular have often arrived without the insects and diseases that control their populations in their homeland. Freed from these constraints, some of these newcomers spread aggressively, pushing out native species and disrupting and altering natural habitats.

Like many parts of the world, the environmental integrity of the Great Lakes region is at risk from aggressive, non-native species that have been inadvertently or intentionally transported by humans from far away. Many areas across the region are still free of the worst invasive plants and animals, though, and GLIFWC has been working to keep it that way.

Beginning with a successful project initiated in 1989 to control a large infestation of purple loosestrife in the Fish Creek Slough, GLIFWC has taken an active role in inventorying and (when feasible) controlling invasives across northern Wisconsin and western Upper Michigan.

Over the years GLIFWC has conducted extensive surveys to find out how pervasive this problem is and what to do about it. Infestations of several hundred terrestrial and aquatic invasive plants and a handful of aquatic animals have been mapped. GLIFWC has also gathered data from other agencies, groups and individuals.

So far GLIFWC and others have collected over 37,000 invasive species records from Michigan, Minnesota and Wisconsin. More than 6,100 of these occur in the Lake Superior tier of Wisconsin counties (Iron, Ashland, Bayfield and Douglas). Information for most of these invasive species occurrences is available online at *www.glifwc-maps.org/*.

Thanks to a grant from the Wisconsin Tribal Conservation Advisory Council, GLIFWC is now entering the next phase in this process. This phase involves using this wealth of data to predict where various invasive plant species are likely to show up in the future, and to prioritize control efforts.

Which invasive plants are the most problematic in the ceded territory? Which are likely to have the most impact on natural habitats? Where are new infestations most likely to show up next? What is the potential range and abundance of these invasives across the region, if nothing is done to stop their spread? We are trying to get a handle on these questions, with the goal of limiting or preventing the introduction and spread of invasive plants to the ceded territory, and doing so as efficiently and effectively as possible.

GLIFWC staff are putting this large and growing database of invasive species occurrences to use in trying to answer these questions. Using GIS software and several habitat modelling programs, we can electronically overlay multiple layers of environmental and biological data on showing known occurrences of various invasive species.

Each of these electronic layers shows a different characteristic across the area being mapped. Climate layers include characteristics such as average number of frost-free days and average annual minimum temperatures (which determine the hardiness zone). Soil characteristics include moisture, pH, and texture.

A layer obtained from the Wisconsin Department of Natural Resources (DNR) shows detailed vegetation cover data, which can also be used to estimate the amount of shade across the landscape. Layers such as "distance to cities" and "distance to roads" help quantify the human influence on invasive plant distributions.

Computer modelling programs can use these layers to create mathematical models (which can be displayed as maps) that predict the potential distribution of the invasive plant being studied, and show the probability of the plant occurring across the surrounding landscape.

This process seems to naturally lead to two somewhat different models, depending on the layers chosen. Choosing only environmental layers leads to a model that shows the areas the plant in question may be able to colonize, and the areas that are likely to be unsuitable for it. This type of model shows a plant's POTENTIAL distribution and potential threat to native plant diversity. (This concept is closely related to what ecologists call a species' "fundamental niche.")

A second approach is to choose layers such as "distance from cities," "distance to roads," and even "distance from known occurrences of the plant being modelled" to predict the plant's current distribution. Why? Because depending on various factors such as amount of time since introduction, predisposition to dispersal on vehicles and equipment, and affinity to disturbed habitats, some plants species are much more likely to be found in the general area of human activity as opposed to relatively remote natural areas. And all other things being equal, an invasive species is obviously more likely to spread to nearby areas than to distant sites.

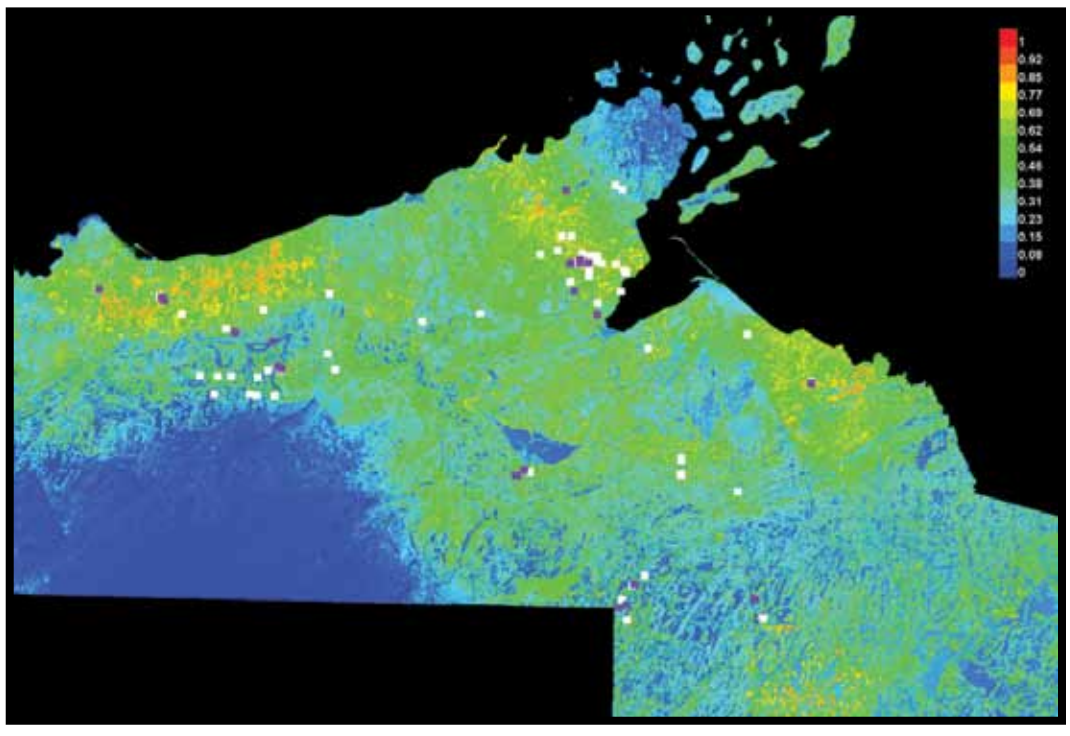
How does one really know whether a particular model really shows the potential distribution of an invasive plant, or whether it will be effective in predicting where new populations are likely to occur? A number of statistical techniques have been developed to address this problem. Prominent among them is the "Receiver Operating Characteristic" (ROC) plot, which can be used to measure how good a model is at correctly predicting the presence and absence of a species across an area, based on the known distribution of that species.

For our purposes a major test will be how well the models predict occurrences in areas within the four Lake Superior counties that we have not yet surveyed for invasives, after we survey these areas this summer. If all goes well, we will end up with a powerful and flexible tool that can be used to predict invasive species distributions in the ceded territory and beyond.

Preliminary maps of leafy spurge (*Euphorbia esula*) distribution in the Lake Superior counties of Wisconsin. For both maps, the white squares show known spurge occurrences randomly chosen to develop or "train" the model, while the purple squares show occurrences used to test the model. Blue shading indicates low probability, green shows moderate probability, and red shows high probability of suitable conditions for leafy spurge.

The top map uses environmental layers of vegetation cover, annual minimum temperature and soil drainage, plus distance from roads, to predict the occurrence of spurge. Diagnostic statistics for this model indicate that distance from roads is a major predictor of leafy spurge presence across the four counties. This strong propensity for spurge to occur along roads also correlates well with what we see in the region today. The bottom map uses only the three environmental layers, and shows the potential distribution of spurge as it eventually spreads from road corridors to suitable habitat away from roads.

***Maps calculated using the Maximum Entropy (MaxEnt) software developed by Steven Phillips and others at Princeton University* (www.cs.princeton.edu/~schapire/maxent/).**



Big numbers follow ice-out

(Continued from page 1)

mid-April gave way to participation by all Ojibwe bands on the month's fourth weekend when winter ice vanished from much of Lake Mille Lacs. With excellent fishing conditions and a high turnout, the eight 1837 Treaty bands combined to harvest 22,600 pounds on April 25—a single-day record. Navigating around the scattered network of gill nets, spearers boated eight percent of that outstanding walleye total.

One popular boat launch in recent years—North Garrison—was inaccessible during the season's peak after southeast winds stacked thick lake ice over the concrete landing. Fishing pressure shifted to other areas like Liberty Beach on the east shore as band members sought open water to set gill nets and spear in the early evenings.

Fisheries staff from the Minnesota Department of Natural Resources creeled tribal catches at various Mille Lacs boat landings throughout the spring season. Patrick Schmalz, MDNR research scientist and treaty fisheries coordinator, said state officials have monitored approximately 20 percent of spring gill net lifts since 1998.

"This allows us to ensure that any concern the public might have about harvest numbers is addressed," Schmalz explained. "The creeling work done by GLIFWC consistently matches up with our own data."

Biologists from the tribes, GLIFWC, and MDNR meet annually to share fisheries assessment information and determine safe harvest levels. Lake Mille Lacs harvest quotas for 2009 are set at 126,500 pounds for treaty fishermen and 414,500 for state-licensed anglers.

While the vast majority of the spring harvest is comprised of walleye, additional species including yellow perch, northern pike and muskie are significant elements in the diet of tribal members. In Wisconsin waters spearers took 238 muskies during spring 2009. Clockwise from lower right: Stuart Burgess (Lac du Flambeau)with a Sand Lake muskie; 13-year-old Quentin LaBarge boats a Dam Lake walleye; Charlie Hornet (Bad River) picks a gill net at Lake Mille Lacs; Sis Plucinski (BR) removes a Mille Lacs walleye; Peyton and Ethan Greene (BR) help their parents with the family's Mille Lacs catch.

—Photos by Charlie Otto Rasmussen

A good time spearing:

Father & son make it a tradition

By Sue Erickson, Staff Writer

Odanah, Wis.—Early birds, Joe Bates and son Forrest, Bad River tribal members, headed south on April 10 to open the 2009 off-reservation spearing season this spring on Lake Wissota. Although the first night only brought a few walleye aboard, the twosome fared better on subsequent nights fishing both Long Lake and Wissota in Chippewa County.

Their ventures south usually entail a several night stay-over. In earlier years, Joe and spearing partner Ron Parisien used to make the trip home each night, but those kind of nighttime drives are in the past now—it's just too tiring and not fun. And fun and the comradarie are what spearing is about, according to Joe.

Of course, these two spearfishermen are no rookies, and once they push their boat into the water, it's serious business. If the fish are there, this team will get them.

Joe began spearing off-reservation in 1987, so this season is his 23rd treaty spring spearing season. Consequently, he knows the lakes and the fish well. "We don't have to waste time searching for fish anymore, because we know where we will find them now," Joe states. Application of this accumulated knowledge and experience now makes their fishing trips efficient.

Forrest more-or-less grew up in the spearing boat, along for the trip since he was five or six. "We use to just wrap him up good, and he would sleep in the boat while we speared," Joe explains. But by the time Forrest was ten, he had a spear in his hand and began developing a skill that he uses effectively today. "He's very good, very efficient," Joe says with a smile, admitting also that Forrest spends more time at the bow of the boat while dad mans the motor these days.

Weather doesn't seem to be much of a factor for these fishermen. Despite the cold, blustery spring weather, they were out after fish. Wind and waves just don't make things easier and probably lowers the number of fish they actually take in a night.

Joe Bates and his son Forrest, Bad River Tribal members, clean and package their fish for the freezer. (Photos by Sue Erickson.)

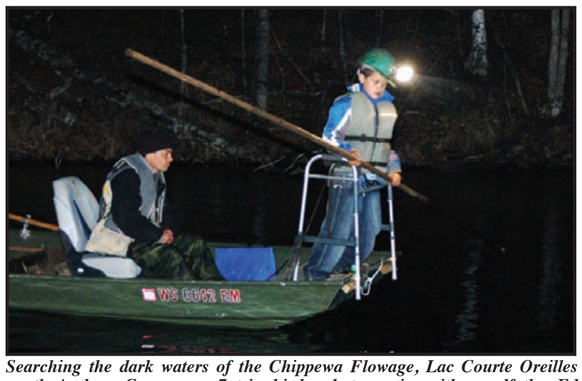
On April 18 they encountered some nasty weather on Lake Namakagon, so spearing was tough but they managed to bring in 100 walleye in about an hour and 45 minutes. "You've got to be there when the fish are there," Joe explains. "The fish don't care if it's raining or snowing or blowing. They'll be there anyway, so you have to be too."

Spearing is actually the fun part of the whole process. The following day the two set up assembly-line style for cleaning and packaging the fish, turning their spearing boat into a makeshift cleaning table. Each has a job to do and the result is nice, clean, boneless walleye fillets. Joe's mother, Elizabeth Drake, usually participates in washing and bagging as well.

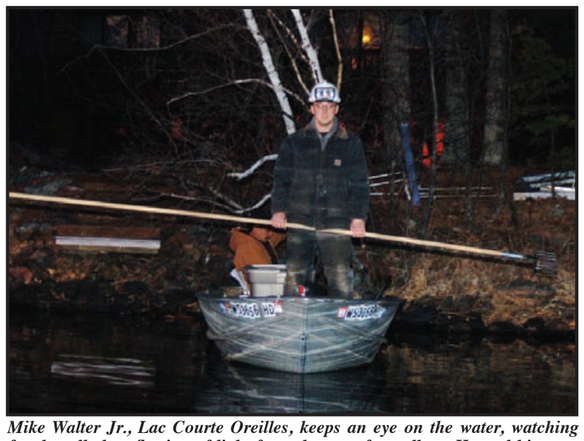
Conscious of mercury contamination issues, they carefully mark their bags of fish by lake. Joe thinks of his grandchildren and tries to avoid lakes with high mercury levels altogether. But if fish are taken from a lake with a higher level of mercury, they don't give it to children or women of childbearing years.

"What worries me is that there are not more youth out spearing. We need to get young people out," Joe comments, concerned that the traditional practice of spearing in the spring be carried on and enjoyed by coming generations as well. "Spearing is fun," he says, and his sense of enjoyment is obvious. It's a great father and son time; they enjoy the challenge, the time out on the lake, some cook-outs, and the opportunity to bring fish home to family, friends and for the freezer.

Joe hasn't participated much in the netting at Mille Lacs Lake because it interferes with the spearing season. He went to Mille Lacs once to net some perch at the end of the season, and might consider trying that again sometime. But for the Bates boys, spearing is the thing. It's just a good time!



Searching the dark waters of the Chippewa Flowage, Lac Courte Oreilles youth, Anthony Conger, age 7, tries his hand at spearing with grandfather Ed Martin at the helm. (Photo by Jen Schlender.)



Mike Walter Jr., Lac Courte Oreilles, keeps an eye on the water, watching for the telltale reflection of light from the eye of a walleye. He and his partner fished the Chippewa Flowage soon after the treaty spring spearing season began. (Photo by Jen Schlender.)

Matt Riedell, Lac Courte Oreilles, brings up a walleye during the 2009 spring spearing season in Wisconsin. Spearing with him were Kyle Acker and Craig Minnick, also from Lac Courte Oreilles. (Photo by Jen Schlender.)

Photos from the right: Participating in the Wisconsin Department of Natural Resources' Angler Education Program, GLIFWC wardens experienced first-hand some of the activities designed to engage and encourage youth and adults to participate in outdoor activities such as fishing. Completing a game designed to help identify fish species, GLIFWC wardens each show the fish they caught. Pictured are: Warden Matt Bark, Enforcement Chief Fred Maulson, Warden Emily Miller, Warden Tom Kroplin, and Warden Jonas Moermond. (Photo submitted.)

Middle: GLIFWC enforcement officers participated in a one-day training session presented by the Community Options Policing Services at the Bad River Convention Center in March. The training centered on utilizing three tenets of community policing—problem-solving, partnership, and organizational transformationÑ o address both crime and disorder concerns in communities and neighborhoods. The training was designed specifically to address Native American issues. Pictured in the photo are instructor Bill Micklus and GLIFWC and tribal officers. (Photo submitted.)

Right: GLIFWC Chief of Enforcement Fred Maulson and David Zebro, WDNR Regional Supervisor, worked on a presentation for UW-Stevens Point natural resource students relating to Hmong history and culture. The session was designed to create cultural sensitivity, and Maulson was able to relate Native American experiences to those of Hmong in Wisconsin. (Photo by Fred Maulson.)

A number of GLIFWC employees were awarded recognition pins at the February 27 all staff meeting in Odanah. Pins are issued on five-year employment anniversaries to all staff members. 2009 recipients from left: Missy Berlin (15), Gigi Cloud (20), Mike Soulier (10), Roger McGeshick (10), Maggie Kolodziejski (15), Matt Hudson (5), Tanya Aldred (5), Fred Maulson (5), and John Coleman (15). Missing from the photo: Brennan Deragon (10), Vicki Leask (20) and Annette Crowe (20). (Photo by Charlie Otto Rasmussen.)

Marking 25 years at the Commission, three GLIFWC staff members received Pendleton blankets and special recognition from Executive Administrator Jim Zorn. From left: Sue Erickson, Henry "Butch" Mieloszyk, and Jon Gilbert. (Photo by Charlie Otto Rasmussen.)

GLIFWC conservation officers teamed up with students and staff from Lac du Flambeau School to construct two fish cribs on the ice at Wild Rice Lake. Several weeks after the March 27 event, the cribs sunk to the lake bottom after ice-out, improving habitat for fish and other aquatic species. (Photo submitted.)

UW-Madison students digitize the *Mazina'igan*

By Mike Herrmann
UW-Madison student

Madison, Wis.—During spring semester of 2009, well over 200 collective hours of time was spent digitizing the microfilm collection of *Mazina'igan* editions from 1983-2002.

Professor Larry Nesper organized a seminar in the University of Wisconsin-Madison's (UW-M) Anthropology Department and the American Indian Studies Program to research the impact of treaty rights on several Ojibwe communities over the past 25 years.

This effort was in support of "Minwaajimo-Telling a Good Story: Preserving Ojibwe Treaty Rights," an upcoming symposium hosted by the Great Lakes Indian Fish & Wildlife Commission (GLIFWC) to celebrate its 25th anniversary.

Mazina'igan is a primary resource for information documenting the changes, from several different perspectives, in the Ojibwe communities we were assigned to research. Originally, we were going to go through each hard-copy issue in the library archives and manually index, or summarize each newspaper article.

Later, when as researchers we read an index listing with needed information, we would have to go back to the archives and reread the old newspaper and type or manually copy the information we need.

Alternatively, I proposed to invest our time into digitizing everything. UW-M housed some microfilm with pictures of each newspaper page embedded in film, covering most of the issues of the *Mazina'igan* that we needed. Our class organized volunteers to start scanning the microfilm, and we were able to scan around 3000 images, one at a time, and organize them, in less than two weeks.

After they were scanned, we took the images, and used computer software with "Optical Character Recognition,"(OCR) tools to analyze the images. The software recognizes the difference in color between the letters and the background, and the software somewhat knows the geometries of the letters it finds and "reads" the document.

I had to go through and "train" the software to recognize the format that *Mazina'igan* once used in order to increase its accuracy. Variations of an individual letter were increased due to different levels of ink; for example, a letter "l", might have so much ink that it overlaps with the letter "t" or even look the same as the number "1."

The program would show me letters that were obviously incorrect, and I **(See Digitizing, page 17)**

Chi-miigwech!

Mazina'igan extends a chi-miigwech (big thank-you) to Professor Nesper and his students for taking on this extensive project and providing a service that will benefit many people in the future.

GLIFWC will be adding these archived papers to our website in the future. Congratulations on a job well done!!

Summer manoomin workshops bring youth & elders together

By Reggie Cadotte
ANA Manoomin Project

Odanah, WI—Boozhoo! The last article I wrote discussed how I was gathering traditional ecological knowledge (TEK) from our elders in relation to manoomin (wild rice).

Another important aspect of being Ojibwe is sharing! I will be sharing the TEK information I have gathered over the past few months with tribal youth on the Lac du Flambeau, Lac Courte Oreilles, and Sokaogon (Mole Lake) reservations in Wisconsin and the Lac Vieux Desert, Keweenaw Bay, and Bay Mills reservations in Michigan.

This information sharing will occur in the form of fun-filled workshops! The Mille Lacs and Fond du Lac tribes in Minnesota and the Red Cliff, Bad River, and St. Croix tribes in Wisconsin had similar workshops during the first year of this project.

There will be three (3) workshops held during this summer for each of the six tribes identified above. I will be working with local tribal elders to teach cultural activities at each of these workshops. The first workshop will show our tribal youth how to identify wiigwaas (birch), giizhik (cedar), and wiigobaatig (basswood) trees in the forests. The tribal youth will then be shown how to properly harvest and show respect to the trees and the forest for providing the resources necessary to harvest wild rice.

In essence, we will be harvesting resources to harvest resources! Tribal youth will be shown how to make the tools necessary to harvest manoomin like cedar knocking sticks, push poles, and birch bark winnowing baskets.

The second workshop will show our tribal youth how to safely operate a jiimaan (canoe) and what to expect and look out for when harvesting manoomin. Tribal youth will be shown how to use a push pole to get around rice beds and how to use the knocking sticks they made in the first workshop.

The youth will then be able to practice these skills prior to the manoomin harvest season. The workshop will also discuss potential risks involved with harvesting manoomin like a jiimaan tipping over. The youth will get to practice tipping and righting their canoes to show their parents that they can safely operate a jiimaan and know what to do if their canoe happens to tip over! This is an unlikely event that occasionally happens to the best of us. If you don't believe me...ask someone you know who rices if they have ever tipped!

The final workshop of the summer will be a manoomin harvesting and processing workshop. This workshop will allow the participating tribal youth to get on the water and harvest manoomin like "the professionals." The youth will then be shown how to process wild rice into a finished food product which most people can recognize.

This process includes drying the rice for a few days, parching/curing the rice, dancing/threshing the hull from the grain, winnowing the hull away from the rice, and then properly storing the rice to be used in a favorite recipe (some recipes can be found at *www.manoomin.com*).

This will be a fun all-day event that will occur right around the dreaded "back-to-school" period of the summer. The best part of this workshop is that the students will be shown how to cook the finished manoomin and will get a chance to taste it!

I have contacted youth programs at each of the identified tribes and will continue to look for the best possible times to hold these workshops. So far we have collectively identified the following dates for each of the workshops.

These dates are "penciled-in" for the moment. Flyers will be made and distributed to each of the tribes with the final dates listed on them as well as who to contact locally. Here is what we have so far:

Off-reservation harvest workshops

Tribe	Tentative Dates
Lac Courte Oreilles	June 25th
Lac du Flambeau	June 23rd
Sokaogon (Mole Lake)	July 8th
Lac Vieux Desert	June 30th
Keweenaw Bay	July 9th
Bay Mills	August 5th

Canoe safety workshops

Tribe	Tentative Dates
Lac Courte Oreilles	July 1st
Lac du Flambeau	June 24th
Sokaogon (Mole Lake)	July 7th
Lac Vieux Desert	June 13th
Keweenaw Bay	July 10th
Bay Mills	August 5th

Manoomin harvesting/processing workshops

Tribe	Tentative Dates
Lac Courte Oreilles	To be scheduled—August/September
Lac du Flambeau	To be scheduled—August/September
Sokaogon (Mole Lake)	To be scheduled—August/September
Lac Vieux Desert	September 5th
Keweenaw Bay	September 4th
Bay Mills	August 6th

These workshops will be lots of fun and participants will come away knowing how to: harvest natural resources using off-reservation permits; make specialized tools; operate a canoe safely to harvest manoomin, and harvest, process, cook, and eat manoomin!

Manoomin processing equipment

The Manoomin Project Coordinator asked tribal manoomin processors about their equipment to process wild rice into a finished food product. Equipment ranged from a kettle pot and some firewood to a motorized barrel and propane burners to scorch the wild rice.

Designs of equipment for small tribal wild rice processing businesses/families to become more efficient have been made. The next step is to build prototypes of the equipment designs.

This equipment will be leased out to small tribal businesses (including wild rice harvesters for home use/give away) in exchange for an amount of finished wild rice equal to the cost to purchase/build the equipment. The wild rice collected in this exchange will then be given to tribal food programs/systems in each of GLIFWC's 11 tribal communities!

If you are a wild rice processor (or would like to become one) and are interested in this project, please contact me at (715) 682-6619 ext. 103 or by email at *wcadotte@glifwc.org*.

I am finalizing my design ideas with wild rice processors and will be building prototypes soon! If everything works out as planned, we will be negotiating the exchange of processing equipment for finished wild rice just in time for this year's harvest!

A second chance at life

Antigo, Wis.—Healed and ready for take off migizi is released at the Raptor Education Group Inc. (REGI), Antigo, Wis. on April 9. *Mazina'igan's* spring edition carried Lori Thomas' story of this eagle that had been found by Clarence Daniels, Forest County Potawatomi, and eventually taken to Marge Gibson at REGI. The obviously sickened bird was found to have lead poisoning, but was successfully healed and a ceremony accompanied its release.

Thomas, *Potawatomi Traveling Times*, reported on the release: "During the release ceremony Gibson carefully reunited the keno once again with Clarence, his rescuer, and within a few seconds the keno proudly spread his wings and flew to a nearby tree. There were smiles and many tears (of joy) that were shown on the faces of those that came to support the keno and his release.

Perched on a branch of the nearby tree, the keno took one look back towards the crowd of people that prayed for his healthy recovery and flew off to become familiar, once again, with all the beings around him. Earth Day drummed an Eagle song for the keno once he took flight. A few had seen the keno make his way back once more in the distance as the drumming took place and then, he flew out of sight.

Daniels Jr. presented a blanket to his nephew, Clarence, and also a keno feather. Keno feathers are given to many who have accomplished great deeds in their life, from serving in the armed forces to saving a life, as did Clarence on that cold December day. After Clarence received his gifts, an honor song was sung for him.

To Anishinabe, everything is looked at as having a spirit and as so, respected as such. Our animals, plant life, insects, birds and waterfowl all play a huge role in the cycle of life and come first and foremost of importance before humans. If it weren't for all the other beings that we share this earth with, we as humans would not survive."

An Ojibwe of all seasons:

Surviving as a modern-day hunter, fisher, gatherer

By Sue Erickson
Staff Writer

Lac Courte Oreilles, Wis.—Following a hunter-gatherer lifestyle is not a thing of the past for Lac Courte Oreilles tribal member Mel Gasper. Rather he has found the pursuit of traditional hunting, fishing and gathering activities provides him with an ample year-round income and his direct-from-nature products have a ready market in the modern world.

And, while many fret about recession and job loss, Gasper isn't worried. He says he quit his job three years ago and isn't going back. He deals primarily in necessities such as food items—fish, wild rice and medicinal plants like ginseng—which don't seem to be affected by the economic downswing. Neither are his handmade products such as his birch bark baskets and hair ties. However, as a modern-day entrepeneur in touch with economic realities, he does keep his eye on Wall Street and the fluctuations of the stock market. For one thing, it can affect the price of furs, he says.

Gasper's activities are guided by the seasons, but there is always something to be harvested no matter the time of year. So his work is year-round. In January he moves from his fall pursuit of gathering balsam boughs for the Christmas season to gathering small, pliable birch limbs which he bundles and sells for use in making the popular stick wreaths.

In the late fall, his traps are also laid and set for a variety of furbearers, including squirrels, fisher, raccoon, coyote, muskrat, and beaver. Trapping is something he has done seriously for about twenty plus years now, a skill learned from his foster father as a youth.

A man of little waste, he finds a use for almost all parts of an animal. For example he has buyers for the pelt of a squirrel in Danbury and for the carcass in Minneapolis.

The winter brings Gasper to the frozen lakes, equipped with his own custom-made, fish-catchin' setlines. Devised from metal coat hangers, fishing line and swivel hooks, Gasper's setlines are designed to be set flush with the ice, so they will not be damaged by snowmobile traffic that either purposefully or inadvertently make havoc with tip-ups. Lightweight, easy to pack, these setlines can be adjusted to varying depths and spin nicely once in the water, effectively enticing fish to bite.

"These things catch fish like crazy," Gasper says, a claim confirmed a by a few fishermen who happened to be in the area. The biggest fish Gasper pulled up on one was a 32 pound musky, not bad for coat hanger, line and swivel hook held in place with a twig. Gasper has found a good market for his setlines among fishermen, selling the unique gear for $5.00 each.

On off-reservation lakes, he can set thirty setlines, ten per lake. His catch goes to his own table or those of family, friends, or elders. But some is also sold locally for a profit, a little cash in the pocket.

As the sun gets higher and hotter and winter yields to the push of spring, Gasper puts away his traps and turns his attention to the sugarbush and other forms of fishing. Daytime thaw and nighttime freeze-up is the time in early spring when Gasper sets taps in the maple trees to gather maple sap, which he boils down into syrup. What he gathers is for home use only in this instance. The benefits are the sweet, natural syrup which, he says, is a sweetener that will not even harm diabetics because its natural and not refined.

In the spring he also readies his spear and nets because this is the time, just after the ice goes out, to harvest walleye. He spears in inland lakes around the region and also nets in Minnesota's Mille Lacs Lake.

A veteran spear fisherman, Gasper remembers the early days of the off-reservation spear fishing season and the violent protests. He particularly recalls being on the left guard of the Drum at Deer Lake one night—the Drum being a peaceful response to the violence and racism tribal members were exposed to each night in the mid-1980s when spear fishing. "It was scarey!" he says, recalling those years, "but I've always been an activist, watching out for our rights and for our folks."

One of his newest endeavors is working with birch bark, which he gathers at various times of the year. It's not something you can do at just anytime, he explains. There are certain times when the bark of the tree loosens from the trunk and is easy to peel. Trying to harvest the bark when it is tight to the tree can damage the tree.

Mel Gasper, Lac Courte Oreilles, holds a ginseng root which is valued as a medicinal plant. Gasper has been harvesting ginseng for nearly 30 years. (SE)

It's about four years ago that Mel started working with birch bark. Unable to buy a good winnowing basket for wild rice, he ended up fashioning one for himself. That lit the fire for a whole new realm of creative activity. The gatherer turned artist as well, producing winnowing-style baskets of all sizes, frequently burning designs into the flat interior or adding a delicate beadwork trim to the edge. He also customizes baskets by burning in names and dates for customers. Equally popular are his birch bark with beadwork hair ties, which he has a hard time keeping in stock.

Although his status as artist is new, his work has already been recognized with awards at several local shows. It also keeps him busy through the summer months attending shows and pow-wows to sell his work.

In the fall, Mel once again heads to the forests in quest of ginseng, one of the plants he's been harvesting for nearly 30 years. Valued as a medicinal plant both here and abroad, ginseng maintains a high market value. Especially sought after are the older roots—40 to 50 years old. Age affects the potency of the root. Gasper has an outlet in Wausau for the ginseng he harvests. Ginseng is sold commercially in many forms and with all parts of the plant being used.

Other plants with various medicinal purposes also find their way into Gasper's gathering basket. He credits elder women at St. Croix for sharing their knowledge of medicinal plants with him when he was living on the St. Croix reservation.

Gasper is also concerned that traditional knowledge and skills be passed onto tribal youth so that those practices can be continued into the future. "The Great Spirit put things here for us to use. If we don't use them, he will take them back," Gasper says.

An Indian activist, guitar-playing, karoke-winning musician, a hunter, trapper, fisherman and artist, this grandfather of sixteen has lots to share. He is truly a man of all seasons and proof that traditional knowledge remains relevant today.

Madeline Island Anishinaabeg Gathering

September 25-26, 2009

LaPointe, Wis.—All Anishinaabeg are called to LaPointe, Wisconsin on Madeline Island for an important gathering on September 25-26, Friday and Saturday, dates coinciding with the signing of the 1854 Treaty on the Island.

The weekend will begin Friday with a Pipe Ceremony by honored Red Cliff Elder Leo LaFernier and will continue with sharing circles on the importance of the Island to Anishinaabeg in the past, present and future featuring respected leaders and elders. Presenters include: Rick St. Germaine, Winona LaDuke, Henry Buffalo Jr., Robert VanZile, Larry Amik Smallwood, Joe Rose, and others.

The Town of LaPointe has passed a resolution welcoming Anishinaabeg again to the Island and providing resources to the planning committee. The Town will provide a lunch to all participants.

The day long talks will conclude with a traditional feast and several invited drums. Regalia is encouraged and welcome! Saturday will include a free Open House at the Madeline Island Museum with book signings, Great Lakes Indian Fish & Wildlife Commission's educational displays, and other events.

Everyone is welcome to attend the free weekend Gathering which requires a ferry boat ride from Bayfield, Wisconsin. Campsites are available at the Town Park and State Park.

The planning committee has asked that groups of six or more please make a reservation by calling the number or emailing the address below. There will be a nominal charge for organizations bringing groups of six or more. For directions, schedules, information, and reservations please contact Lorraine Norrgard at the Madeline Island Museum, 715-747-2415 or email *lnorrgard@aol.com*.

Traditions & transformation

Anishinaabeg weekend

Madeline Island Museum, June 25, 27-28, 2009

LaPointe, Wis.—Singer songwriter, Lyz Jaakola, Fond du Lac Band of Lake Superior Chippewa, will perform a free concert on Thursday June 25 at 7:00 pm at the Madeline Island Museum in LaPointe, Wisconsin.

Saturday and Sunday will include demonstrations of birch bark by Diane Defoe from Red Cliff, birch bark by Sandy and Dave Peterson from Lac du Flambeau, beadwork and birch by Rita Vanderventer from Red Cliff, beadwork by Kurt Buffalo from Red Cliff, black ash basketry and finger weaving by Renee Dillard from Michigan, woodcarving by Edward Peterson from Lac du Flambeau, arrow making, carving, and other crafts by Nick Hockings from Lac du Flambeau.

The Great Lakes Indian Fish & Wildlife Commission will have an educational booth during the weekend, and all Anishinaabeg will receive free admission to the Museum and exhibits if they call or email for tickets in advance.

Madeline Island Ferries run regularly from Bayfield, Wisconsin to the Island, and the Museum is only a short walk from the dock at the Town of LaPointe. For more information, schedules, or free Museum admission tickets contact Steve Cotherman, Madeline Island Museum: *steve.cotherman@wisconsinhistory.org* or call 715-747-2415.

Discovering our forest's jewels: namepin (wild ginger)

By Karen Danielsen, GLIFWC Forest Ecologist

Odanah, Wis.—Our northern forests conceal many beautiful "jewels" that can be discovered only by walking and being fully observant—not driving by at 55 mph. A superb example includes the flowers of namepin (wild ginger, *Asarum canadense*). During late spring and early summer, these maroon-colored flowers rest at the base of their parent plants, vaguely invoking an image of garnet stones casually dropped onto the forest floor.

These exquisite little flowers occur singly and rarely grow more than two inches in length and diameter. Cup-shaped with three pointed lobes, they have pale white centers, possibly for attracting the attention of ground-dwelling pollinators, such as beetles.

In spring, namepin, being a perennial plant, breaks its winter dormancy and develops two heart-shaped leaves on stout, erect stalks that results in an overall height of eight to ten inches. Dense white hairs cover the leaves and stalks. The leaves measure five to six inches, with each pair of leaves hiding a solitary flower—almost like two guards protecting a precious gem.

Namepin stems, technically referred to as a rhizomes, grow horizontally just below the soil surface, looking more or less like roots. These rhizomes smell and taste similar to that of the tropical Asian ginger *(Zingiber officinale)*, which is commonly used for cooking. Namepin leaves also have a "ginger" fragrance.

The Ojibwe value namepin for its medicinal uses and as a food spice. Care should be taken, however, when handling this plant because it can cause skin rashes in some people. Furthermore, it contains aristolochic acid, which if consumed in large doses, may result in kidney failure.

Namepin occurs throughout the Midwest and eastern United States and Canada. It grows in rich, moist to wet soils in a variety of plant communities including northern hardwoods, boreal forests, cedar swamps and mixed woodlands. It can be found in full sun, but prefers shady to partially shady sites.

For gardeners interested in growing native plants, namepin provides as excellent ground cover, forming a luscious green carpet, particularly in those shady areas where most plants cannot survive. Planting on a slope allows for better viewing of its clandestine flowers.

During the first year or two after planting namepin, watering and weeding may be regularly required. Once established, however, this plant needs minimal maintenance. Natural precipitation usually provides adequate moisture and fewer weeds develop as namepin becomes more crowded.

Namepin plant. © 2003 Steven J. Baskauf http://bioimages.vanderbilt.edu/.

Additionally, namepin appears to be disliked by deer and other plant-munching animals. Gardeners need not waste time erecting fences or spraying foul-smelling liquids as deterrents, which seldom work anyway.

And with all that extra time, gardeners may want to wander and explore our forests searching for more hidden jewels.

Namepin flower. © 2003 Steven J. Baskauf http://bioimages.vanderbilt.edu/.

Digitizing *Mazina'igan*

(Continued from page 14)

simply typed in the correct letter. It also had a spell checker that I could allow to change words to what seemed most appropriate. The variations were saved and used to re-scan the document.

There are still mistakes, but now one can search a word like "recipe," through the entire *Mazina'igan* collection, and in a matter of seconds or minutes, depending on your computer, you will have several results for whatever subject you choose!

This ambitious undertaking was justified because articles that are digitized are easily accessible and searchable, which facilitates and accelerates current and future research by others. It also preserves the original documents from wear-and-tear, prolonging the integrity of the original copy.

Similar projects can be very costly, requiring thousands of dollars to complete with the same results. UW-M has most of the costly equipment available to digitize almost anything, and I have the software at home, so we didn't need any grants or funding to do this, making time our only investment.

It gave me great satisfaction participating in this group effort and spending time to accomplish something that benefits both ourselves and others.

Fee-exempt Camping at National Forest Campgrounds

Through an agreement between participating GLIFWC member bands and the U.S. Forest Service, tribal members exercising treaty rights may camp for free and without length of stay restrictions for most campgrounds in the **Chequamegon-Nicolet, Ottawa, Hiawatha, and Huron-Manistee National Forests**.

Member bands that have ratified the agreement include Bad River, Bay Mills, Keweenaw Bay, Lac du Flambeau, Lac Vieux Desert, Mille Lacs, Red Cliff, and Sokaogon (Mole Lake). Member bands that have not yet ratified the agreement include Lac Courte Oreilles and St. Croix.

Some fee-exempt campgrounds still maintain length of stay restrictions between June 15 and August 15. The Forest Service states that these campgrounds experience high visitation rates during these summer months. This provision will be periodically reviewed to ensure that these restrictions are not interfering with the exercise of treaty rights.

In addition, some campgrounds operated by concessionaires will not have fee or length of stay exemptions until the solicitation and awarding of new concessionaire contracts. Expiration dates for the existing contracts will continue until 2009.

For fee-exempt camping in NATIONAL FOREST campgrounds you must:

1. Be a member of a band that has ratified the Tribal/USFS Campground Agreement.
2. From your tribal conservation department or other person designated by your band, obtain a tribal camping permit, **the list of fee-exempt campgrounds, and the booklet entitled *Regulations Summary: National Forest Treaty Gathering and Camping***.
3. Follow the camping registration procedures at the campground. Generally, this involves providing information requested on a registration form or envelope.
   a. Indicate the number of days that you plan on camping on both the tribal camping permit and on the campground registration form.
   b. Instead of paying a fee, give the camping permit to the campground registration personnel or place the permit in the envelope.
4. Camp only at the campsite for which you have registered.

Have a berrylicious summer season

By Sue Erickson, Staff Writer

Odanah, Wis.—It's almost time to grab those gathering baskets off their hooks and head-out to the woods or fields in search of berries. Nature's own special sweet treats—wild berries—will soon be available for picking. Tasty and nutritious, berries have long been used in Native America as food and medicine, with the fruit as well as leaves and roots of some plants used for medicinal teas.

Rich in vitamin C as well as a host of other nutrients, berries lend themselves to a variety of preparations—inclusions in breads, salads, hot dishes, dried jerkies, slushes, smoothies, cake and pies. This is not to forget the fun of eating them fresh and raw as they are picked!

Years ago, Ojibwe people would dry many of the berries and store them in birch bark containers (makak) for use during the winter, according to Frances Densmore in **How Indians Use Wild Plants for Food, Medicine & Crafts**. Densmore also says berries were sometimes crushed and formed into small cakes, then dried for storage. Today, we have multiple options to include berries in a year-round diet. We can enjoy them fresh, frozen, canned, or dried. So, when you're picking, gather some extras for later enjoyment.

(You will notice that the Ojibwe names for berries all end in "min" which indicates it is a berry.)

Gozigwaakomin (heavy blossoming berries)Ñ uneberries

One of spring's first berries on the northern landscape is the juneberry. However, don't be fooled by the name. In the South this sweet berry can be found in early June, but in the North, they are more likely to ripen in early July. Juneberries are also known as serviceberries or shadbush. Initially the berry is bright red, but ripens to a dark blue, similar in look to a blueberry.

Juneberry trees have an ash-gray to blackish colored bark which is slightly furrowed. They have about two (2) inch leaves that are finely-toothed and appear alternately on the branch. In May they produce five-petaled white flowers, which appear alternately along a stalk, making a heavy flower cluster, which is referred to in the juneberry's Ojibwe name, goziwaakomin.

Juneberry trees or bushes are found in many places such as river banks, along lakes and wetlands. Sometimes they grow at the edge of woods among other trees, so they can be difficult to find. However, they are also one of the first white-blossomed trees to bloom in the spring. So, it helps to take note where you see them blooming—that is if you plan to acquire a basket of juneberries later in the season.

Great additions to pancakes and muffins, juneberries also make dynamite pies and can be cooked with a little maple syrup and eaten as is or used as a topping.

According to Dan Moerman in **Native American Ethnobotany**, juneberries have been used by Native Americans as a woman's medicine, and the bark was also used in a decoction for stomach problems and dysentery.

(www.wildmanstevebrill.com/Plants.Folder/Juneberries.html.)

Gozigwaakomin.

Ode'imin.

Ode'imin (heart berry)—Strawberries

In the Ojibwe calendar the month of June is called ode'imini-giizis or strawberry picking moon. Wild strawberries are another early berry, small and sweet and traditionally an important food and medicine for many Native American people, including the Ojibwe.

Wild strawberries can be found in meadows, along streams and in moist forest soil, from low valleys to the timberline. Low lying, the wild strawberry has three, small, toothed leaves and showcases a five-petal white flower. The strawberry spreads by runners. The berry is usually hidden under the leaves, tiny, but sweet and succulent. What it lacks in size in comparison to the mammoth cultivated strawberries found in stores, it makes up for in taste. The strawberry is the only fruit with its seeds on the outside.

Before anyone knew about the benefits of vitamin C, Native Americans realized the strawberry was helpful in preventing colds as well as treating heart conditions. Some say that the Ojibwe name, which means heart berry, refers to its use in treating heart ailments rather than it's heartlike appearance.

In fact the plant has had multiple healing uses. A decoction of strawberries and water was used to relieve inflamed eyes, and strawberry juice was squeezed into sores and on sunburn for its soothing effect. Strawberries were also mashed into a paste to remove tartar and clean teeth and used to relieve toothaches.

(Information obtained from the Kootenai National Forest website and University of Illinois website, Strawberries & More)

Miskomin (red berry)—Wild raspberry

Flowering in the northwoods from late June to early July, miskomin bushes stand about five to six feet high. Watch out for their long prickly branches. They can be found in stream banks, in open, moist or dry woods and on rocky mountain slopes. They have alternating leaves on the branches, each leaf composed of three to five leaflets. They produce nodding white flowers where the fruit will grow.

The wild raspberry is one of several berries in the Rubus species. There is also a black raspberry native to North America but which appears mostly in the east.

Actually, the color of the raspberry can vary from nearly white through to pink, red, purple. When a raspberry is picked, it slides off its receptacle when ripe, leaving a hollow berry.

Raspberries are known to have many nutritional, medicinal and practical uses. For one they are a valuable source of vitamin C, potassium, niacin, riboflavin, and dietary fiber. Their juice is said to be good for the heart, and the leaves and roots have long been used for their beneficial effects during childbirth and to prevent miscarriages. They have also been used to treat tonsillitis as a gargle and as a poultice to treat sores and burns. Leaves are generally dried and stored for later use. Frances Densmore notes that Ojibwe used the root to treat digestive problems.

Wild raspberries are probably most enjoyed simply eaten out of hand, but they also make great pies and jams.

The roots are also edible when cooked and boiled extensively; whereas young shoots can be peeled and eaten raw or cooked like asparagus. These are harvested young and tender as they first emerge from the ground. Tea made from dried raspberry leaves is said to be good, as is a tea of blended raspberry and blackberry leaves. Other uses recorded for the raspberry include a bluish-purple die made from the fruit and a facemask made from the fruit to soothe reddened skin.

(Information obtained from websites: www.montana.plant-life.org/species/rubus_idae.htm; www.innvista.com/health/foods/fruits/raspberry.htm)

Strawberries, raw

Nutrition Facts

Serving Size 1 cup, whole 144g (144 g)
Servings per container 1

Amount Per Serving	
Calories 46	Calories from Fat 4
	% Daily Value*
Total Fat 0g	1%
Saturated Fat 0g	0%
Trans Fat	
Cholesterol 0mg	0%
Sodium 1mg	0%
Total Carbohydrate 11g	4%
Dietary Fiber 3g	12%
Sugars 7g	
Protein 1g	
Vitamin A 0% • Vitamin C	141%
Calcium 2% • Iron	3%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

© www.NutritionData.com

Raspberries, raw

Nutrition Facts

Serving Size 1 cup 123g (123 g)
Servings per container 1

Amount Per Serving	
Calories 64	Calories from Fat 7
	% Daily Value*
Total Fat 1g	1%
Saturated Fat 0g	0%
Trans Fat	
Cholesterol 0mg	0%
Sodium 1mg	0%
Total Carbohydrate 15g	5%
Dietary Fiber 8g	32%
Sugars 5g	
Protein 1g	
Vitamin A 1% • Vitamin C	54%
Calcium 3% • Iron	5%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

© www.NutritionData.com

Enjoy the fruits all year long

O-day-min-nug (Strawberries)

The next morning he [Waynaboozhoo] awoke to the singing of birds. The birds were returning from their winter home in the South. They were returning with the seeds of life just as they did when the Earth was first created. They were reenacting their original instructions.

Waynaboozhoo looked around him and was surprised to see red berries growing here and there on the ground. He recognized them as the O-day-min-nug (heart berries or strawberries) that Nokomis once told him about. It was said that they actually resembled the human heart in shape, structure and color.

Just as the O-day-min was conected to the strawberry plant by a vast system of leaves, runners, and roots, so was the heart connected to all the organs and parts of the human body. The heart was at the center of the human body.

Nokomis had told him that O-day-min was the last to bloom and the first to ripen of all the berries. The O-day-min-nug became ripe just after the birds had returned from the South.

Later, the Anishinabe would hold their spring ceremonies with the ripening of the O-day-min-nug. Nokomis had told him that the O-day-min was a strong medicine plant. It could grow near the snow at the tops of the mountains as well as in the low valleys.

The roots of the O-day-min could be taken just before it became ripe and eaten to purify a person's blood. Waynaboozhoo realized that in order for the work of medicines to be complete, healing had to take place not only in the physical sense but in a spiritual sense as well. The body and mind had to be treated together because they represented the duality of all things.

The O-day-min was certainly evidence of this harmony that exists within the heartbeat of the Creation.

—Excerpted from the classic Ojibwe book,
The Mishomis Book by Edward Benton-Banai

Miskomin.

Odatagaagomin—Blackberry

Usually ready for picking in August, blackberries make a juicy treat. Like the raspberry, they are a bramble bush (thorny) and of the Rubus species

If you are seeking blackberries for pies, jams, syrups or simply for munching, check in thickets, along roadsides or the trail edges, in fields, on mountains, in young woodlands. The berries are produced on tall, arching canes that host some nasty thorns. So be sure to wear long sleeves and pants when after blackberries. The canes have a way of grabbing you while in the process of picking.

Dewberries are a relative of blackberries also, but they trail on the ground and usually ripen earlier.

The blackberry produces white flowers with five petals that drape from the canes. The leaves are composed of three to seven leaflets. The canes can either be trailing on the ground or stand up to eight feet in height.

The berries, which ripen to a deep purplish-black are aggregate, or composed of many tiny, round, shiny berries surrounding a firm core. Inside each of the tiny, clustered berries is a seed. These tiny individual berries, called drupelets, provide extra skin, seeds and pectin with dietary fiber value to the nutritional benefits of blackberries,which are one of the highest fiber content plants.

Blackberries are rich in antioxidant vitamins A and C and also a good source of dietary fiber.

As is pointed out in **Littleflower's Medicine of North American Plants**, the leaf and bark of blackberry root contain tannin, which has been used medicinally for centuries. The young leaves are also made into a tonic "to tone the stomach and intestines."

The Ojibwe also used the blackberry root along with the inner bark of bur oak for a decoction treating the lungs. The canes were boiled to make a tea used as a

Odatagaagomin.

diuretic, and a tea from the roots was used to cure diarrhea and to prevent abortion. Other tribes, such as the Menomonie, used an infusion from the blackberry root to treat wounds.

(Information obtained from Littleflower's Medicine of North American Plants; www.geocities.com/RainForest/Vines/7048/black.html and www.wildmanstevebrill.com/Plants.Folder/Blackberries.html)

AniibiiminÑighbush Cranberry

(The Ojibwe name may refer to growing on a bank near water.)

One of the last berries of the summer is the cranberry, actually maturing in the fall. The highbush cranberry is not truly a cranberry, but a member of the honeysuckle family. However, its fruit closely resembles that of the low bush cranberry in appearance and taste.

The wild highbush cranberry is often found in bogs. The round bush grows from eight to fifteen feet tall with dense arching stems. The dark green leaves grow opposite on the stems. With three lobes, the leaf looks somewhat similar to a small maple leaf. Highbush cranberry leaves will turn to a scarlet color in the fall. In June the bush is decorated with clusters of showy white flowers. Interestingly there is a ring of larger flowers that circles the cluster of small flowers within.

The bright red berries are rich in Vitamin C and can be eaten either raw or cooked. The colorful berries remain on the shrub all winter long and serve as a source of food for birds and mammals. The berries are tart and best picked slightly under ripe and after the first frost. They make excellent jams, sauces and condiments for meat.

Other uses for the highbush cranberry have historically been decoctions for women's complaints such as a fallen uterus. An infusion of the root has also been used as a laxative, to treat stomach cramps, and also used to induced vomiting. It is good to be aware that large quantities of the fruit can cause vomiting and diarrhea. A preparation of the fruit was also used to treat swollen glands.

(Information derived from University of Maine Cooperative Extension, Littleflower's "The medicine of North American Plants" at www.geocites.com/littleflowers_medicine/_plants/high_bush_cranberry.htm and www.gardenline.usakica/fruit/cranberry.html.)

For further discussion and consideration of other berries an interesting read is an article by Katsi Cook, Akwesasne Mohawk, entitled ÒBerry Plants for WomenÕs Nutrition & Medicine,Ó published in Indigenous Woman, Volume One, No. IV, a publication of the Indigenous WomenÕs Network.

Aniibiimin

Protecting Anishinaabe from mercury consumption

(Continued from page 4)

walleye contaminated with methyl mercury." What that means is we wanted the mercury maps to emphasize the opportunity to harvest and eat ogaa while limiting mercury intake to levels that are considered safe.

Along with updating the maps with the most current science on health effects of mercury, the STAR grant project also incorporated data on tribal fish consumption and mercury concentrations in ogaa tissue into the maps, expanded the maps into the 1837 ceded territory of Minnesota and the 1842 ceded territory of Michigan, involved tribal members in the process to critique and revise the maps, conducted an "intervention," or effort to influence harvest and consumption behavior while maintaining cultural lifeways, and evaluated the success of the intervention with a series of surveys.

Results from the work of the STAR grant have been published in two peer-reviewed journal articles and are summarized in this article. A paper in Risk Analysis (DeWeese et al. 2009, Volume 29, Number 5, pages 729-742) describes results of the mercury map updating process and intervention program.

A paper in *Integrated Environmental Assessment and Management* (Madsen et al. 2008, Volume 4, Number 1, pages 118-124) describes specific methods used in developing the mercury maps. Both of these papers are available by contacting Neil Kmiecik at GLIFWC. An example of the updated versions of the mercury maps is shown in Figure 2 and is available on GLIFWC's website *(www.glifwc.org/biology/inlandfish/mercury/mercury.html)*.

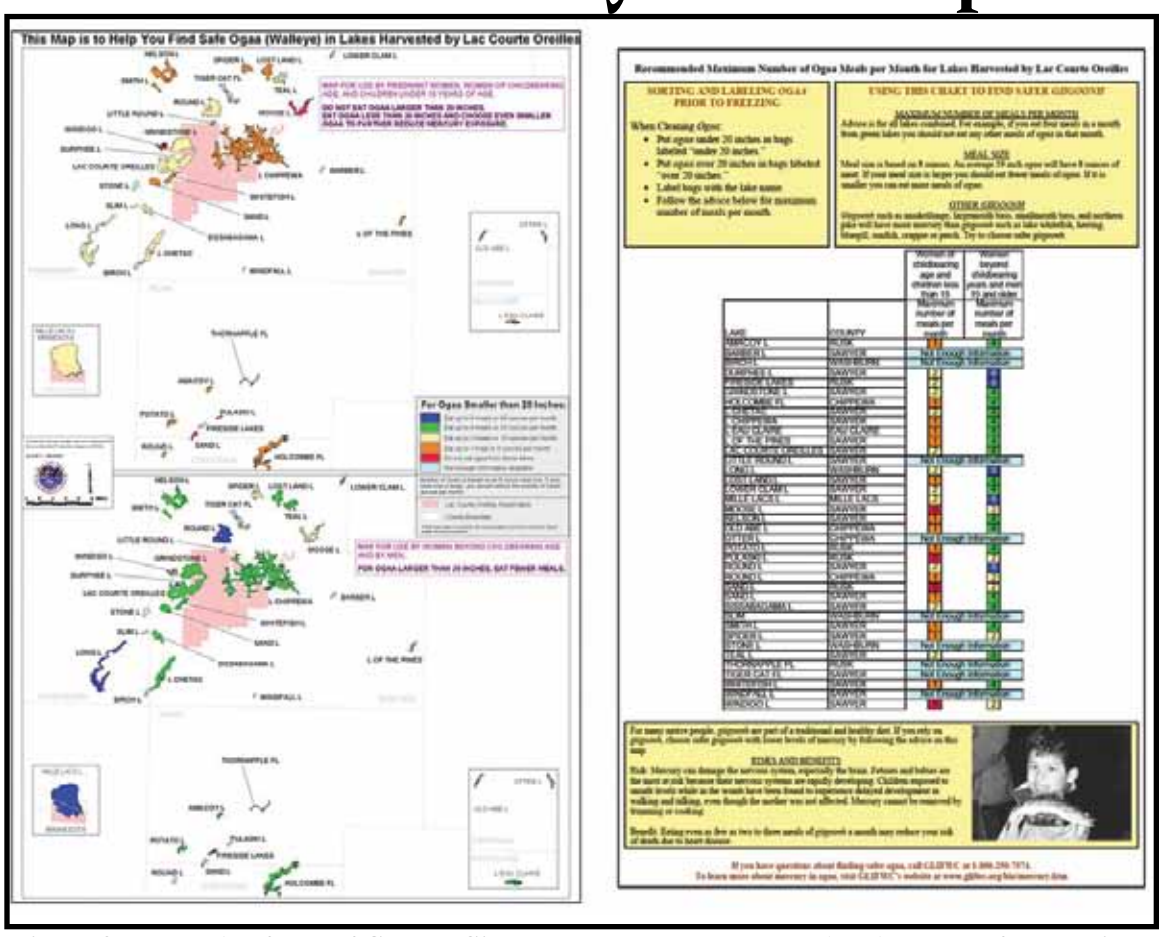


Figure 2. Example of one of GLIFWC's current mercury maps updated as part of an Environmental Protection Agency STAR grant (DeWeese et al. 2009).

Did our intervention efforts work?

Not only were we interested in talking to tribal leaders, fish harvesters, women of childbearing age, children, elders, and the broader tribal population about the new mercury maps and how to use them, we were also interested in whether we were actually reaching these folks and having an effect on the choices they were making to reduce risk when harvesting and consuming fish.

We conducted phone surveys of tribal harvesters in Wisconsin, Michigan, and Minnesota and women of childbearing age in Wisconsin before and after we conducted our intervention efforts.

The results showed significant increases occurred in the percentage of survey participants who indicated awareness of advisory maps among Wisconsin harvesters (increase from 60% to 77%), Michigan and Minnesota harvesters (29% to 51%), and women of childbearing age in Wisconsin (40% to 87%). Higher overall rates of awareness in Wisconsin were attributed to tribal members in this state having been exposed to the maps for many years, while in Michigan and Minnesota they had not been.

A significant increase in preference for smaller ogaa occurred among tribal harvesters in Wisconsin (41% to 72%) and tribal harvesters in Michigan and Minnesota (49% to 71%), although not among women of childbearing age. This is encouraging because smaller ogaa typically have lower mercury concentrations than larger ogaa.

Overall, the surveys showed that concern and awareness about mercury in ogaa increased following intervention efforts. Some behavioral changes, such as a preference for smaller ogaa and labeling freezer bags with lake name and ogaa size occurred. However, a lack of response of women of childbearing age to behavioral interventions and an overall low amount of survey respondents labeling freezer bags are indications of areas where new approaches and further sustained efforts may be necessary to affect harvest and consumption behavior.

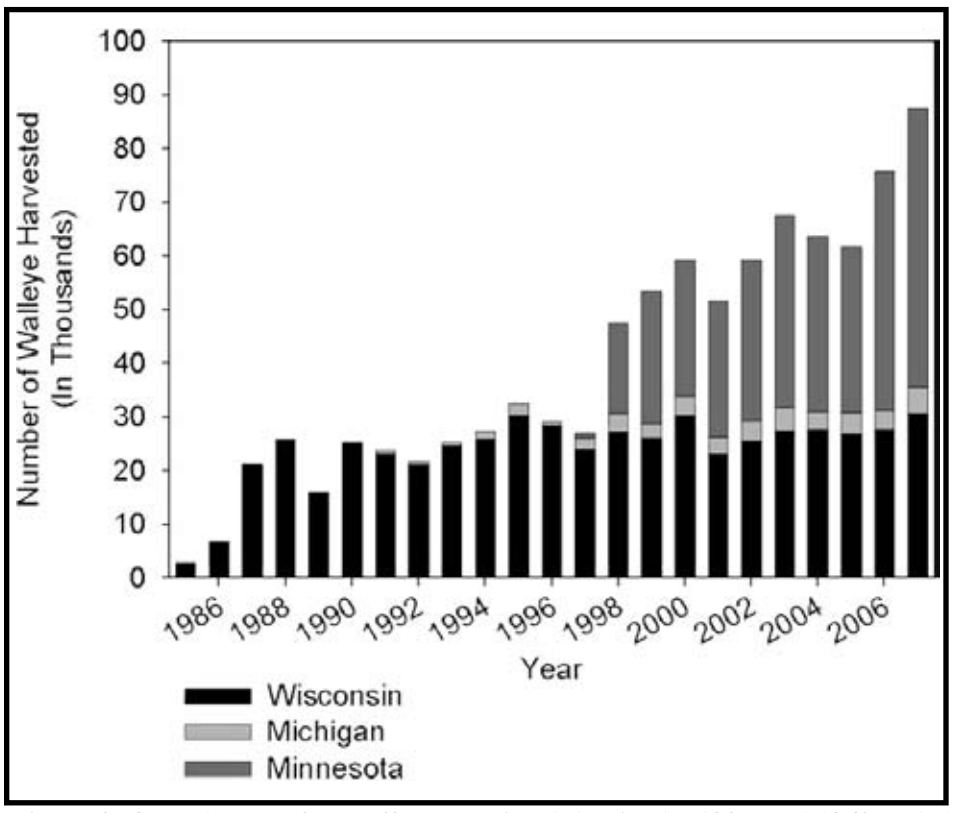


Figure 3. Ogaa harvest from off-reservation lakes in the 1837 and 1842 ceded territories. Wisconsin data from 1985 to 2007. Michigan data from 1991 to 2007. Minnesota data from 1997 to 2007 (DeWeese et al. 2009).

Have our efforts adversely affected harvest and consumption of ogaa?

This is a really important question because the goal of our mercury map program is to inform tribal members about mercury in ogaa so they can take steps to protect their health while continuing to harvest and eat ogaa.

It's important to make people aware of the potential health effects of mercury in fish, but also to reassure them that the benefits of harvesting and consuming ogaa can far outweigh the risks if steps such as those described in the mercury maps are followed. Overall, ogaa harvest has increased, providing an indication that the mercury maps have not had a negative impact on harvest and presumably consumption of ogaa (Figure 3).

Estimating mercury exposure to tribal members

GLIFWC has large databases on ogaa harvest, consumption, and mercury levels, which allowed us to use a statistical tool called "probabilistic risk analysis" to get an estimate of how much mercury tribal members could be exposed to by eating harvested ogaa over a lifetime. The tool allowed us to gain key insight into which age groups of the tribal population may be at greatest risk from mercury exposure and if the advice in our mercury maps is appropriately targeted.

The analysis was conducted as a final piece to the STAR grant and used risk assessment software called "LifeLine," along with data from GLIFWC's fish consumption study, ogaa mercury database, and ogaa harvest database to create a simulated population of individuals whose diet is harvested ogaa.

By knowing how often our population is eating harvested ogaa (fish consumption study data) and how much mercury is in the harvested ogaa (combination of GLIFWC mercury and ogaa harvest databases), we were able to estimate mercury exposure to different ages of children (ages 1-5 and 6-14), women of childbearing age (ages 15-45) and "other," which includes men over age 15 and women beyond childbearing age.

We looked at different scenarios where our population ate ogaa regardless of mercury map color code, ate only ogaa from lakes colored red, ate no ogaa from lakes color coded red, and ate different sizes of ogaa.

The results indicate that mercury exposure risk goes down when smaller ogaa are eaten and ogaa from red lakes are avoided. They also indicate that greatest risks from mercury exposure occur among children who may consume large ogaa from lakes that contain heavily contaminated fish (i.e. GLIFWC's red lakes).

While the results are simulations and don't represent actual exposures to mercury, they do provide GLIFWC with important information about whether its mercury maps are targeting the right population groups and giving tribal members appropriate information that can protect their health.

The results of our study indicate that GLIFWC's mercury maps are appropriately targeted and providing tribal members with information that can protect them from health effects of mercury in ogaa while allowing them to continue harvesting and eating ogaa. Results from the study have been submitted for publication.

Finally, *chi miigwech* to everyone who has been involved with GLIFWC's mercury program, especially tribal members and leaders, Jeff Foran, and Adam DeWeese. GLIFWC's mercury program continues to get better with age and is a testament to the hard work and dedication of many people.

It's important to make people aware of the potential health effects of mercury in fish, but also to reassure them that the benefits of harvesting and consuming ogaa can far outweigh the risks if steps such as those described in the mercury maps are followed.

Healing Circle Run/Walk

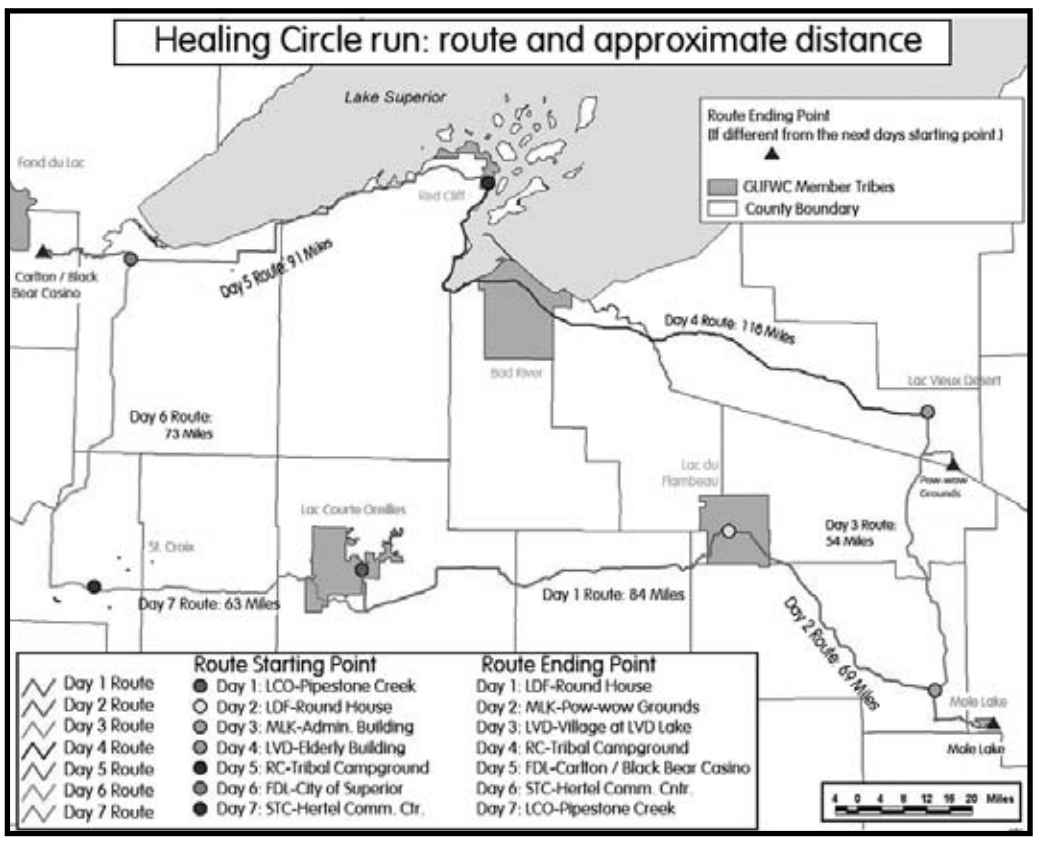
July 11-17, 2009

The 2009 Healing Circle Run/Walk is intended to be a prayer for healing. During the 2001 Healing Journey Run, participants thought of a teaching on healing—"For a nation to heal, it must begin with the individual. As a person heals, then that person can help heal his/her family. As families begin to heal, they can help heal their community. As communities heal, they can help the nation heal. As nations heal, they can help Akii (the earth), our plant and animal relatives to heal."

The 2009 Healing Circle Run/Walk is an opportunity for people to come together to pray for healing for themselves, their families, their communities, their nation, Akii, and our relatives.

The 2009 "Healing Circle" Run/Walk will occur from July 11-17, 2009. The run/walk will connect eight Ojibwe reservations in northern Wisconsin, Michigan, and Minnesota (see map) starting at the Lac Courte Oreilles Reservation and ending at Lac du Flambeau on July 11 (Day 1), then ending at Mole Lake on July 12 (Day 2), at Lac Vieux Desert on July 13 (Day 3), at Bad River/Red Cliff on July 14 (Day 4), at Fond du Lac/ Black Bear Casino on July 15 (Day 5), at St. Croix on July 16 (Day 6), and at Lac Courte Oreilles on July 17 (Day 7).

For more information or if you are interested in participating as a core runner, or having a group of runners from your reservation participate, please contact Rose Wilmer, Sue Nichols, or Neil Kmiecik at GLIFWC at (715) 682-6619. All participants must assume personal liability, as well as responsibility for their own transportation and expenses.



Educational Resources

Indinawemaaganidog (All My Relations)

This interactive Anishinaabe language CD identifies the names of animals, birds, fish, reptiles, insects, and plants. The CD utilizes voice links to allow the user to hear the name while viewing photographs of the species. In addition, traditional knowledge is passed along through stories in the Anishinaabe language with partial translation. This is a resource that both beginning and advanced language students can use to increase their knowledge of Anishinaabemowin—$12.00.

Gidakiiminaan (Our Earth) atlas

The Gidakiiminaan atlas is an 80-page atlas that identifies the Anishinaabe (Ojibwe) names of lakes, rivers, islands, bays, and other locations in northern Wisconsin, the Upper Peninsula of Michigan, and east central Minnesota. Some of these are the pre-European names. Included in the atlas is a translation of the original name and a table that identifies the modern location name with the Anishinaabe name—$12.00.

Gidakiiminaan (Our Earth)

The Gidakiiminaan CD is an interactive CD that identifies the Anishinaabe (Ojibwe) name of lakes, river, islands, bays, and other locations within northern Wisconsin, the Upper Peninsula of Michigan, and east central Minnesota, some of these are the pre-European names. The CD incorporates voice links to the names so the user will be able to hear how they are pronounced and provides a translation of the Anishinaabe names—$12.00.

Ojibwe Journeys: Treaties, Sandy Lake & the Waabanong Run

This book explores key events in the history of Ojibwe people in the greater Lake Superior region. Soon after Ojibwe leaders negotiated treaties with the United States in the mid-1800s, tribal members embarked on a journey to maintain their reserved rights to natural resources. Through traditions that include distance running, spiritual living, and a growing legal prowess, Ojibwe people have struggled against formidable governments and anti-Indian groups. Includes rare historical photos, color images and maps, an explanation of treaty rights fundamentals, and an intimate look into the lives of some Ojibwe people today—$16.00.

The Sandy Lake Tragedy DVD
Mikwendaagoziwag: They are Remembered

A 28-minute DVD tells the story of the 1850 Sandy Lake Tragedy. The story provides significant historical background for the event at Sandy Lake, Minnesota, which claimed about 400 Ojibwe lives as part of a conspiracy to provoke Ojibwe bands to move from Wisconsin into Minnesota Territory. The story dramatically portrays the tragedy as it unfolded in the 1850s and continues to depict Chief Buffalo's heroic trip to Washington, DC in protest of the 1850 Removal Order, a trip also in response to the tragic events at Sandy Lake and which resulted in the establishment of permanent reservations—$12.00.

Plants Used by the Great Lakes Ojibwa

This book includes a brief description of 384 plant species and the plant's use, a reproduced line drawing, and a map showing approximately where each plant is distributed within the ceded territories. These plants were of great importance to the Anishinaabe people. 440 pages—$20.00

Non-Medicinal Plants Used by the Great Lakes Ojibwe

This CD is the result of meetings with elders from GLIFWC's 11 member tribes. The CD identifies non-medicinal uses of plants gathered by the Great Lakes Ojibwe, such as wild bergamont used as a hair rinse and conditioner, elderberry juice used as lipstick when mixed with tallow, or cattail used as a food. CD includes the compete database of 585 pages and summaries that identify specific uses of plants. It also includes transcriptions of meetings with the elders, a seasonal harvest calendar, and a plant listing that includes links to photographs of most plants.—$12.00

Name:_____

Company/Organization:_____

Address:_____

City:_____ State: _____ Zip: _____

Daytime Telephone Number: (_____)_____

email:_____ fax #: (_____)_____

Item	Unit Price	Quantity	Total
Gidakiiminaan (Our Earth) atlas	$12.00	_____	_____
Gidakiiminaan CD	$12.00	_____	_____
Gidakiiminaan atlas & CD combination	$18.00	_____	_____
Indinawemaaganidog (All My Relations) Anishinaabe language CD	$12.00	_____	_____
Ojibwe Journeys: Treaties, Sandy Lake & the Waabanong Run	$16.00	_____	_____
The Sandy Lake Tragedy (DVD)	$12.00	_____	_____
Ojibwe Journeys/Sandy Lake combination	$25.00		
Plants Used by the Great Lakes Ojibwa	$20.00	_____	_____
Non-Medicinal Plants Used by the Great Lakes Ojibwe	$12.00	_____	_____

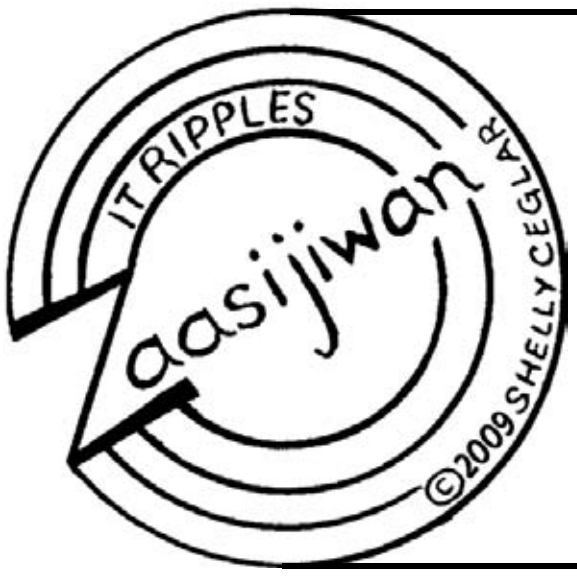
Merchandise Total $_____

Make checks payable to:
Great Lakes Indian Fish & Wildlife Commission (GLIFWC)
P.O. Box 9, Odanah, WI 54861 or *email pio@glifwc.org*;

GLIFWC accepts purchase orders, personal checks, cashiers checks and money orders. There are no shipping or handling fees for orders shipped within the United States sent via USPS Media Mail. Materials and shipping charges are to be paid in advance for orders shipped out of the US. All orders must be paid in US currency.

Mikwendaagoziwag: They are remembered
Sandy Lake Ceremonies set for October 1

Mikwendaagoziwag ceremonies and a feast will follow the 10:00 a.m. Voigt Intertribal Task Force (VITF) meeting at the Sandy Lake Recreational Site. The traditional paddle across Sandy Lake will take place during the VITF meeting. The public is invited to attend the ceremonies, feast and participate in the paddle. For more information contact GLIFWC at (715) 682-6619.



Niibinl t is Summer

Boozhoo, aaniin niijiiwag. Gii-kimiwan biijinaago, gizhaate noongom. Niwii-kikaadiz. Anishinaabeg minik aakoziwag. Ziinzibaakwadwaapinewag. Niningide'ewag. Gaye dash minikwewaapinewin dash odadisigwaniwinan. Aaniin waa-izhichigeyang? Gidaa-ozhitoomin Anishinaabe izhitwaawinan. Niwii-wiidokaagemin. Giwii-mino-izhi-ayaamin. Gimino-izhi-ayaa na? Endaso-giizhik ina gibimose? Giwii-wiisin naawaj. Izhaan! Gidizhaa agwajiing. Mii'iw.

(Hello, greetings my friends. It rained yesterday, it is sunny today. I want to be serious. Native people so many they are sick. They have diabetes. They have heart attacks, also and drinking disease and addictions. What will we do? We should do Indian traditions. We all want to help. We all want to be healthy. Are you healthy? Everyday you go walking? You want to eat less. Go! You go outside. That's all.)

Bezhig1

OJIBWEMOWIN (OjibweL anguage)

Doublevo welsys temo fwri tingOj ibwemowin.
Lo ngvo wels:A A,E,I I,OO
Onzaama si nf ather
Miigwecha si n jay
Aaniina si ns een
Manoomina si nm oon

Sho rtV owels:A ,I ,O
Dasha si n about
Izhaana si nt in
Aakozia si n only

Ag lottalst opi sa
vo icelessna salso und
a si nA a w.

Re spectfullye nlist
a ne lderf orhe lp
i np ronunciation
a ndd ialect
d ifferences.

VAI s

Verbs—Animate—Intransitive
These are She/He verbs. They do not take a direct object. Learn the root word, then speech patterns.

Maajitaa.—S/he begins to do it.
Nimaajitaa.—**I** begin to do it.
Gimaajitaa.—**You** begin to do it.
Anji-bimaadizi.—S/he changes life.
Nindanji-bimaadizimin.—**We** change.
Gidanji-bimaadizimin.—**We** all change.
Mino-izhi-ayaa.—S/he is healthy.
Gimino-izhi-ayaam.—**You all** are healthy
Mino-izhi-ayaawag.—**They** are healthy.

Niizh2

Circlet he10u nderlinedOjibwe wor dsin t he letterm aze.(Translationsbe low)

A. Boozhoo. Aaniin ezhinikaazoyan? (name) nindizhinikaaz.

B. Aaniindi wenjibaayan? Gaawaabaabiganikaag nindonjibaa.

C. Aaniin ezhi-ayaayan? Nimino-ayaa. Giin dash?

D. Aaniindi ezhaayan? Ningiiwe.

E. Aakozi nindede.
Gii-mamaajide`eshkaa.

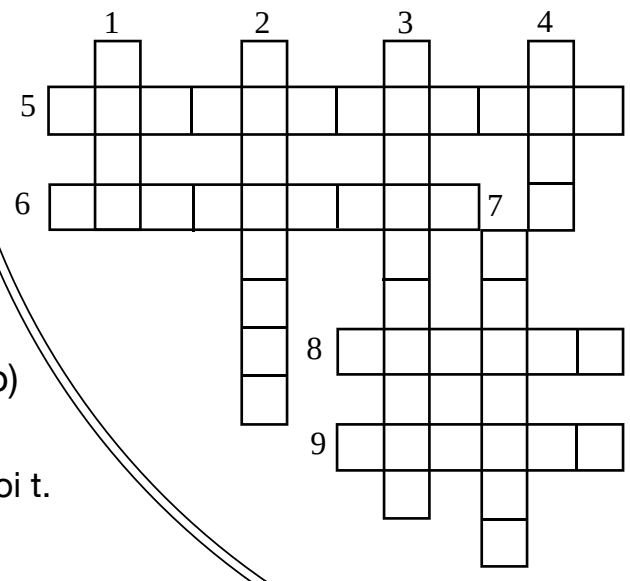
F. Gii-saagaswaa onzaam, endaso-giizkik.

G. Nimbooni-zaagaswaa. Giin Boonitaan!
Howah! Miigwech!

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

Niswi3

IKIDOWIN ODAMINOWIN (wordpla y)



Down:
1.g ood(preverb)
2. Youwa lk.
3. Youb egint od oi t.
4.a lso
7.S /hei so bese.

Across:
5.S /hei si ng oodhe alth.
6. Youq uitso mething!
7.S/he p lants, gardens.
9.H owo ri nwh at way? Greetings.

Niiwin-4

VAI sS peechP atterns

Zaasaabikizige.—S/he is frying food.
Gaawiin zaasaabikizigesii.—S/he is **not** frying.
Gego zaasaabikizigeken!—**Don't** fry!
Gitige.—S/he gardens. Gitigen!—Garden!
Gitige**g**!—Garden! **to more than one**.
Wiinino.—S/he is obese.
Wiinino**yan**.—**When/If you** are obese...
Wiinino**yaan**.—**When/if I** am obese...
Wiinino**d**.—If S/he is obese...
Wiinino**yaang**.—**If we** are obese
Wiinino**waad**.—**If they** are obese...

Goojitoon! Try it!
Translation below.

–yan

–yaan

–d

–waad

–g

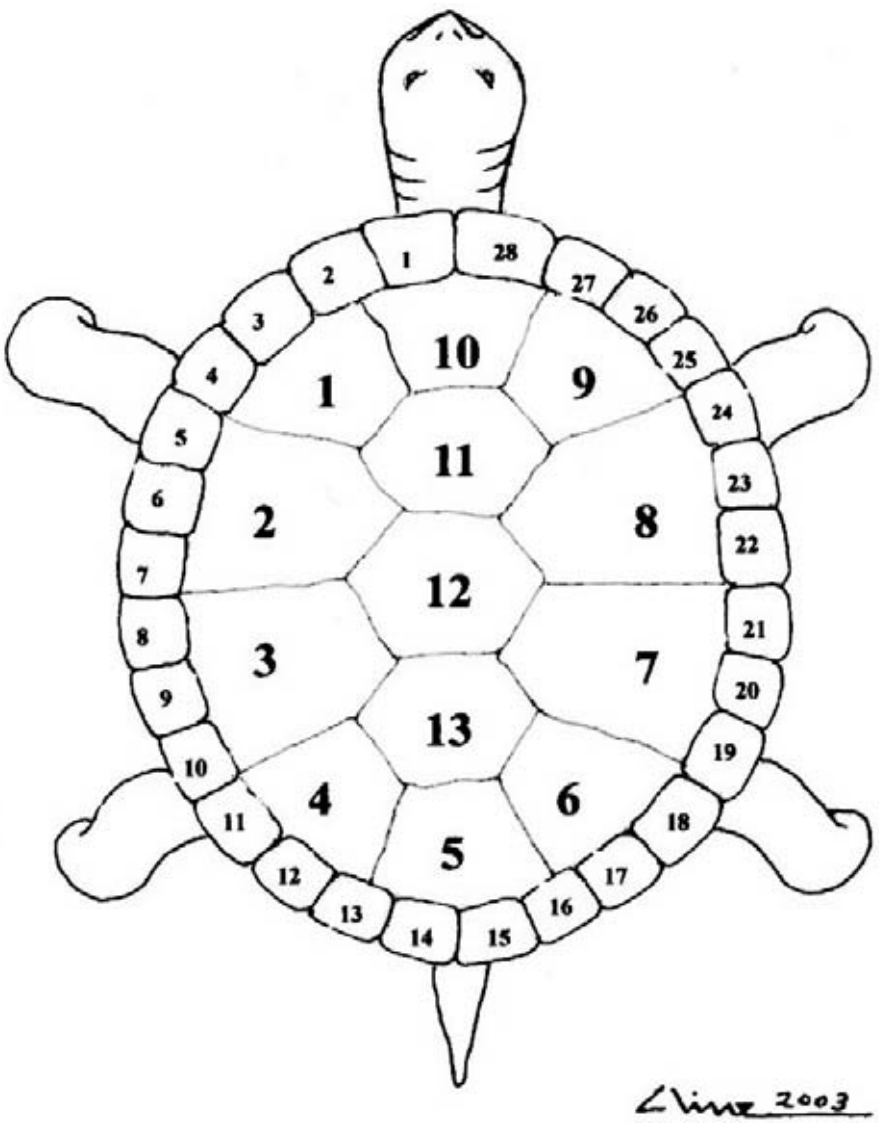
1. Anji-bimaadizi____, minwedamoog imaa.
2. Gii-wiinino____, gaawiin ningii-minwendanzii. Nimbimose.
3. Wii-pimose____, zanagad binawiigo. Niwii-mino-ayaa.
4. Maajitaa____! Anji-bimaadizi____! Noongom izigo.
5. Nishiime gii-wiinino_____, gii-anji-bimaadizi. Di-tibiwebishkige. (ditibiwebishkigan)

Translations:
Niizh2 **A.** Hello. What is your name? (name) I am called so. **B.** Where do you originate from? White Earth I originate. **C.** How thusly are you? I am good. You also? **D.** Where are you going? I am going home. **E.** He is sick, my father. He had a heart attack. **F.** He smoked too much, every day. **G.**I q uitsmo king.Y ou quit! Wow,a lright!
Niswi3 **Down:** ***1.***M ino. ***2.***G ibimose. ***3.*** Gimaajitaa. ***4.*** Gaye. ***7.*** Wiinino. ***Across: 5.*** Mino-izhi-ayaa. ***6.*** Boonitaan! ***8.*** Gitige. ***9.*** Aaniin.
Niiwin-4 ***1.*** **When they** (-waad) change their life, they will be hapy there. **2. When I** (-yaan) was fatter, I was not happy. I walk. **3. When you** walk, it is difficult at first. You will feel fine. **4.**M ysi ster **when she** was obese, she peddled. (bicycle).

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 languaget ranslation.

Thirteen Moons on a Turtles Back

Many Native Americans share the knowledge of the thirteen moons on a turtle's back. As children they are taught to examine the segments on the back of every turtle. There are thirteen large segments which represent the thirteen moons which make up the lunar year. By counting the smaller segments around the lower edge of the shell, you will find there are 28, which represents the 28 days between new moons.



Every group of Native Americans has names for the thirteen moons and there are stories to go with each new moon. The names of the moons and the stories that accompany them vary from one group to another, but each is descriptive of the season in which the new moon appears.

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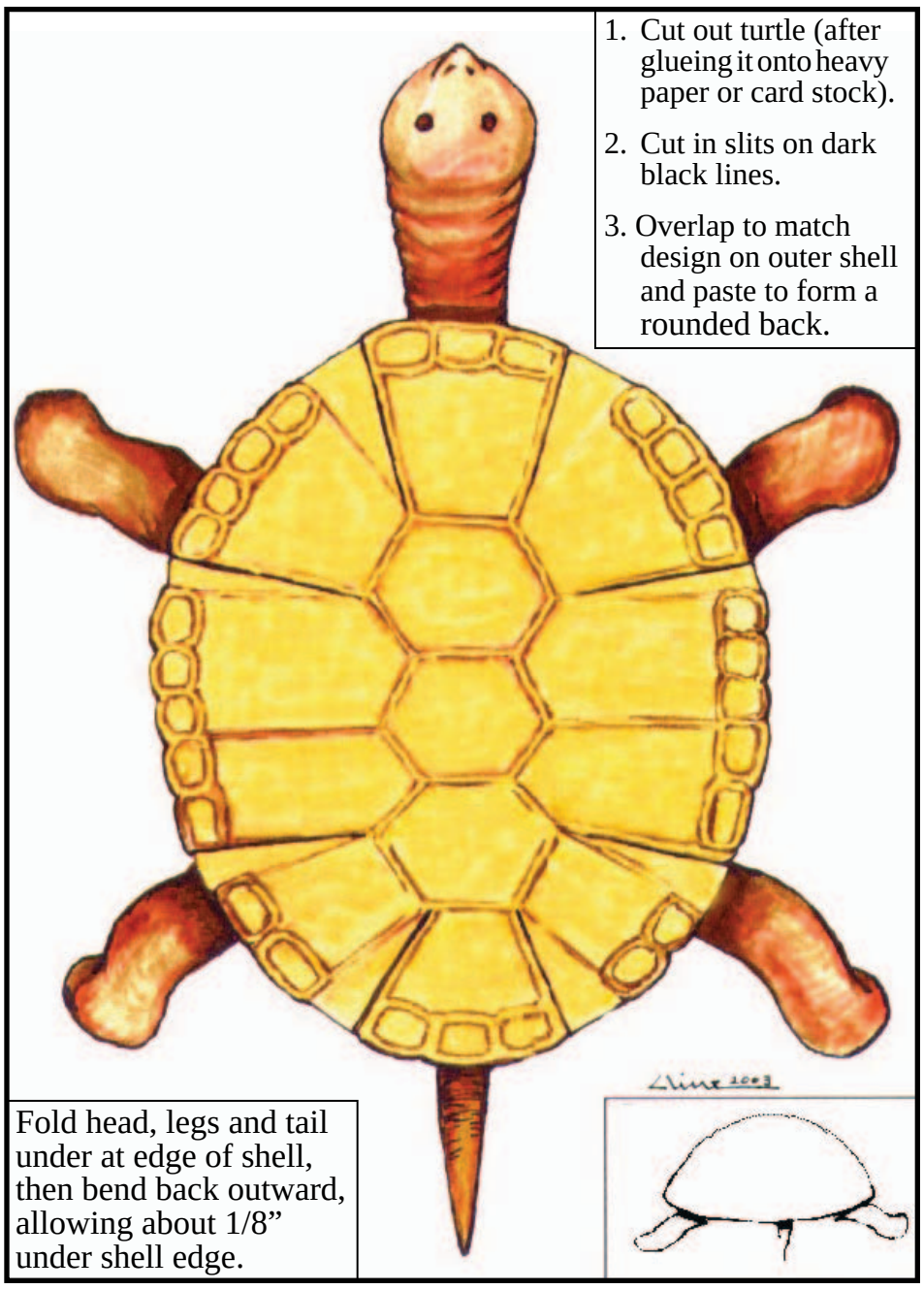
The Pilgrims and Plymouth Colony: 1620
www.rootsweb.com/~mosmd

Cut and Paste Turtle

To make your own turtle, cut out the drawing below and paste it on heavy paper or card stock. By following the directions you will have your own pet turtle showing the number of moons and the number of days between new moons.



NOTE: The information on the thirteen moons on a turtle's back is drawn from the traditions of the Pokanoket Tribe of the Wampanoag Nation. However, it must be noted that this type of lunar calendar was common to many Native American Tribes. The paperback book, ***Thirteen Moons on a Turtle's Back*** by Joseph Bruchac and Jonathan London tells the seasonal stories from thirteen different tribes.

Ojibwe moons

Ojibwe	Translation	English
gichi-manidoo-giizis	Great Spirit Moon	January
namebini-giizis	Sucker Moon	February
onaabani-giizis	Hard Crust on the Snow Moon	March
iskigamizige-giizis	Maple Sugar Moon	April
waabigwanii-giizis	Flower Moon	May
ode´imini-giizis	Time for Picking Strawberry Moon	June
aabita-niibino-giizis	Half Way Through the Summer Moon	July
manoominike-giizis	Ricing Moon	August
waatebagaa-giizis	Leaves Changing Color Moon	September
binaakwii-giizis	Falling Leaves Moon	October
gashkadino-giizis	Ice is Forming Moon	November
manidoo-giizisoons	Little Spirit Moon	December

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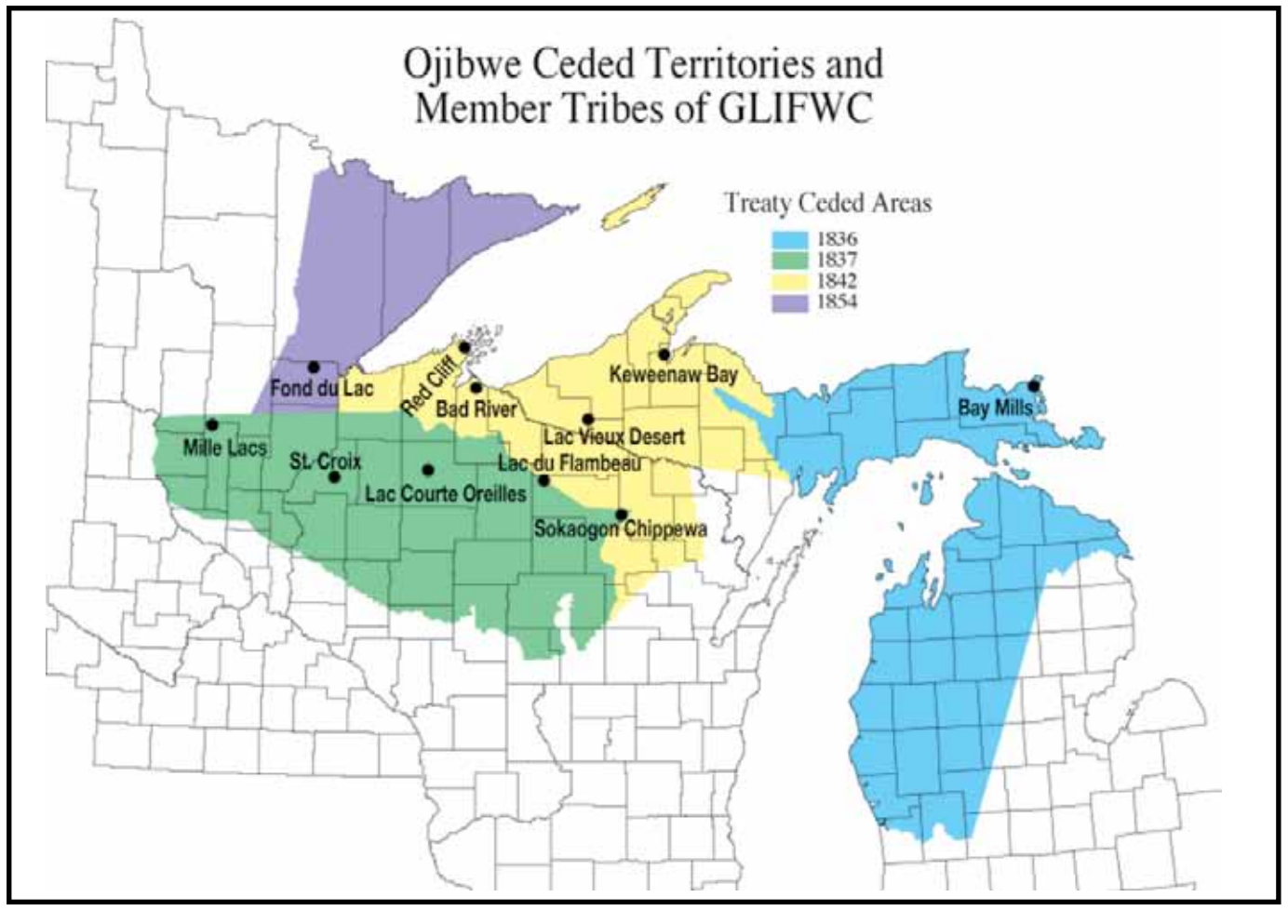
For more information see GLIFWC's website: **www.glifwc.org**.



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