

Mazina'igan

A Chronicle of the Lake Superior Ojibwe

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Tribal elk hunters find success in Lower Michigan

By Charlie Otto Rasmussen, Staff Writer

Atlanta, Mich.—A longtime treaty rights advocate harvested the first of 14 elk during an inaugural hunt under the newly minted 1836 Inland Consent Decree. Bay Mills Indian Community member Dwight Bucko Teeple bagged an impressive 6 x 6 bull during the late autumn season that included treaty hunters from five Michigan bands. Teeple drew his elk permit less than a week earlier following a lottery at Bay Mills.

“The way this hunt was conducted by the state and the tribes—we’ve come a long way,” said Teeple who pushed for widespread recognition of treaty fishing rights in the early 1970s. “It’s a neat thing to come in and see tribal biologists and state biologists working hand-in-hand.”

Grand Traverse and Little River Band wildlife staff assisted Department of Natural Resources technicians in collecting tooth and tissue samples from each elk registered by state and tribal hunters on the December 11 opener.

Wildlife officials also removed elk heads to access lymph nodes from the lower jaw and neck for bovine tuberculosis and chronic wasting disease testing. Laboratory testing has uncovered bovine tuberculosis in hundreds of white-tailed deer and a handful of elk since 1994, but the wild herds appear free of CWD.

Regardless of the serious work at hand, the Atlanta check station scene was far from grim. A local conservation club set up a hospitality table in a spacious DNR garage offering coffee, doughnuts and cookies to spectators that showed up to watch elk roll in on trailers or squashed into the bed of pick-up trucks. In between snapping photographs and projecting where animals would tip the scales,

the informal setting enabled local residents and DNR staff to mingle with tribal representatives and become better acquainted with off-reservation natural resources programs. By and large, it was a fitting complement to a season of good hunting. (See Tribal elk hunt, page 2)



Tribal and state wildlife staff worked cooperatively to collect tooth and tissue samples from each elk harvested on the December 11 season opener. The samples help biologists assess age structure and the overall health of the elk herd in Lower Michigan's northeast region. Pictured at the Atlanta, Michigan registration station with an elk cow from left: Grand Traverse Band's Hank Baily and Tom Collison with DNR Technician Keith Fisher. (Photo by COR.)

Signatory tribes to the 1836 Treaty with the United States hunted elk last December under the 2007 Consent Decree negotiated with state officials. Treaty tribes include: Bay Mills, Sault Ste. Marie Band, Grand Traverse Band and the Little River and Little Traverse Bay Bands.

Workshop focuses on wildlife diseases

Don't blame the wildlife

By Sue Erickson
Staff Writer

Odanah, Wis.—“We have met the enemy and he is us,” Bryan Richards, biologist with the National Wildlife Health

Center, Madison, pointed out, quoting the popular 1960s cartoon character Pogo the Possum, as he discussed the increasing incidence of wildlife diseases that have been noted in our recent past and the human role in the escalating numbers of infectious diseases found in

wildlife. “In the later one-third of the 20th century, there have been more diseases than previously recorded,” Richards said, emphasizing the upward trend.

Wildlife diseases, their causes, impacts and prevention, were the focus of a two-day wildlife disease workshop. Richards, along with Dr. Julie Langenberg, UW DNR chief veterinarian, provided extensive information at the Bad River Casino, Odanah, Wisconsin on Feb. 12-13. The workshop was coordinated by GLIFWC Wildlife Section Leader Dr. Jonathan Gilbert and drew nearly 40 participants from seven of GLIFWC's member bands as well as the 1854 Treaty Authority and GLIFWC.

Throughout the comprehensive session, Richards stressed the need for education and prevention. This includes early detection as well as the ability to pre-empt infectious diseases in wildlife rather than react once they have become established.

While diseases such as avian influenza, which can infect humans, have caused considerable alarm, Richards pointed out that the reaction to simply eradicate the wildlife is not one to pursue as the diseases rarely start with wildlife, but rather are a product of human activity. The workshop considered diseases infecting a wide range of wildlife including, fish, furbearers, large game, amphibians, and birds.

Causes

Richards indicated that an increasing incidence of new diseases in wildlife is occurring around the globe and is starting to have a greater impact on wildlife communities. Australia's Tasmanian devils, he noted as an example, are near extinction due to a highly infectious facial cancer.

Global travel and transportation have succeeded in importing disease along with various commodities and, unfortunately, invasive species. Increasing numbers of humans and the subsequent expansion of development continue to squeeze wildlife into smaller spaces, while simultaneously exposing them to new sources of infection and disease.

The introduction of invasive species, such as quagga and zebra mussels, which can become hosts to infectious bacteria, can also serve to sicken large numbers of wildlife that feed on them, such as fish and waterfowl.

Why are there so many emerging infectious diseases (EID)? Richards pointed to numerous causes: 1.) translocation of animals, citing as an example the relocation of raccoons infected with rabies to New England during a restoration effort, also a likely cause of the CWD outbreak in Wisconsin; 2.) game ranching with high density populations (See Wildlife, page 18)



Waawaashkeshi (deer). (Photo by Charlie Otto Rasmussen.)



Wisconsin spring hearing asks if it's time for A Wisconsin wolf season?

By Peter David
GLIFWC Wildlife Biologist

Odanah, Wis.—On April 14th, the small number of Wisconsinites who attend the Department of Natural Resources Spring Hearings will be asked an important advisory question posed by the Wisconsin Conservation Congress (see inset). Question number 29 will ask, in essence, if attendees think it is time for Wisconsin to begin preparing for a wolf season.

To me, this question raises so many others. Is the small cohort of spring hearing attendees the right group to ask? How representative are they of Wisconsinites in general? And how knowledgeable are they of wolf ecology and management? While these questions are worth pondering, they are also moot to the extent that whatever your answers to them may be, the decision has already been made to have this question on the spring hearing. The question will be asked, the responses will be tallied, and the Conservation Congress will be “advised.”

There are also questions about Question 29 itself. Is it straight-forward, or leading? It indicates that wolves have made a “dramatic” comeback in Wisconsin. I guess the return of any species which has been extirpated in the state can be dramatic—even if the population will never again approach the level at which it once occurred. It also says the wolf population



Ma'iingan.

“is predicted to continue to increase if no control methods are implemented.” This is true in the short run, but it overlooks the fact that most biologists believe this population is likely within 200-300 animals of reaching its biological carrying capacity in the state—the level where natural factors will keep the population from growing further. If we are this close, is it important to have hunters “assist” the state in keeping the population at the state population goal?

Now the questions really start to run. What is the state goal? What is it based on? Is it a good goal? Would bringing the population down to the goal really assist managers, or individuals having trouble with depredating wolves? Here at least some answers exist.

We know the state's population goal is 350 animals. We know that it was based on an estimate of “social tolerance” in the state, and that it was made at a time when the population was around 200 animals. Is it a “good” goal? That is a matter of perspective and opinion.

Some in the state feel it is too high. Many Ojibwe—who believe the ma'iingan population should be determined by natural biological factors, rather than human intolerance—feel it is too low. Most people are probably unsure.

But we are learning that there may be biological problems with a goal of 350 animals. It turns out this level is just about half of what most population models suggest is the biological carrying capacity in the state, and managers will tell you that this is a relatively unstable population level to manage for. It is a point where natural environmental variation—or management errors—can easily lead a population into decline. (For this reason, most harvested wildlife species are managed at a level between this half-way point and the biological carrying capacity.) When the species being managed is one that numbers only in the hundreds to begin with, the room for error is very small. For the wolf, it could mean relisting as a threatened or endangered species.

Wolves are very different from their primary prey in the area: white-tailed deer. While the hunting community can provide real assistance to managers attempting to control an over-abundance deer population, the case is much harder to build with wolves. Some recent population models suggest that at a population of 350, the allowable annual harvest could be as low as 50 animals. Extracting this small harvest could cost a bundle, since the state would be under great scrutiny to ensure the wolf population does in

Question 29. Wolf Management

The gray wolf has made a dramatic come back in Wisconsin. Wolves in Wisconsin have recently been taken off the Federal Threatened and Endangered Species List. The wolf population is predicted to continue to increase if no control methods are implemented. Currently there is no public harvest system set up to have sportsman assist in maintaining the population of wolves at the population goals established in the wolf management plan.

Do you favor the Department of Natural Resources, Wisconsin Conservation Congress, and the Wisconsin Legislature develop a season framework and harvest goals to maintain the wolf population within management objectives?

Question 29. Yes _____ No _____

fact remain viable. Likely, the cost of the intensive population monitoring that would be required to go with a public harvest makes this “assistance” help the state could do without.

And it is important to remember that the entire premise here is based on an assumption that there is a pressing need to manage at the population to goal. Yet the current state goal is highly arbitrary. Raise that state-wide population goal by just a few hundred animals (a quantity comparable to the annual Bayfield County bear harvest) and the need to reduce the population to goal essentially disappears.

But wouldn't a harvest also provide a benefit to those experiencing wolf depredations? Turns out, even this seemingly logical conclusion may be on soft footing. Why?

For one, most livestock depredations occur in the summer, outside of hunting and trapping seasons. Secondly, general harvests are also not very selective. Dealing with depredation problems this way is like trying to make your fridge smell better by throwing out random foods instead of identifying the one that is the source of the odors. Only in this case, its possible that it might make the situation worse—by stressing a non-depredating pack (through the harvest of some of its pack members) into becoming a depredating pack. In the real world, depredations are much better addressed by an immediate response on the individual animals causing the problem. This is the realm of government control agents, not sport harvesters.

I have no idea how attendees at the spring hearings will vote, or how the Conservation Congress and the DNR will interpret the results. But I do remain convinced that the future of ma'iingan in the western Great Lakes will continue to depend on the choices we make.

A spring hearing meeting is held in every county in the state, beginning at 7:00 pm. More information can be found on the DNR website. The public is invited to attend.

Tribal elk hunt in Lower Michigan

(Continued from page 1)
Good hunting

Hunters woke to near-ideal conditions on opening day with a foot of snow already on the ground. Periodic snow showers over the coming days allowed hunters scouting remote forest roads to pinpoint fresh tracks.

From Teeple's first elk kill to the last—harvested by a Little River Band hunter on December 30—good weather helped boost the overall harvest. In the final tally, tribal and state hunters combined to kill 120 elk.

“Under these conditions hunter success was pretty high, probably the highest in five years,” said Brian Mastenbrook, a Department of Natural Resources wildlife biologist based in Gaylord.

Additional elk lottery recipients from Bay Mills included 12 year-old Brandon Carrick and Kimmie Walden who each harvested a cow elk. Together with Teeple, the tribal members represented three generations of Bay Mills hunters. They shared their harvest with

approximately 100 community members at a January 3 feast that also included deer and caribou meat.

Prior to the elk season, state and tribal hunters attended a mandatory orientation session that detailed carcass handling requirements and other regulations. While the DNR opened the training session for both state and tribal hunters, Bay Mills officials conducted an independent session for lottery tag recipients with assistance from GLIFWC Biologist Miles Falck.

Under the 2007 Consent Decree, treaty tribes are entitled to ten percent of the elk harvest quota annually. With a harvest target ratio of 30 percent bulls and 70 percent antlerless elk, Michigan wildlife managers limit kill permits to maintain the herd at around 900 animals or less. Each 1836 tribe is guaranteed at least one permit annually.

Michigan elk range is centered on the Pigeon River Country State Forest, a largely unbroken region that covers approximately 177 square miles. Marked by rolling hills, vast wetlands

and woodlands of pine and hardwood, Pigeon River Country is reminiscent of National Forests in the upper Upper Great Lakes states. Management actions including select timber harvests,

burning and maintenance of permanent forest openings provide quality habitat for elk as well as other game and nongame species like the endangered Kirtland's warbler.



Bucko Teeple, Bay Mills member, (left) and a local hunting guide pinpoint the kill site of a bull elk so biologists could go to the location and collect biological samples for disease and health testing. (Photo by Charlie Otto Rasmussen.)



A date to remember 25 years ago in treaty rights history

By Jim Zorn, GLIFWC Executive Administrator

January 25, 1983 – The federal appellate court in Chicago confirmed what the Tribes and their communities already knew. In the Treaties of 1837 and 1842, the Tribes reserved their sovereign right to continue to hunt, fish and gather on their ancestral homelands.



Tribal representatives and attorneys gathered outside the Federal Court building, Madison, for a Drum Ceremony prior to a hearing which began Phase II of the Voigt litigation in December, 1985. Spiritual practices, such as the Drum Ceremony, have been an intrinsic part of legal proceedings as well as tribal policy-making throughout the history of Voigt and GLIFWC. (Photos by Sue Erickson.)



This landmark court case—*Lac Courte Oreilles Band v. Voigt*—stands among a number of similarly important rulings for GLIFWC's Tribes. These include *State v. Gurnoe*, *People v. Jondreau*, *People v. LaBlanc*, *U.S. v. Michigan*, *Fond du Lac v. Carlson*, and *Mille Lacs Band v. Minnesota*. Each of these cases stands as a modern-day affirmation of what the ancestors, through their wisdom and foresight as well as through great sacrifice, secured for future generations. Just as their ancestors did, today's tribal communities look to Akii's natural bounty in the 1836, 1837, 1842 and 1854 Treaty ceded territories to meet their subsistence, ceremonial, medicinal, spiritual and economic needs.

The complete story of the *Voigt* case cannot be recounted in this small space. If you want to know more, start with our Web site www.glifwc.org. Even there you won't find all that is to be known. There are so many aspects to this story that not even a bookshelf full of volumes could capture it.

Let's also not forget that there are parts of this story that can't be written down in cold, stark black and white words. They must be passed from generation to generation through the warmth and intimacy of human relationships, oral teachings and oral history. Gikinawaabi—Our Elders, Our Teachers.

For now, let's use this particular date from 25 years ago in "modern" treaty times to help us remember the larger mosaic of treaty history that spans the generations. Let's use this opportunity to remind ourselves that treaty history is made everyday. It is the proverbial never-ending story.

There will be other similar dates in "modern" treaty rights history to be commemorated in the next few years, such as GLIFWC's 25th anniversary in the summer of 2009. I look forward to these milestones.

It is good to know that we can be—as our friend Dr. Ron Satz wrote in his 1991 seminal work *Chippewa Treaty Rights: The Reserved Rights of Wisconsin's Chippewa Indians in Historical Perspective*—"secure in the conviction that [the Tribes] have preserved these rights for the generations to come."

Why is the landmark treaty case called the Voigt case?

The original lawsuit filed in 1975 named Lester P. Voigt, then Secretary of the Wisconsin Department of Natural Resources, as one of the defendants. Hence, the name, the Voigt case, evolved as it subsequently proceeded through many courts and rulings.

Mille Lacs tribal walleye quota set for 122,500 pounds

By Joe Dan Rose, GLIFWC Inland Fisheries Biologist

The Minnesota 1837 Ceded Territory Fisheries Committee and Modeling Workgroup meetings were held on January 23-24 in Aitkin, Minnesota. As in previous years, an extensive amount of stock assessment modeling work was completed by the Minnesota DNR (MnDNR) and GLIFWC to provide a foundation for the development of a 2008 harvestable surplus level for walleye in Mille Lacs Lake. Results from each of these models were reviewed and discussed by the Committee.

The Committee reached consensus on a 2008 walleye harvestable surplus level for Mille Lacs Lake of 430,000 pounds. Based on the Treaty Fisheries Management Plan for the 1837 Minnesota Ceded Territory for the Years 2008-2012, the 2008 tribal walleye quota for Mille Lacs Lake will be 122,500 pounds. The remaining portion of the harvestable surplus level is allocated to the state.

Walleye population estimate to be conducted

State and tribal biologists are planning to conduct a mark-recapture population estimate of the Mille Lacs Lake walleye population this coming spring to generate a current estimate of abundance. A combination of fyke-nets (See Mille Lacs walleye, page 23)

GLIFWC Warden Bill questions & answers

By: Kekek Jason Stark
GLIFWC Policy Analyst

What is the GLIFWC Warden Bill?

The GLIFWC Warden Bill refers to 2007 Wisconsin Act 27.

Why is the GLIFWC Warden Bill needed?

The GLIFWC Warden Bill is needed to enhance the safety of GLIFWC conservation enforcement wardens while it also works to protect the overall public safety in the northern third of Wisconsin.

What does the GLIFWC Warden Bill do?

The GLIFWC Warden Bill has two essential functions:

Protects GLIFWC wardens as they perform their duties

The GLIFWC Warden Bill extends the same statutory safeguards and protections that are afforded to other law enforcement officers to GLIFWC conservation enforcement wardens.

This includes: access to the criminal history of suspects encountered in the field, access to emergency services radio frequencies, operation of statutorily-authorized emergency vehicles, and coverage by statutes that protect state and local officers from threats and assaults.

Provides GLIFWC wardens with limited arrest and assistance authority

The GLIFWC Warden Bill also extends the same statutory authority and responsibility that is now conferred upon other law enforcement officers operating outside their areas of primary jurisdiction to GLIFWC conservation enforcement wardens.

This would include the requirement to promptly call in the agency with primary jurisdiction and to develop other

appropriate policies for exercising this authority consistent with Wisconsin law.

Does the GLIFWC Warden Bill apply to all GLIFWC conservation wardens?

The expanded authority granted to GLIFWC conservation enforcement wardens applies only to on-duty, state-certified wardens responding to a felony or significant public safety threat, or as otherwise called upon by a Wisconsin peace officer.

How will GLIFWC implement the bill?

Under the GLIFWC Warden Bill, GLIFWC conservation enforcement wardens must meet the requirements of the Wisconsin Law Enforcement Standards Board.

The Conservation Enforcement Division has taken the necessary steps to apply for status as a tribal law enforcement agency and is implementing requisite policies and procedures for the Bill's implementation.

Are GLIFWC conservation enforcement wardens insured?

GLIFWC must provide liability insurance for its wardens and will be responsible for them while exercising the expanded authority conferred by this bill.

On the cover

Bucko Teeple in downtown Atlanta, Michigan with his 6x6 bull elk in December. Car owner Teeple hung the animal overnight until a truck was available to take the elk to Bay Mills. (Photo by Charlie Otto Rasmussen)

Minnesota DNR completes wild rice report

By Peter David
GLIFWC Wildlife Biologist

On February 15th, the Minnesota Department of Natural Resources (MNDNR) submitted its *Natural Wild Rice In Minnesota* report to the state legislature. This report was intended to fulfill the request from the legislature for a study consisting of three components: 1) information on the current abundance of rice beds in the state, 2) identification of potential threats to those beds, and 3) recommendations on protecting and increasing natural stands in the state.

Although the report was completed with substantial consultation with a wide array of Native American interests—as well as state and federal biologists, private individuals, and representatives from the cultivated wild rice industry—the final report makes clear that the content and recommendations included represent the positions of the DNR, and not the advising parties.

The creation of the report was triggered in large part by concern that many interest groups are feeling that manoomin may be facing an uncertain future, particularly in the face of some relatively new threats. Included among these is the possibility that genetically engineered varieties of wild rice could be developed that could threaten the genetic purity of natural stands.

The report contains sections on the cultural significance of wild rice in Minnesota to both the Indian and non-Indian communities, and its ecological and economic significance. Its taxonomy, distribution, abundance and life history are also reviewed.

Nearly 1300 rice locations were identified in the state, and the total tally of wild rice acres exceeded 64,000. Although acreage estimates were only available from about 60% of the identified beds, the 64,000 acre figure probably represents most of the state total, since most of the beds where estimates were not available are small.

The report also reviews threats to rice in some detail, breaking them down between issues which tend to impact individual beds (like lake shore development and hydrological changes caused by dams) and those which may affect rice on a state-wide level (like climate change and invasive species). The report also noted that many beds may face multiple threats.

The report also commented on the need to recruit new harvesters, since harvesters tend to be stewards of this resource, holding a great interest in protecting and enhancing this resource.

The report also included recommendations. Among these were suggestions that the state: establish a statutory policy guidance on wild rice and its management, similar to what has been done for wetlands; designate and publish a list of important wild rice areas; increase natural wild rice lake management efforts and accelerate the restoration of stands within its historic range; convene an interagency workgroup to identify desired changes in harvest regulations; and convene a standing interagency workgroup. The workgroup would share information and develop recommendations for inventory methodology and trend assessments, education and information outreach, lake planning and management, harvester recruitment and retention, and other management issues as they arise.

The level of concerns about genetic engineering (GE) varied widely among the advisory parties. Growers of cultivated rice indicated that they were unaware of anyone working to develop

GE strains and felt that cost of doing this work would make it unlikely to occur in the future. Thus, they felt more emphasis should be placed on addressing other threats. Many Native American representatives felt technological changes could greatly reduce the cost of doing this kind of work in the future, and the potential damage that could be caused by GE rice, if developed, was simply too great to make any release acceptable.

In the end, the report did not make any specific recommendations about protecting natural stands from genetic engineering, but did state that “MNDNR recognizes the importance of protecting natural wild rice beds from genetic modification and agrees with wild rice stakeholders that this protection is critical to the future of this resource.”

Many of the Native American representatives who were consulted on the report were in general agreement with its finding, but felt that in some areas it did not go far enough. These parties submitted a joint statement, appended to the report, stressing the significance of manoomin to the Ojibwe, and the need to provide it with complete protection from possible genetic contamination.

They suggested that a “ban on genetically engineered wild rice in Minnesota would be the best way to achieve this.” They also recommended the State require consideration of impacts on cultural practices in the Environmental Impact Statement process.

The full report, which runs 113 pages, is available on the DNR web site at <http://www.dnr.state.mn.us/fishwildlife/legreports/index.html#rice>.

Wild Rice Recipes Wanted

Mazina'igan will be publishing a supplement on manoomin (wild rice) this summer and would like to include favorite wild rice recipes. Soups, salads, casseroles, breads—recipes for any number of ways to prepare and enjoy manoomin are welcomed!!

If you are willing to share recipes for your manoomin favorites, please submit to *Mazina'igan*/wild rice, PO Box 9, Odanah, Wisconsin 54861 or e-mail to pio@glifwc.org.

Please include your name and town, so we can credit your contribution.

Wayiiba da maajiiga (The sap will begin to run soon)

By Karen Danielsen
GLIFWC Forest Ecologist

Odanah, Wis.—Dana Jackson, a Bad River member, prepares for the gathering of ziinzibaakwadaaboo (maple sap) by either hiking or four-wheeling a half-mile through the snow to his iskgamizigan (sugarbush). Located on the banks of the Bad River, his iskgamizigan consists mostly of zhishiigamewinzh (red maple) and less of inininaatig (sugar maple).

Throughout the entire process of gathering ziinzibaakwadaaboo, Dana demonstrates the utmost respect for his iskgamizigan. He takes care that his actions do not damage the trees, just as he learned during his childhood. And from him, this manner of respect continues to flow to future generations through his children and grandchildren.

Family and friends help split and stack firewood from nearby dead trees. They need a lot of firewood to boil down ziinzibaakwadaaboo to make zhiwaagamizigan (maple syrup). Though exhausting work, the companionship keeps the task tolerable, even fun.

As soon as the days begin to warm, but nights stay below freezing, Dana and his helpers begin tapping the trees. They carefully drill holes into the trees,

no farther than three inches, in which they insert half-inch diameter metal negwaakwaanan (taps). They situate their negwaakwaanan on the trees' south-facing sides where the sun's warmth enhances the flow of sap.

They only tap trees measuring over ten inches in diameter. Except for very large trees, they insert just one negwaakwaanan per tree. For trees that measure over two feet in diameter, they sometimes insert two or three negwaakwaanan.

They never place their negwaakwaanan into holes drilled during previous years and always offset the new holes a distance from the old. Furthermore, they never drill into the same tree over consecutive years, preferring to provide each tree an adequate number of years to rest between tapping.

The number of trees tapped depends upon the number of helpers and their ages. If only younger children help, Dana limits the tapping to 50 or 60 trees. If more adults help, he can tap up to 300 trees.

Dana likes to use gallon-sized milk jugs to collect ziinzibaakwadaaboo. If cut and hung properly, these containers can protect the dripping ziinzibaakwadaaboo from bugs, falling leaves and rain. Sometimes he uses large plastic bags that once held soda pop syrup. (See *Ziinzibaakwadaaboo*, page 5)



Boiling ziinzibaakwadaaboo (maple sap) at his iskgamizigan (sugarbush), Bad River's Dana Jackson shows a group of visiting teachers how zhiwaagamizigan (maple syrup) is made. (Photo by Amoose.)

Ojibwemowin

ziinzibaakwadaaboo
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zhiwaagamizigan
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zhiingob

English

maple sap
sugarbush
red maple
sugar maple
maple syrup
taps
balsam fir



Ice opens up Apostle Islands fishery

Red Cliff brothers, son continue legacy

By Charlie Otto Rasmussen
Staff Writer

Red Cliff, Wis.—On the far side of Oak Island in the Apostle Islands archipelago, birds and wildlife remain undercover as the sun struggles on the eastern horizon. The air temperature is 16 degrees below zero. Arctic northwest winds whip across the Gichigami ice, further magnifying the brutal cold as the land seems all but paralyzed.

“Kind of chilly today,” says barehanded Sean Hanson as he pulls a gillnet through a freshly chopped hole in the ice. A string of whitefish emerge, many with bulging bellies filled with air from their sudden 180 foot ascension to the surface of Lake Superior. With remarkable dexterity, Hanson removes a small pin clenched between his front teeth and pops each fish, producing a thin whistle.

“They come out of the net a lot easier once you get the air out,” he explains as his blushed hands free a silvery whitefish, tossing it a few feet to brother Jamie who stuns it with a quick head-whack and has it gutted in seconds. Hanson, a fifth generation Gichigami commercial fisherman, heads a four-man ice netting operation rounded out by another brother, Troy, and son, Sean Jr. Grandfather Wilfred Peterson passed on the business—Peterson’s Fisheries—to Hanson in 1995.

On this mid-February morning, Hanson’s crew works atop a foot-thick expanse of ice between Oak and Manitou Islands. With ten gillnets measuring 300 feet long by 6 feet high to pull, pick and reset, the fishermen work in smooth unison, each man filling a role in the progression.

The first lift of the morning is a good one, yielding about 200 pounds of whitefish, three lean lake trout, a siscowet and one foot-long herring. Sean Jr. threads a red plastic tag through the gills of each laker—a species whose harvest is tightly regulated by state and tribal fisheries managers. Each fisherman receives a limited allocation of these individually numbered tags based on harvest quotas designed to maintain lake trout populations at current levels.

While a few different fish species invariably show up in 3,000 feet of net, the harvest is far-and-away comprised of the Friday night menu classic: whitefish. Hanson’s crew receive about \$1.25 per pound from a local wholesaler that distributes the dressed whitefish to area restaurants, grocery stores and markets. This spring Hanson reopens his own market along Highway 13 just south of Red Cliff following a



The Hansons of Red Cliff-based Peterson’s Fisheries raise a gillnet loaded with whitefish from approximately 180 feet below the ice. From foreground: Sean Jr., Troy, Sean Sr. and Jamie Hanson. (Photo by Charlie Otto Rasmussen.)



Near the north shore of Oak Island, Sean Hanson plucks a whitefish from a net drawn through a freshly chopped hole in the ice. Boxes of whitefish (foreground) are loaded onto sleds and hauled by snowmobile from sites around the Apostle Islands to the Wisconsin mainland at Red Cliff. (COR)

mid-winter hiatus. Beginning with weekend-only business hours, Peterson’s Fisheries market expands to 10-6 pm daily in May as more vacationers and second home owners return to the area. The change of season also signals the return to tug boat fishing for Hanson and other commercial fishermen.

“Once the ice starts breaking up, we head out to open water to fish with trap nets. We’re kind of all-around fishermen,” Hanson said.

The under-ice gillnetting efforts of Hanson and three other tribal operators are monitored by Red Cliff fisheries staff who make intermittent appearances during net lifts to count each fish and collect biological data. Red Cliff Biologist Matt Symbal said information gathered by resource technicians is a key element in establishing harvest guidelines for the fishery. Along with the Bad River Band, Red Cliff officials manage the Wisconsin Gichigami fishery through intergovernmental agreements with the Department of Natural Resources. In April 2007 tribal and state representatives signed a new 10-year management pact—the fourth Lake Superior fishing agreement between the parties since 1981.

Gathering ziinzibaakwadaaboo

(Continued from page 4)

They hold more ziinzibaakwadaaboo than milk jugs, but are more difficult to clean.

The first boil of the collected ziinzibaakwadaaboo occurs at his iskigamizigan on a wood stove that he and some friends had hauled onto the site years ago. He occasionally dips a branch of zhiingob (balsam fir) into the boiling ziinzibaakwadaaboo to prevent

it from foaming too much. Also, he has heard that the oil from zhiingob acts as a preservative for the resulting zhi-waagamizigan.

Because he gathers most of the ziinzibaakwadaaboo from zhishi-igamewinz, which has a lower sugar content than if collected from inininaatig, he has to boil more of it for longer. He usually boils 55 to 60 gallons of ziinzibaakwadaaboo to make one gallon of zhi-waagamizigan. For inininaatig, it usually takes about 40 gallons of ziinzibaakwadaaboo to make one gallon of zhi-waagamizigan.

During the first boil, friends and family visit, sharing stories and trading jokes. Coffee, pancakes and hot dogs are cooked over the fire. Naturally, the coffee and pancakes are sweetened with ziinzibaakwadaaboo—always a delicious pleasure enjoyed by everyone.

Due to the close proximity of the river to the iskigamizigan, sudden flooding can place Dana and his helpers in a serious

predicament. More than once, heavy rain and fast melting snow has triggered a quick departure from the iskigamizigan, forcing everyone to slog precariously through icy water.

After the “first boil,” Dana boils the ziinzibaakwadaaboo a second time at home. This final boil requires more heat control, so he prefers to use his kitchen stove. He cans the finished zhi-waagamizigan in Mason jars, usually producing between five to twenty gallons, depending upon the total number of trees tapped.

After a few weeks at the iskigamizigan, nighttime temperatures warm, the trees start to develop their leaves and the ziinzibaakwadaaboo begins to taste bitter. Dana removes the negwaakwaan to allow the trees to heal. Years ago, when he made his negwaakwaan from zhishiigamewinz, he actually left them in the trees to help with healing.

Before Europeans arrived, Anishinaabeg made negwaakwaan out of apaakwaanaatig (staghorn sumac). They used apaakwaanaatig because of the relative ease of hollowing out the soft wood center of its stems. Moreover, instead of drilling holes in the trees, they made two perpendicular ax cuts with the right angle pointing down.

At the right angle, they placed a negwaakwaan, below which they placed a biskitenaagan (folded birch bark basket) to collect the ziinzibaakwadaaboo. Though tribal members nowadays may not make ax cuts to gather ziinzibaakwadaaboo, some still use apaakwaanaatig to make their negwaakwaan.

Dana remembers that, during his childhood, his family used apaakwaanaatig to make negwaakwaan and coffee tins to gather ziinzibaakwadaaboo. His auntie remembers when Dana was a baby and his family brought him to the iskigamizigan. He was bundled up in a dikinaagan (cradleboard) and then secured to a tree, as everyone else worked.

He continues his family’s traditions and shares them with his children. In particular, he teaches his children the importance of showing respect to zhishiigamewinz and inininaatig. Every year, these trees sacrifice their own blood for human survival.

Before the ziinzibaakwadaaboo season, Dana and his family have a ceremony to honor the spirits. They offer asema (tobacco) and ask permission of zhishiigamewinz and inininaatig. After the season, they repeat the ceremony and express a strong-felt miigwech (thank you).



Collecting ziinzibaakwadaaboo from a tapped tree. In earlier times, birchbark baskets, biskitenaagan, were used to collect the sap. (Photo by Amoose.)



Carving out a way of life

Decoys attract collectors and fish

By *Charlie Otto Rasmussen*
Staff Writer

Lac du Flambeau, Wis.—When Jerry La Barge is done with a piece of basswood, decoy collectors see first-rate artistry and muskies see breakfast. Only one comes away happy.

Over the last forty years, Lac du Flambeau's La Barge has developed an ever-expanding lineage of carved, painted and weighted creatures designed to lure predator fish into spearing range on northern lakes. Dangled through an opening in the ice just smaller than a manhole, La Barge's decoys have duped schools of muskellunge and northern pike and drawn favor from art collectors nationwide.

"They say this is folk art, whatever that means," jibed LaBarge, a tribal youth councilor and cultural skills leader. "This is something my grandpa taught me—carving decoys to fish with."

What folk art means for La Barge and other Ojibwe carvers in the 21st Century is that an ancient fishing tool has taken on new value as decorative wood sculpture distinct to the Great Lakes region. La Barge's fish, frogs, and a critter called "teardrop" fetch \$45 to over \$100. All his decoys are balanced with a lead inner core and designed to move, or swim, to the right on the end of a jigging line.

"When I get a piece of wood, I look for a natural turn where the tail would flare out to the right," he said. "Then after I get the bark off, I look it over to see what kind of fish is in there."

La Barge hand-carves around twenty decoys a year that range from about six to eleven inches long. Buyers place orders over the phone or make selections at shows he attends. Other decoys proven popular with hungry muskies—notably renditions of colorful rainbow trout—are destined to circle fishing holes used by La Barge and youngest son Seth.

"Some collectors want ones with teeth marks or ones that you've actually caught muskies with,"

said La Barge, who finishes smooth-sanded decoys with brilliant enamel paint or earth tones depending on the species. A few decoys evoke techniques used by grandfather Joseph Sharlow.

While La Barge prefers sandpaper to his grandfather's liking for broken glass as a surfacing instrument, he does employ a traditional burning method to add color.

"All his decoys were black with brown bellies. They were all burnt with no paint," said La Barge, who has experimented with small outdoor fires, kitchen gas stoves and even a Bunsen burner.

In addition to shading methods and adding round pieces of sheet metal to approximate lateral fins, La Barge has brought artistic innovation to his work by animating simple wooden jigging sticks with likenesses of eagles, frogs and bears.

To create a better handhold on the stick, he also shapes finger grips with a carving knife before retouching with paint and varying degrees of burning. Black fishing line in the range of 20-pound test connect jigging sticks with decoys. Like a puppet on a string, decoys swim and change direction through the fisherman's handling of the jigging stick

Come and get it

LaBarge puts his decoys to the test on lakes inside and out of the Lac du Flambeau reservation. With stick, string and decoy at the ready, the key to realizing muskie fillets is locating good lake habitat. La Barge looks for ice-locked bays with about eight to ten feet of water where esox predators cruise for forage fish. Once he finds the right spot, La Barge chops a hole in the ice the day before fishing and crowns it with a teepee made of alder supports and canvas walls.

"You lay balsam boughs all around the hole. That old muskie can't see you when you have it nice and dark in there," explained La Barge who also layers balsam and wool blankets to lie on in the traditional ice spearing position. "The glare from the surrounding ice makes your hole clear, kind of like looking at a TV screen."

It's time to fish. La Barge lies on his belly, drops the canvas flap to seal out the daylight and starts working a decoy. A four-pronged spear



Lac du Flambeau decoy carver Jerry La Barge draws a knife into a piece of basswood.

is at the ready, rising upward from a notch chipped into ice next to the hole.

"Whether you fish your decoy fast or slow, the trick is to see the muskie coming so your hole needs to flare out on the bottom. Muskies make one or two initial charges; they bump and try to stun the decoy. Northerns come right in. When you see them come with their mouth open, you have to decide to spear them or make them miss. Otherwise, they'll grab the decoy and run," he said.

Decoy styles and color choices depend on weather, lake size and water quality. La Barge said bright, colorful decoys work best in dark water or on windy days; frog decoys are good bets on smaller lakes.

"My grandpa would say that when it was snowing not to bother going out on the lake. The muskies won't bite. But how do muskies know it's snowing? So I didn't believe him and kept trying. He was right, nothing would show up!" chuckled La Barge.

For more information on ice spearing instruction and ice fishing decoys contact La Barge at (715) 892-7666 or (715) 588-1315.



Under an ice spearing teepee near his Lac du Flambeau home, Jerry La Barge fishes with a hand-carved decoy designed to attract muskellunge and northern pike.



A view inside an ice spearfishing teepee. The spear on the right rests on a shelf chipped into the ice for easy access. The perch decoy and jigging stick are connected by 20-pound test fishing line. Balsam boughs spread on the ice help conceal the fisherman.

Photos by Charlie Otto Rasmussen



Fish waste and your garden— The compost connection

By Matt Hudson, GLIFWC Environmental Biologist

Odanah, Wis.—As spring rapidly approaches, fish are on the minds of many staff here at GLIFWC and most certainly those eagerly waiting the moment when Mother Earth peels back her icy cover on the lakes and spring harvest begins. While fresh walleye frying in a pan undoubtedly evokes pleasant thoughts about spring, those tasty fillets represent only a part of the original fish and the hard work that went into getting it ready to nourish the body.

What about the rest of that fish that got tossed aside after the fillets were removed? Undoubtedly most avid gardeners are aware that fish waste buried in the garden provides a nice jolt to plants who love all that juicy nitrogen the fish provides as it is broken down in the soil. But when you've just completed filleting that huge pile of fish from your successful harvest and the ground in your garden is still frozen, what do you do with all those fish guts? Sure, you could throw them in the garbage or woods, but why not consider making fertilizer for your garden out of them?

Composting is a great way to take all the organic left-overs like food scraps or fish entrails, and take advantage of nature's processes to produce valuable fertilizer out of something we tend to call "waste." Composting reduces the amount of waste that is sent to landfills and the amount of chemical fertilizers that must be applied to the land to grow food. To compost fish waste, all you need are some materials to mix with the waste called "bulking materials" that help aid the composting process, a space to make a pile and a sense of adventure for trying something new! Here I'll describe my adventure in composting fish waste and give some information and tips on how it could work for you.

Every spring, a big part of my job is to oversee the collection of walleye from ceded territory lakes to be tested for mercury. The resulting data are used to make GLIFWC's mercury maps. Depending on funding, we have typically collected anywhere from less than 100 to upwards of 500 walleye each spring. We only remove the fillets from each fish for mercury testing, and the remainder of the fish becomes "waste." As I pondered what to do with all these fish carcasses, it occurred to me that we could compost them to demonstrate to people how to transform fish waste, which many of us have every spring, into fertilizer for gardens.

Of course, since studying mercury in fish is a big part of my job, one of the biggest questions with composting fish waste was whether the mercury in the fish could be a health concern if put it in a garden to grow food. The other big question was how to keep a pile full of fish guts from attracting every animal and fly within a ten mile radius. To tackle these questions, I did a lot of reading and worked with many folks from the Natural Resource Conservation Service (NRCS), Bad River Community Garden Vista Volunteers, and labs with the University of Wisconsin system. Here's what I learned.

Making the Pile

Fish waste is not something most people enjoy the thought of working with, but if you plan ahead and have the materials you need on hand before you go fishing, you can throw the waste right into the pile as you clean the fish after your trip, making the compost pile part of the fishing process.



Photo 1. Creating a fish compost pile by layering wood chips/sawdust and fish waste.



Photo 2. Completed fish compost pile, June 2006. (Photos by Matt Hudson)

You can also freeze the fish waste if you have enough space and wait until you are done with spring harvest to make your pile. This is the approach I took, and it was a little more cumbersome because the fish have to be at least partially thawed before making the pile, adding more time and the potential for attracting more flies. I made the first pile in June of 2006 (see photos 1 and 2).

It's helpful to remember that fish is high in nitrogen when deciding what bulking materials to use in your pile. You will need to add enough carbon to create the right conditions for organisms to do their work. Here's the approach I took:

Thoughts on making a fish compost pile

1. High carbon bulking materials to mix with fish waste include: BEST sawdust, shredded wood chips, GOOD straw, leaves and grass clippings. Call local saw mills to see if they'll give you wood chips and sawdust. Check local yard waste collection sites for leaves, grass clippings and possibly wood chips. You will want to avoid sticks and large chunks of wood because they are more difficult to break down. Sawdust is great for soaking up some of the excess water in the fish waste and breaks down more readily, but wood chips are necessary to provide enough air pockets to allow proper decomposition.
2. Use about 3 parts bulking materials to 1 part fish waste by volume. For example, for every 5-gallon bucket of fish waste you have, you'll want about three 5-gallon buckets of bulking materials.
3. Start with 4-5 inches of wood chips and sawdust and then alternate layers of fish waste and wood chips/sawdust.
4. Mix pile with pitchfork or shovel.
5. Cover pile with 12 inches of leaves, straw, and/or grass clippings OR about 6 inches of soil to keep odors down and pests away (this is in addition to the bulking materials you used to make the pile). Don't skimp on this part! I only added about 6 inches of bulking materials to the top of my mixed pile and attracted too many flies.
6. You may want to cover pile with a tarp or compost blanket. A properly constructed pile will have little odor, but if you want to be safe, keep the pile in an enclosed area to keep away pests.
7. Stir pile periodically (about once per month) and if it dries out, add water. Ideally you want to check the temperature of the pile with a long thermometer and turn the pile when the temperature drops to stimulate more rapid decomposition, but this is only necessary if you want to speed the process up.
8. May take 1-2 years for mature compost, which should have a nice, earthy smell to it. The great thing about composting is that even if you do nothing to the pile, once it's made, you'll still get compost, but it will take longer.

Growing food with the compost

After about a year, there were still a lot of wood chips that had not broken down, but the compost pile had a nice, earthy smell to it and almost all traces of fish parts were completely gone.

I called the Bad River Vista Volunteers, and they agreed to work with me on using the fish compost in a test plot in the Bad River Community Garden to see how well plants would respond to it. We set up a plot with nine squares, three with fish compost, three with no compost and three with Creekwood, a commercially available, pelleted chicken manure. We planted Bear Island corn (a multicolored flint corn) in each of the plots and monitored the growth of the corn plants throughout the summer. The corn grown in the fish compost plots grew better and had larger cobs by the end of the summer than the Creekwood or no compost plots (photo 3).

We can't directly compare the plant growth in the Creekwood and fish compost plots because we did not add the same amount of nitrogen to each at the start. However, the fish compost clearly provided a big boost to the plants in those plots compared to the plots with no compost. Unfortunately, we weren't able to measure the yield of corn in each of the plots because a cunning raccoon decided to snack on the corn before I could get to it. Luckily, enough corn remained to be able to test for mercury.



Photo 3. Bear Island corn test plot on July 15, 2007. The three plots with the largest corn plants were grown with fish compost and are noted. (Photo by MH)

Following mercury in the fish composting process

GLIFWC has spent a lot of effort informing tribal members about the risk mercury in fish may pose to human health and how to make informed decisions to avoid that risk. Therefore, it made sense to ask the question whether mercury (See Fish composting, page 15)

Lake Superior holding steady on prey fish numbers

By Bill Mattes, GLIFWC
Great Lakes Section Leader

Odanah, Wis.—Prey fish, or fish taken as food by other fish, have been a topic of concern in Lake Michigan for the past several years. Mainly, because in Lake Michigan, prey fish have been declining. The reasons are unclear, but some point to the increased abundance of invasive species, in particular the invasion of quagga mussels. Lake Superior, however, has not suffered the impact of a quagga mussel invasion (see below for more information).

So, how are prey fish doing in Lake Superior? For the past ten years the overall abundance has been steady (see figure 1). Prey fish were more abundant in the ten years prior to 1996. However, at that time the number of lake trout, siscowet, and lake whitefish, the primary predators, were lower—possibly allowing the prey fish to be more plentiful.

The main decrease in prey fish has been in the number of young cisco (a.k.a. lake herring) a favorite food for predators in Lake Superior.

Cisco numbers can vary greatly from year to year due to the success (or failure) of young to hatch and grow to one-year-old fish. Scientists are unsure of the reason for the extreme variation from year to year, but they are sure that it happens. In the early 1990's there were several very successful years for young cisco which helped increase the estimate of prey fish abundance during that time.

Every year the Great Lakes Science Center's Lake Superior Biological Station (LSBS) of the U.S. Geological Survey conducts a survey which tracks the abundance of prey fish in Lake Superior. The survey began in 1978 for U.S. waters and was expanded in 1989 to include Canadian waters. The survey is intended to provide a long-term index of relative abundance and biomass of Lake Superior's fish community in waters less than 260 feet deep. Most of our understanding of prey fish in Lake Superior comes from these surveys.

In 2006, the LSBS research showed that the lake wide mean relative biomass estimate for all species combined was 6.80 kg/ha (roughly 123 million pounds). Cisco made up the highest portion of



Comparison of zebra mussels and quagga mussels, both recent invaders to Lake Superior. (Photo reprinted from <http://el.erdc.usace.army.mil/zebra/zmis/image/compare.gif>)

the total mean biomass (~32 million pounds), followed by bloater (~25 million pounds), lake whitefish (~25 million pounds), and rainbow smelt (~15 million pounds). For the full report visit www.glsc.usgs.gov/files/reports/2006LakeSuperiorPreyfish.pdf.

Quagga mussels

Quagga mussels were first identified in the Duluth-Superior harbor by EPA researchers in 2007 (see photo). Like the zebra mussel they likely came to Lake Superior via ballast water discharge from sea-going ships. So far, zebra mussels have not colonized many areas in Lake Superior. This is most likely due to their calcium needs.

According to reports by NOAA Sea Grant, laboratory studies done in this country indicate



Bloater chubs, a common prey fish in Lake Superior, were estimated at about 132 million fish in the 31,820 square mile lake during 2006. That's seven fish/acre. Cisco (not pictured) were estimated at about 206 million fish or ten fish/acre.

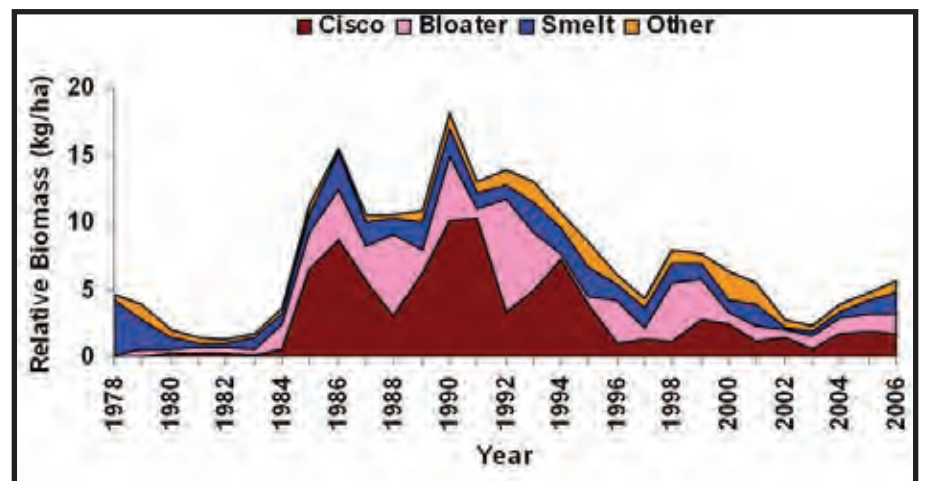


Figure 1. Estimated prey fish abundance in Lake Superior as reported by the USGS Lake Superior Biological Station.

that zebra mussel can grow when there is at least 20 parts per million of dissolved calcium in the water. Outside of a few bays, Lake Superior does not have that much calcium dissolved in the water. Quagga mussel calcium needs have not been tested.

Mining proposals in MI, WI & MN

By John Coleman, GLIFWC Environmental Modeler &
Ann McCammon Soltis, GLIFWC Policy Analyst

GLIFWC staff are engaged in the evaluation of issues related to four existing or proposed mines, one in Michigan, one in Wisconsin, and two in Minnesota. These mines are of concern not only to the tribes in closest proximity, but more broadly to those with interests in the ceded territories.

It is also clear that sulfide mineral and uranium exploration activity in the ceded territories has increased dramatically over the past few years. An update on three of the four projects follows.

Yellow Dog (Eagle) Mine—Upper Peninsula, Michigan

On December 14, 2007, the Michigan Department of Environmental Quality (DEQ) announced its decision to grant permits to Kennecott Minerals Company for the proposed Yellow Dog mine near Marquette. DEQ had delayed a decision by one month due to the volume of comments it received on the proposed permits. According to the DEQ, several permit conditions were changed as a result of comments received by the DEQ during the public comment period. On February 7th the Michigan DNR granted Kennecott a lease to 120 acres for operating their mine facilities.

Four groups filed contested case petitions and a lawsuit against the DEQ. Those groups are: Keweenaw Bay Indian Community, National Wildlife Federation, Huron Mountain Club and Yellow Dog Watershed Preserve. The lawsuit focuses on the air quality permit; the contested case petitions related to the mining and the groundwater permits issued. The contested case hearing is scheduled to begin April 28th and may last for two weeks.

Since obtaining its state permits Kennecott has announced that it will modify its mine project in three significant ways: Kennecott has reached agreement with

an electric power utility to run a powerline to the mine site. This would be the first installation of electrical powerlines on the Yellow Dog Plains; Kennecott is in negotiations for acquisition and conversion of the Humbolt mine site facilities for processing of their sulfidic ores; Kennecott is now proposing that rather than use existing roads to haul their ore, they build a road directly south 17 miles across the Yellow Dog Plains and Silver Lake Basin to the railhead near Superior, Mich.

Minntac Mine near Mt. Iron, Minnesota

The Minntac iron mine has been in operation for approximately 40 years. Minntac's water discharge permit, however, expired in 1992. The company has continued to operate under that permit, although it has problems with ongoing violations. The Minnesota Pollution Control Agency (PCA) and the company would like to get a new permit in place. Minntac and the PCA developed and signed a Schedule of Compliance (SOC) that specifies when Minntac will need to be in compliance with water quality standards. Staff met with the PCA and Minntac before the agreement was finalized and were able to influence the outcome. Under the SOC, Minntac is will be submitting reports and studies to the PCA. These documents will be reviewed by tribal staff.

Polymet Mine near Babbitt, Minnesota

This open pit mine would be located in a wetland rich area called the Hundred Mile Swamp and would require a permit from the Army Corps to fill approximately 1200 acres of wetlands, the largest wetland fill the Corps' St. Paul office has ever considered. A joint state/federal EIS is under development and two tribes, Fond du Lac and Bois Forte have requested cooperating agency status. GLIFWC staff will continue to assist Fond du Lac in fulfilling its duties to review and comment on the permit application, and assist in the development of the EIS. To do that, staff are participating on and providing comments to state/federal "teams" that have been formed to focus on various issues.



Lamprey—so nasty they can even dethrone a king

Article by Bill Mattes, GLIFWC Great Lakes Section Leader

Odanah, Wis.—A period of civil war known as the Anarchy broke out in old England after Henry I died on December 1, 1135 from eating “a surfeit of lampreys.” Lampreys are eaten to this day in some parts of the world. However, due to possible contaminant issues and just a plain lack of interest by the local populace, lamprey dining has not excelled around the Great Lakes.

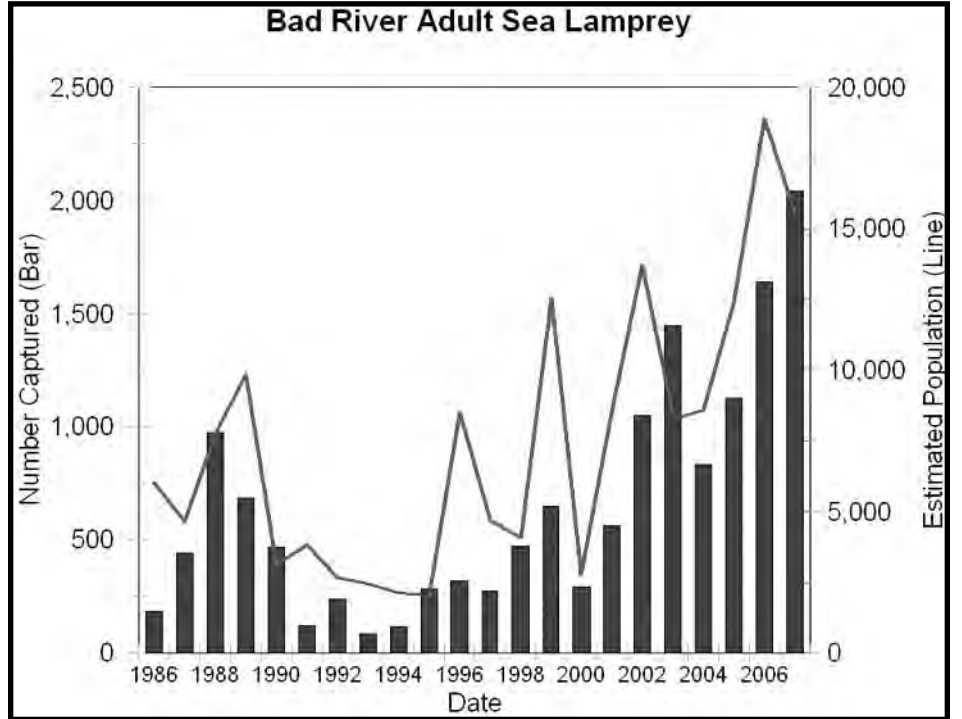
The sea lampreys we know here in Lake Superior are native to the entire eastern seaboard from the west coast of Greenland south to Florida. They are also found along the Atlantic coasts of Europe from northern Norway to the Mediterranean, Adriatic, and Baltic seas (see map).



Approximate worldwide sea lamprey (*Petromyzon marinus*) distribution as indicated by the dark shaded line.

In the ocean, lampreys feed on mackerel, the various herrings, cod, haddock, American pollock, salmon, basking sharks, swordfish, hake, sturgeon and eels. Here, they feed on lake trout, whitefish, cisco (a.k.a. lake herring), suckers and most other fish they find.

In most parts of the world lampreys aren't doing so well, primarily because hydro-power dams block their movement upstream to spawn. Here in the Great



Trap catch (bars) and estimated population size (line) for spawning sea lampreys in the Bad River, Wisconsin during 1986 to 2007.



An adult male lamprey captured during the 2007 spring spawning run in the Bad River, Wisconsin. (Photo by Sam Wiggins.)

Lakes lampreys do better because of the number of streams without any dams, including the Bad River in Northern Wisconsin, which is one of the largest free-flowing river systems in the U.S.

In 2007, Mike Plucinski, Great Lakes section technician, completed his twenty-second year removing sea lamprey from the Bad River in Wisconsin during their spring spawning run. Mike has been leading the GLIFWC crews cooperating with the U.S. Fish and Wildlife Service Sea Lamprey Control Program in Marquette Michigan (USFWS-SLC) since 1986. GLIFWC crews assess the spawning lamprey population in the Bad River and several other streams along the south shore of Lake Superior during the spring of each year. USFWS-SLC is an agent of the Great Lakes Fishery Commission which oversees lamprey control in all of the Great Lakes. (See for more information).

Lamprey numbers in Lake Superior are 90% reduced from their pre-control level. However, the number of lamprey in the Bad River has increased since trapping began in the mid 1980's. Trap catch in 2007 was 2,042, the highest in the 22-year period 1986-2007 (see graph). In addition, the population estimate for the Bad River has increased over time, although down slightly in 2007 from an all time high of 18,912 lampreys in 2006. Control agents and fishery managers are not sure what is leading to the increased numbers of lampreys in Lake Superior. It may be as simple as lampreys are doing well because other fish in Lake Superior like lake trout, whitefish, and herring are doing well, thereby providing more food for each lamprey that migrates to the lake to feed.

An aggressive control program is scheduled again this year for Lake Superior and the rest of the Great Lakes, with lampricide treatments planned for 29 Lake Superior streams (12 Canada, 17 United States). Lampricide, or TFM (3-trifluoromethyl-4-nitrophenol), is a liquid put in streams in the spring and fall which is toxic to larval lamprey while being harmless to most other fish.

So, just like mosquitoes, we'll keep killing the pests year after year, and hopefully keep their numbers and the damage they cause to a minimum.

Tribal hatcheries release over 67 million fish in 2007

Tribe Hatchery/Rearing Component	Walleye		Muskellunge		Yellow Perch	Lake Sturgeon	Whitefish	Brook/Brown Rainbow Trout*	Lake Trout	White Sucker	Total
	Fry	Fgl.	Fry	Fgl.							
Bad River	14,500,000	491,800			52,000						15,043,800
Keweenaw Bay								26,522	92,770		119,292
Lac Courte Oreilles	2,295,000	95,419									2,390,419
Lac du Flambeau	22,390,000	331,047				1,072		121,325		13,700,000	36,543,444
Leech Lake	9,248,875	119,552		771			382,998				9,752,196
Red Cliff		700						86,000			86,700
Red Lake		10,000				10,000		3,940			23,940
Sault Ste. Marie	2,450,000	885,875									3,335,875
St. Croix		2,334									2,334
White Earth		131,009									131,009
Total	50,883,875	2,067,736	0	771	52,000	11,072	382,998	237,787	92,770	13,700,000	67,429,009

*Total number of one or combination of trout species



Study shows ceded territories low risk for CWD from captive deer & elk

By Jonathan Gilbert, Ph.D., GLIFWC Wildlife Section Leader & Dara Olson, GLIFWC Invasive Species Coordinator

Odanah, Wis.—Chronic wasting disease (CWD) has been an issue of concern to tribal hunters for a number of years. The disease is primarily located south of the ceded territories, but there is concern that it will spread north. Consequently, this project was undertaken in order to evaluate the potential relative risk that captive deer and elk farms may pose to the transmission of CWD to the north. This risk is only one of several risk factors that may contribute to the disease spread and so should not be seen as an assessment of absolute risk of transmission.

The risk of CWD due to cervid (see map) farm density was low on most public lands within the ceded territories, according to this model. Members of the tribes with deer hunting rights must largely limit their hunting to public lands.

Thus the deer which tribal members are harvesting under their treaty rights are exposed to a low level of CWD risk, according to this model. Deer management units with large amounts of public land had less risk to CWD than did units with little public land, and these units have been found to support the largest tribal deer harvests.

This present project was the first attempt to quantify the risk of northern Wisconsin to CWD based on the presence of cervid facilities and white-tailed deer density. It was certainly not the representation of absolute risk to CWD, partially because not all risk factors are known.

However, this model does provide a starting point for continued monitoring. The model can help target efforts to monitor those facilities that pose the greatest risk, and it can act as a base-line from which to compare future conditions.

Background information

In February 2002, the Wisconsin Department of Natural Resources (WDNR) reported that three (3) male waawaashkishiwag (white-tailed deer) harvested the previous fall in western Dane County had tested positive for CWD. This was the first time that CWD had been found in wild deer east of the Mississippi River, and it triggered a massive response on the part of the WDNR. The presence of this disease in free-ranging deer was of concern to Ojibwe tribes with treaty-reserved rights to hunt in ceded territories. This disease in free-ranging deer was viewed as a threat to these rights and to the health of deer on which tribal members rely.

CWD belongs to a family of diseases known as transmissible spongiform encephalopathies (TSE). These diseases cause microscopic holes in brain tissues, giving it a sponge-like appearance. TSEs include such diseases as scrapie in sheep, mad cow disease in cattle, mink encephalopathy, and Creutzfeldt-Jakob disease in humans. The infectious agents are hypothesized to be deformed prions, or proteins associated with nucleic acid.

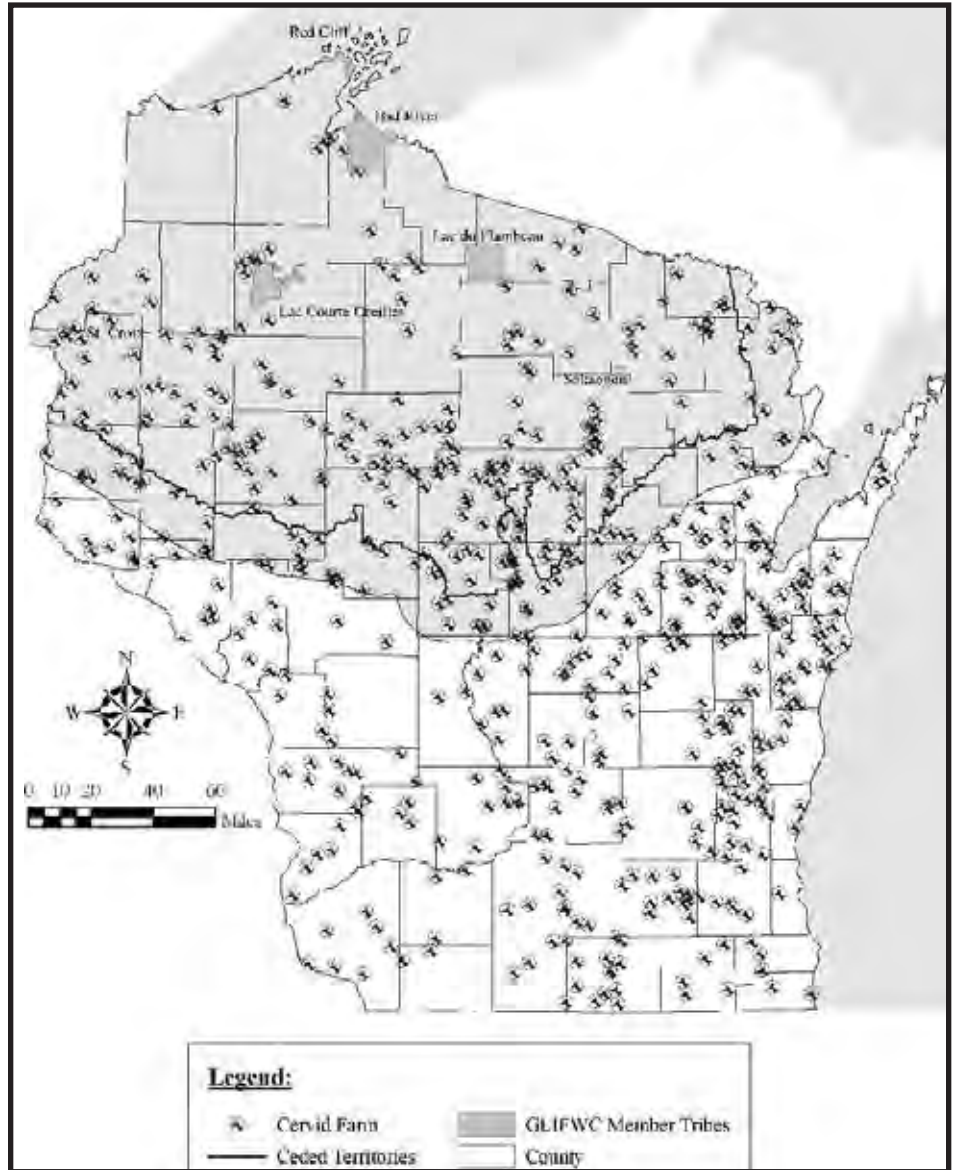
Clinical symptoms of CWD were first recognized in captive mule deer in 1967 in Colorado, and the syndrome was given the name Chronic Wasting Disease. Four species of the family Cervidae (a family of ruminants with solid deciduous antlers) are known to be susceptible to CWD: mule deer, white-tailed deer, Shiras moose, and Rocky Mountain elk/red deer.

Disease-infected deer and other cervids show body atrophy and changes in behavior. Affected animals may seem unstable and stand with a wide stance. They may have subtle head tremors and carry their heads with ears lowered. Excessive salivation and drooling occurs in terminal stages. Death is inevitable once clinical symptoms occur.

Scientists are beginning to learn how CWD is transmitted. The infectious agent may be passed in feces, urine or saliva. Transmission is thought to be from animal to animal, and it may be transmitted from mother to fetus. Recent research has demonstrated that infectious prions may be transmitted from animal to animal via saliva and blood, and the authors suggest that this is one reason for the relatively easy transmission of the disease.

CWD infectious agents are resistant to decomposition in the environment and in dead animals. Contaminated pastures appear to have served as a source of infection in some CWD epidemics. Thus, the elimination of diseased deer from an enclosure will not necessarily rid the area of the disease.

Likewise, prions remain infectious in diseased animals after they have died. Thus, the transportation of diseased animals after harvest can spread the disease.



Registered cervid farms (Department of Agriculture, Trade and Consumer Protection, 2006) in Wisconsin ceded territory and GLIFWC member tribes.

The movement of live animals is one identified risk factor in spreading the disease. Natural movements of wild deer and elk contribute to the spread of the disease, but human-aided transportation of both captive and wild animals greatly enhances this risk factor.

Prior to the disease being detected in wild deer in Wisconsin, the nearest wild population of deer with CWD was in Nebraska. It seems unlikely that the disease could spread through wild populations from Nebraska to Wisconsin without being detected in the area between these two states. However, the transportation of infected deer or deer parts could well explain the apparent leap-frog expansion of the disease.

Deer/elk farms

A database was obtained from the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) that contained information on the location of registered deer/elk farms. A total of 634 state-wide registered cervid farms were in the database obtained from DATCP for 2006 and of these there were 278 cervid farms within, or just outside, the ceded territories. (See above map.)

Species on farms

Cervid farms in Wisconsin housed several different species of cervids, sometimes on the same farm. The majority of farms had deer or elk or both, but there were nine different species listed in DATCP records. More than 60% of the farms had white-tailed deer, while elk or red deer were present on 38% of the farms (some farms may have had both deer and elk). (See figure 1.)

Risk assessment

The average risk of CWD transmission to free-ranging deer was calculated as 2.67 out of a possible maximum of 8.87. The highest (7.9) risk was in the south central portion of the ceded territories (Marathon, Portage, Wood and Shawano Counties). There was little to no risk in the northwest portion of the ceded territories and only a slight risk in the northeast portion, areas important to tribal hunting. Areas of no risk resulted from the lack of cervid farms in the area.

Public land in the ceded territories had a low risk of transmission of CWD from captive cervids. The mean risk factor within public lands (1.79) was 1/3 lower compared to the mean risk within the ceded territories as a whole (2.67). Since public lands within the ceded territory are located primarily in the north while the high-risk areas were located in the south, it seems logical that the public land would have only a small risk.

Also, the fact that cervid farms do not occur on public land or adjacent land, contributes to the lowering of the risk estimate on public land. A few small public land properties in Marathon (eg., Mead Wildlife Area and (See CWD transmission, page 11)

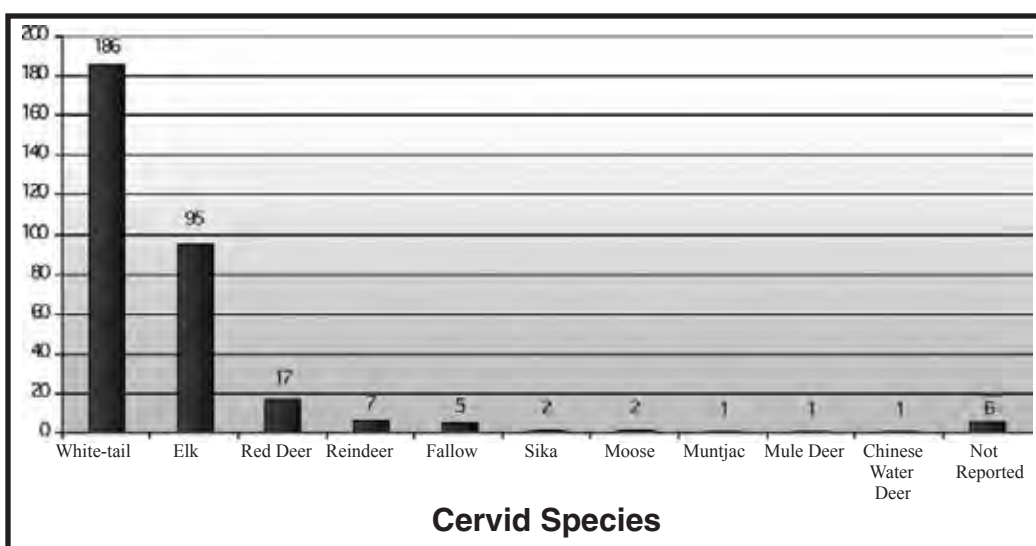


Figure 1. Number of cervid farms in the Wisconsin ceded territories housing various cervid species. Farms may have had more than one species present.



Researchers find signs of successful marten reproduction

By Sue Erickson
Staff Writer

Odanah, Wis.—By the end of the 2006-2007 marten field season last March, the story on waabizheshi (marten) was not a good one. There was little evidence of marten population growth in the Chequamegon-Nicolet Forest, where monitoring has typically taken place over the last 14 years.

Reintroduced after fisher by the Wisconsin Department of Natural Resources (WDNR) in the 1980s, waabizheshi has been the focus of study for GLIFWC's Dr. Jonathan Gilbert along with ojiig (fisher) and gidagaa-bizhiw (bobcat).

Just a year ago he looked glum at the mention of marten—no evidence of reproduction, dying marten and a shrinking of marten range seemed to be the long and short of a sad story.

However, the 2007-2008 field season, which typically runs from November through March, is yielding a slightly more optimistic picture for this small woodland furbearer. GLIFWC live traps captured two new young male martens this season, providing evidence of at least some successful reproduction, Gilbert reports with a wide smile.

Also a high school student group from the Hurley and Mercer area captured and collared another female marten this season in the Penokee range between Hurley and Mellen near Island Lake; she was later found dead in a fisher trap. However, field cameras indicated the presence of more waabizheshiwag in the area.

Working with Zach Wilson, Northwoods Discovery Center, Manitowish Waters, and Bruce Bacon, WDNR, Mercer, the students captured and radio-collared two more martens, one male and one female.

For Gilbert, this not only indicated successful reproduction, but also a new marten community and expanded range—positive indicators that waabizheshi may be doing better than he expected a year ago.

GLIFWC will continue monitoring efforts through March 2008, tracking marten and fisher movement using radio telemetry, recording information on the animals' range, movement, births, and deaths. Ron Parisien, GLIFWC wildlife technician, and Jose' Estrada, seasonal employee, spend many winter hours in the field recording information needed to better understand and assess waawaabeshi's survival in the northern forest.



Waabizheshi. (Photo by Bruce Bacon, Wisconsin DNR.)

2007 Wisconsin & Minnesota treaty deer/bear/turkey harvest

Tribal Registration Station	Deer	Bear	Turkey
Bad River	213	9	0
Lac Courte Oreilles	522	21	6
Lac du Flambeau	314	13	4
Lac Vieux Desert	43	0	0
Mille Lacs	146	0	7
Mole Lake	149	19	7
Red Cliff	242	12	5
St. Croix	320	11	2
Totals	1,949	85	31



Cameron McGeshick, age 14, harvested this spike buck on the Mole Lake Reservation. Cameron is the son of GLIFWC Warden Roger McGeshick. (Photo submitted)

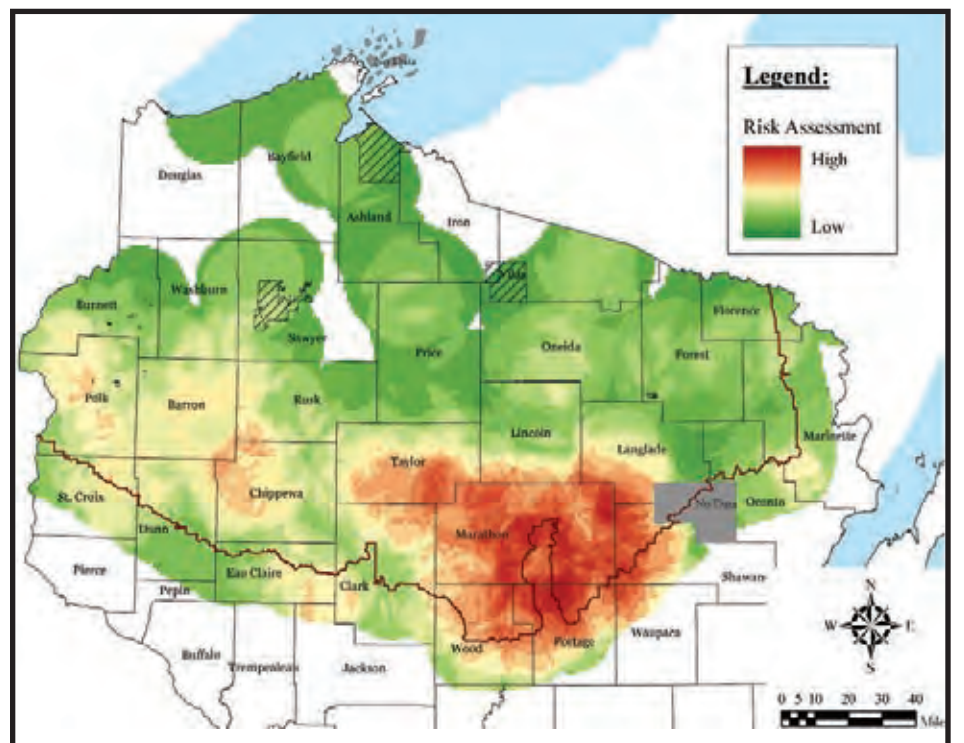
CWD transmission from captive deer & elk

(Continued from page 10)

County Forest) and Langlade Counties (eg., County Forest) had high risk as a result of cervid farms on adjacent private land. These public lands are located in deer management units that sustain very small tribal harvests.

When the tribal harvest is compared to risk of CWD most of the tribal harvest comes from units with relatively low risk, with a few exceptions. There are four units with tribal harvests greater than 100 and risk of CWD above the trend line on the figure (DMU 3, 10, 11, 35). These units are where tribal harvest is large, and the risk is above average. This model can be useful in developing strategies for disease monitoring.

For more information contact Jon Gilbert at (715) 682-6619 or email jgilbert@glifwc.org.



Risk assessment of CWD transmission into the Wisconsin ceded territories as a function of cervid farm density and deer density.

Michigan DNR tribal liaison retires

Jim Ekdahl, Upper Peninsula field deputy for the Department of Natural Resources, retired at the end of January, after more than 33 years of state service. He worked his early career as a conservation officer, serving in field and supervisory positions in Norway, Sault Ste. Marie, Pontiac, Lansing and Baraga. In 1994, Ekdahl was named the DNR's first statewide coordinator for Native American issues, responsibilities he kept for the remainder of his career.

"Jim's dedication to the DNR has been exemplary," said DNR Director Rebecca Humphries. "His ability to work on highly complex matters and gain consensus on major issues, especially in the realm of tribal rights, has been critical to helping the state successfully achieve a desirable outcome for both the citizens of Michigan and the tribes."

In 2000, Ekdahl led the DNR team in negotiating terms of enacting Native American Great Lakes fishing rights in the 1836 Treaty area of eastern Lake Superior and northern Lakes Huron and Michigan. In 2007, he again led a DNR team of negotiators in successfully reaching an out-of-court agreement with five Michigan Indian tribes regarding inland hunting, fishing and gathering rights reserved by the tribes in the 1836 Treaty.



Old Style Anishinabe • Split Toe

Moccasins

by Biskakone from Waswaagoning (Anishinabe Makazin)

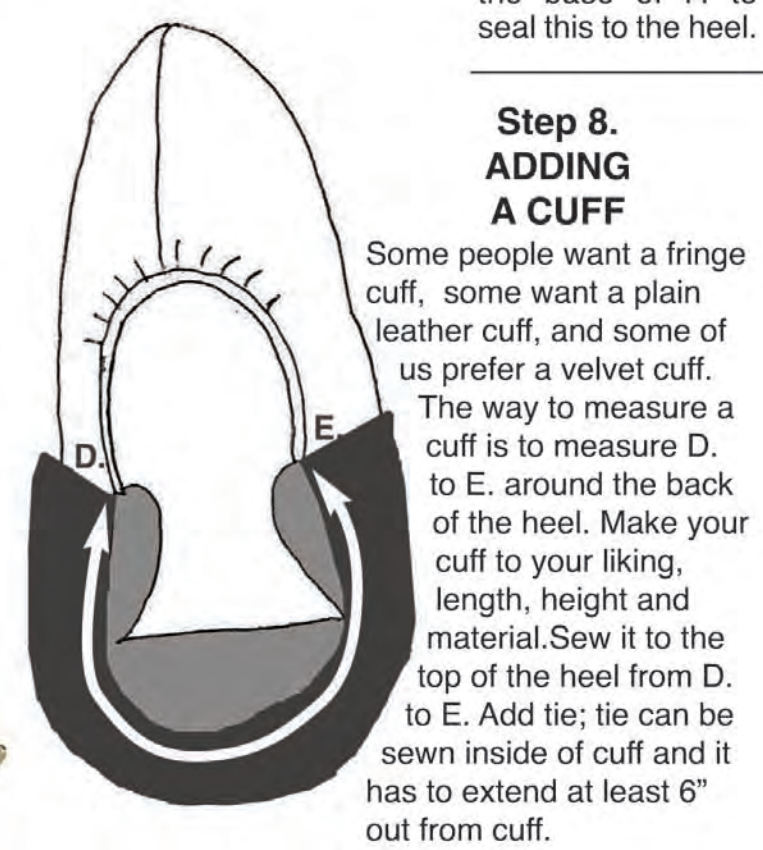
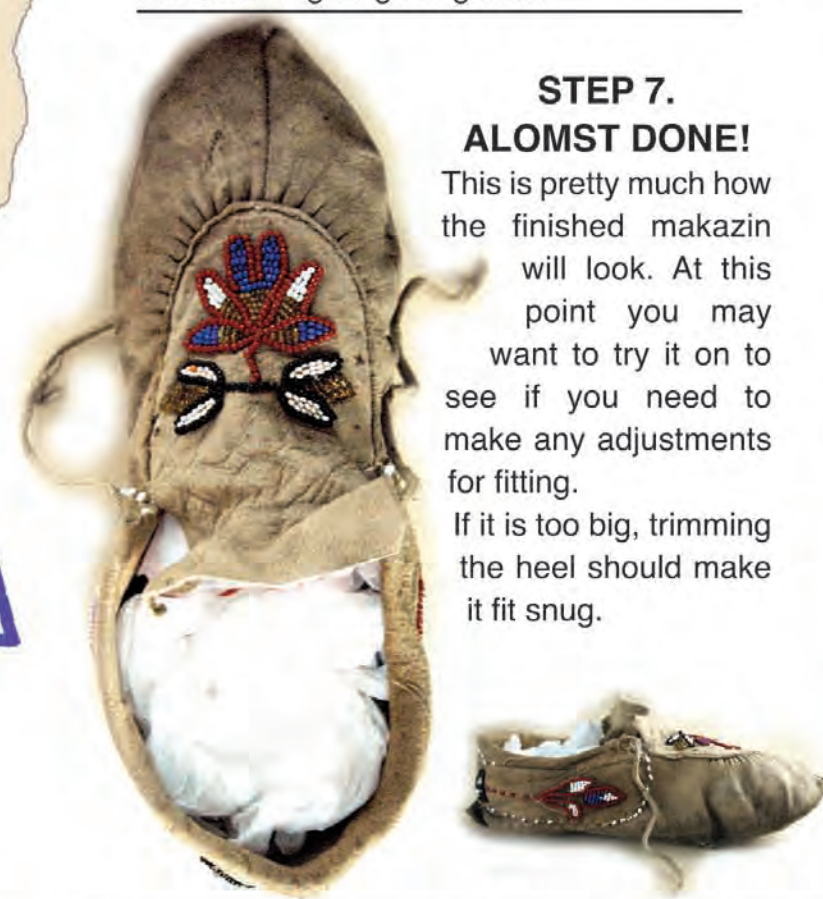
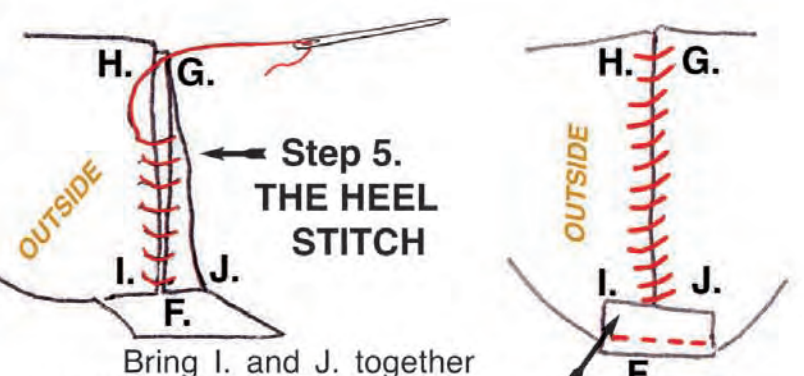
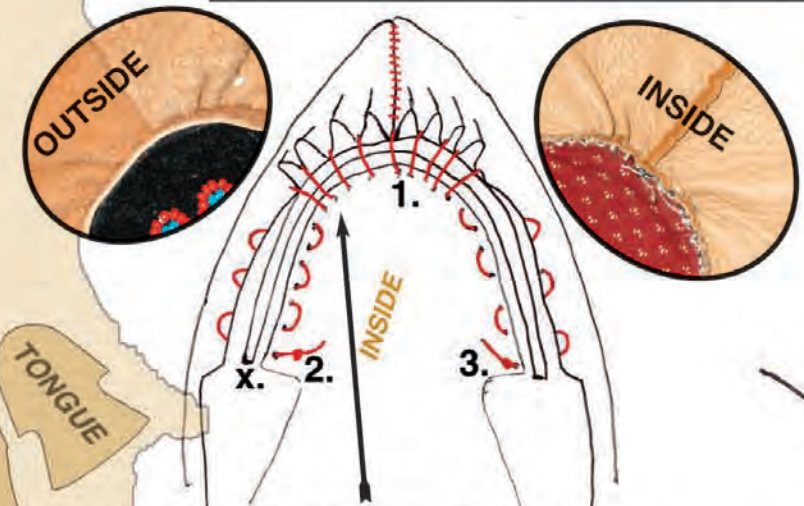
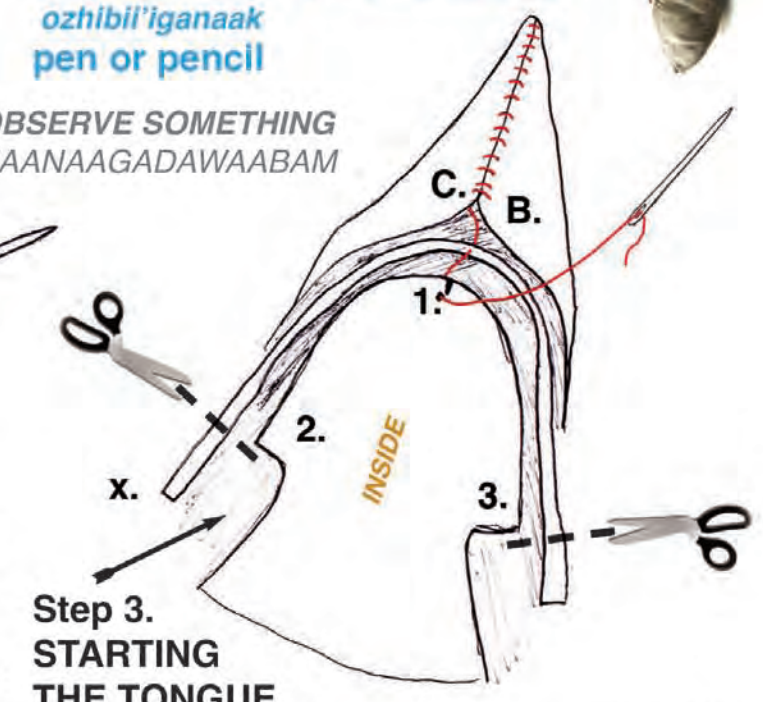
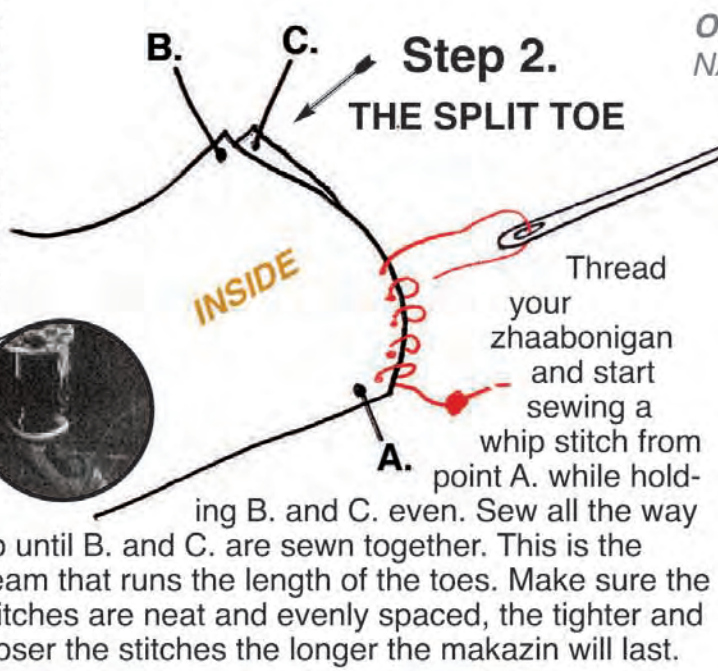
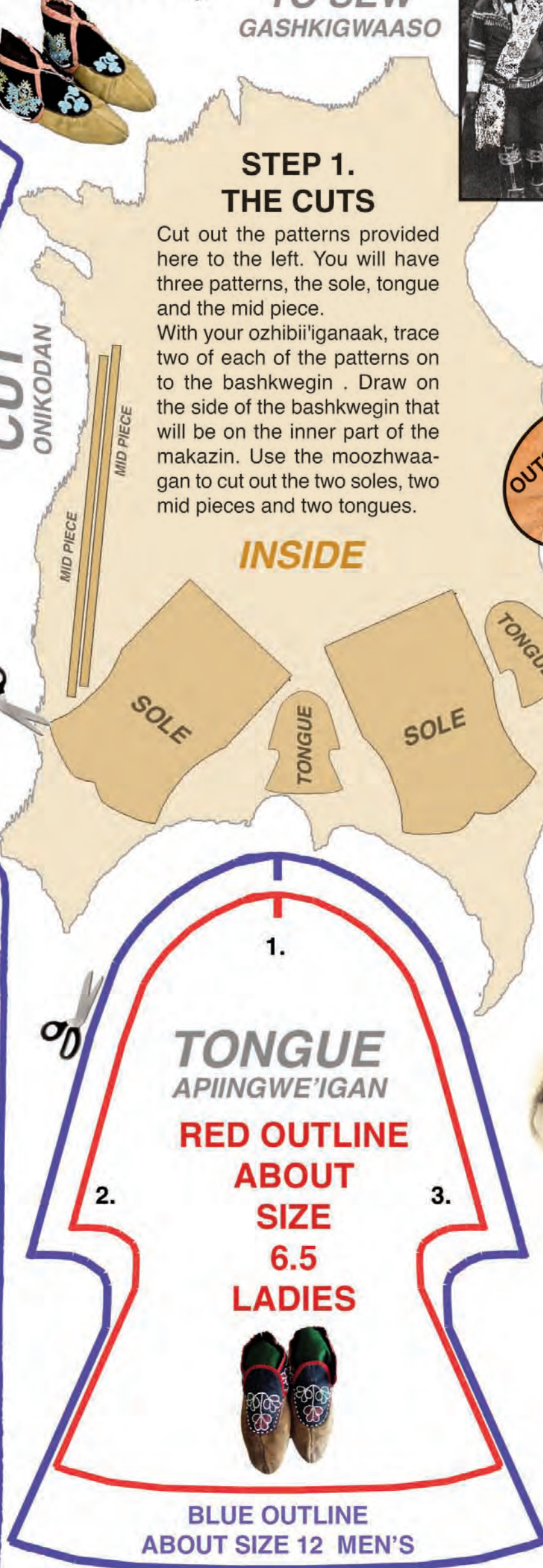


TO SEW GASHKIGWAASO

TO MAKE MOCCASINS YOU WILL NEED:

- moozhwaagan scissors
- asabaab thread or injiitad sinew
- bashkwegin tanned hide
- ozhibil'iganaak pen or pencil
- zhaabonigan gloves needle

OBSERVE SOMETHING NAANAAGADAWAABAM



Most commercially tanned hides have a smooth and soft side. It is up to you to decide which side you want to be on the outside. Some people prefer the soft side because it looks a little more natural than the glossy smooth side. When cutting your bashkwegin please take your time and make every cut even and straight, thus you will have fine looking moccasins. These patterns can be copied and scaled on a scanner or xerox machine to fit your foot. If you want beadwork on these moccasins, please add it to the tongue and cuff before sewing it together. Any further Questions? Please Contact Biskakone. biskakone@yahoo.com

X. MID PIECE

Bringing nature back into balance

Biological control agents level the playing field

By GLIFWC Staff

Odanah, Wis.—The increase in travel and trade over the last several decades has unfortunately brought an increase in accidental and intentional transport of plants and other organisms around the world. This transport has facilitated the spread of an increasing number of aggressive “invasive” species across the globe, to the detriment of local plants, animals, and human societies.

Historically most of the plants arriving in North America over the years have been classic “weeds” such as dandelions and creeping Charlie that primarily colonize open, disturbed areas such as roadsides, lawns, and pastures. While these weeds may spread into natural habitats to some degree, they usually have little effect on these habitats. But a minority of introductions have been able to freely invade natural habitats, pushing out the native plants (and animals) and significantly altering them in the process.

How are aggressive introduced plants such as purple loosestrife, reed canarygrass, leafy spurge, and garlic mustard able to dominate the natural vegetation so completely? Are they just better competitors than the native plants they push out? Or is there more to it than meets the eye?

The relationship between plants and their pests

The arrival of spring brings an explosion of life, including a huge variety of beetles, flies, butterflies, moths, and other insects. Many of these insects are “specialists” to one degree or another, feeding on a relatively narrow group of closely-related plants. Some even depend on a single species of plant for part or all of their life cycle.

Over countless centuries these insects and their plant hosts have developed more-or-less stable relationships with each other. The host plant populations have evolved new strategies to fend off their insect pests, including producing chemicals that make it harder for the insects to feast on them. The insects, in turn, have adapted their feeding habits, life history, and physiology (including the ability to tolerate various plant toxins) to partially overcome the defenses of their hosts. The end result is that plants are able to hold off their predators enough to grow and reproduce, while at the same time, their pests do enough damage to keep their host plant populations in check, so that they don't overrun their neighbors.

When people transport plants from overseas, their specialist predators are often left behind. It is not unusual for introduced plants to be nearly “pest-free” in their new habitat, as garden catalogs are often quick to point out. Because of their unique characteristics (especially chemical characteristics) introduced plants often don't attract the native plant predators or are inedible to them, allowing these plants to put more energy into growth and reproduction. Meanwhile the native plants must continue to labor under their burden of native pests. (Sometimes native plants have little or no resistance to introduced pests—see “*The Cost of Invasive Species*,” Winter 2007/2008 *Mazina'igan*.)

Biological control

One way to try and bring troublesome introduced plants back into “balance” with their neighbors and mitigate the damage they cause is to reunite them with their natural enemies. This technique is called “biological control,” or “biocontrol” for short.

The first biocontrol program in North America was also one of the most successful. Common St. John's wort is a European plant that is toxic to livestock and most wildlife. This plant became established in the western US around 1900, where it became known as Klamathweed or goatweed. (This is the same plant that recently became popular as a medicinal herb, for its reputed antidepressant and antiviral properties.)

St. John's wort spread like wildfire, and by the early 1940s covered more than 800,000 acres of rangeland in California alone, severely threatening the cattle industry. Then in 1944 two closely-related, European leaf-eating beetles (*Chrysolina quadrigemina* and *C. hyperici*) were imported to control it, and by the mid-1950s this former scourge had been reduced to a minor roadside weed! California ranchers were so grateful that they even erected a huge monument in Humboldt County in the beetle's honor.

Careful testing helps insure success

Today plants are chosen as targets for biocontrol based on a number of considerations, including the degree of invasiveness and the risk they pose to native plants and crops. In general, plants that have no close relatives in their new range are the best targets, as their natural pests are less likely to attack the native plants in their new home.

Before insects or other organisms are introduced as biocontrols for invasive plants, they go through a thorough testing process. This testing is usually initiated by individual researchers, a state land-grant university or a government agency (typically a state Department of Agriculture or Natural Resources, or the US Department of Agriculture—Agricultural Research Service, or USDA-ARS). Testing is usually carried out by the USDA-ARS or by the Center for Applied Bioscience International (CABI), a nonprofit research and publishing organization based in Delémont, Switzerland.

The process begins by studying the target invasive plant and its natural predators in its native range. It is not uncommon for researchers to find dozens or even hundreds of insects that use a single species of plant. Some of these insects will attack a wide variety of other plants as well, and so not be very “host-specific.”



Adult loosestrife beetle. (Photo by Miles Falck)

Some may be difficult to raise in captivity. And some may reproduce too slowly or do too little damage to the target plant to be useful. But if all goes well, a few of the insects will show promise as biocontrols.

Once promising biocontrol agents are identified, host-specificity testing begins. The target plant is grown in a secure facility, along with variety of native and crop plants. These test plants include the native species that are most closely related to the target plant, as well as a diverse sprinkling of other species. The potential biocontrol agents are then tested to see whether they can survive and reproduce on the test plants alone (no-choice tests) and whether they use these test plants when the target plant is growing with them (choice tests). Testing is overseen in Canada

by Agriculture Canada, and in the US by the Department of Agriculture, Animal and Plant Health Inspection Service (APHIS), which has legal responsibility for overseeing the testing and approving of agents for release in the US. Research and testing of new biocontrol agents for an invasive plant can take 10 years or more and cost upwards of a million dollars, with no guarantee that any of the agents being tested will prove suitable for release in the end. But successful releases often provide environmental and economic benefits worth millions of dollars per year.

Many of the insects that have gone through this testing process and been released to the environment have proven to be highly host-specific and have significantly reduced populations of their target plants. Highly successful programs include the release of two leaf-feeding beetles (*Galerucella spp.*) for purple loosestrife, and a group of closely-related flea beetles (*Aphonia spp.*) to combat leafy spurge. Other releases have failed to establish or have had little or no impact on target plants, but haven't caused problems either. Of the hundreds of insects that have been released as biocontrols for various invasive plants in this country, only a small handful have themselves become significant problems.

At least one biocontrol agent was very successful in its initial application, but became a problem when used in a way that the original research never intended.



Lake Superior wetland in 2002 (left) and two years later (right). Loosestrife beetles have weakened the loosestrife plants so most no longer flower and produce seed. (Photo by Miles Falck)

Prickly pear cacti (*Opuntia spp.*) are native to the Americas, where they are ecologically and economically valuable in some regions. Starting in 1788 more than two dozen species of prickly pear were introduced into the Old World for horticulture and erosion control, where, lacking natural predators, some spread explosively, becoming major weeds.

In the early 1900s the South American cactus moth (*Cactoblastis cactorum*) was introduced to control invasive prickly pear populations in Australia and South Africa. But then from 1957 through 1960 the moth was introduced to the Caribbean Islands to reduce native populations of prickly pear. From there it spread to Florida, where it presents a serious threat to these ecologically and economically valuable cacti in their native North America. Research is now being done to find native parasitoids (tiny parasitic wasps or flies) and pathogens to control this introduced moth!

Unlike biocontrol agents for invasive plants, no host-specific testing of biocontrols that attack insects or other animals is required by law, so testing of agents introduced for this purpose is usually not done. An example of what can happen when predatory insects are released without testing is the now-familiar multicolored Asian lady beetle (*Harmonia axyridis*).

In Asia this orange to red, often black-spotted beetle inhabits trees and fields, preying on aphids and scale insects. Beginning in the early (See **Biological control**, page 15)



Multicolored Asian lady beetle adults. Note white head with black markings. (Photo: Bill Ree, Texas A&M, Bugwood.org.)



Discovering miskwijibik (bloodroot)

By Karen Danielsen
GLIFWC Plant Ecologist

Odanah, Wis.—In early spring, delicate flowers adorn the forest floor amidst the resting, still leafless trees. In particular, miskwijibik (bloodroot, *Sanguinaria canadensis*) grows flowers so fragile that, once picked, the petals instantly drop away.



Miskwijibik flowers are so fragile that, once picked, the petals instantly drop away. The flower has a central crown of bright yellow stamens surrounded by eight to twelve white petals.

Also, being quite sensitive to temperatures, the flowers close up on cold, cloudy days.

Each plant of miskwijibik produces a single flower (rarely two) that blooms for a time period just long enough to be pollinated by small bees and flies. After pollination, the flower quickly wilts to be replaced by a developing seed capsule. Thus, to spy a flower of miskwijibik is truly fortuitous.

The flower has a central crown of bright yellow stamens surrounded by eight to twelve white petals. It grows on a stout, reddish stem about six inches tall. A single leaf arising from the base of miskwijibik folds itself about the otherwise leafless flower stem.

After the flower wilts, the waxy-green leaf rapidly unfolds and expands. The leaf remains on the plant for the remainder of spring into summer, growing until it often overtops the seed capsule. Meanwhile, the ripening seed capsule swells and develops a yellow or brown tinge to its bluish-green base color.

As the capsule dries and breaks open, the exposed seeds become fodder for ants. Transporting the seeds to their nests, the ants eat only the oily appendage (known as an elaiosome) protruding off the seed. The rest of the seed, left unscathed, gets discarded in soil made nutrient-rich by ant debris.

Miskwijibik has underground stems called rhizomes that many people

confuse with the roots. These rhizomes, along with the actual roots, exude a red sap reminiscent of blood, hence its name miskwi- (referring to blood) and jibik (or ojibik, meaning root). The Latin genus name, *Sanguinaria*, also refers to blood.

The Anishinaabeg use the sap to dye a variety of items a yellow-orange hue. However, care should be taken when handling the sap because it can cause skin rashes or blisters.

Furthermore, the entire plant contains toxic alkaloids that, when administered internally, can lead to severe vomiting and even death.

Look for miskwijibik in hardwood forests that have nutrient-rich soils. Oftentimes, several plants of miskwijibik grow together in clumps, with new plants developing from the rhizomes.

Though not rare, these plants can be difficult to find. Maybe, this difficulty makes discovering them all the more magnificent.

Mercury in fish compost

(Continued from page 7)

in fish waste used to make compost poses any human health risk when used in a garden to grow food. I measured mercury concentrations at various points during the composting experiment including: the components used to make the pile (including fish waste), the pile after one year of maturing, the ground in the garden plots before we added any compost, and the kernels of corn from plants grown in the plots.

Mercury present in the fish compost does not pose a human health risk Here are three reasons why:

1. The concentration of mercury in the fish compost was about 400 parts per billion, which is about 50 times lower than 17,000 parts per billion mercury the U.S. EPA considers the cut-off for "exceptional quality" sewage sludge that can be applied in an unrestricted manner to any type of land.
2. Plants will not actively take up mercury from the soil. It is not an essential nutrient for plant growth and many studies have shown that, unless you are in an area contaminated with mercury, plants will have very low concentrations that are not of concern to people eating them. In addition, the form of mercury typically found in plants is less of a health concern than the form found in fish. Mercury was not detected in any of the corn kernel samples taken from the test plots in this study.
3. The pathway of mercury exposure we are most concerned with is from eating the fillets of fish. By composting the fish, we add many steps to this pathway that greatly reduce our risk. First, we've already removed the fillets that contain much of the mercury; second, the fish waste gets diluted during the composting process and by being mixed in with the garden soil, and third, plants do not actively take up mercury into their tissues.

The bottom line is that we should be more concerned about the mercury in the fish fillets we directly consume, rather than from food grown in our gardens that use compost made from fish waste. GLIFWC's mercury maps can help you make informed choices about which lakes to harvest walleye in order to reduce your risk to mercury in the fillets you consume.

Making compost from fish waste takes a little extra time and effort to find materials and make and manage the pile, but the favorable results from this pilot project show that it can be a safe and effective fertilizer for your garden. If interest exists at the community level, fish composting may be an option to consider for using fish waste from spring harvest or commercial fishing operations to create a useful fertilizer for community gardens and homes.

Basically, composting is creating the right conditions for nature to do its work. Composting happens! All you need is a little knowledge about what materials to use and the willingness to try your own experiment. Plus, you get the added advantage of knowing that a resource you harvested was used to create something that helped grow your own food. It's a way to take ownership of the food we choose to eat.

In closing, I would like to offer a couple of resources that were helpful to me and may be to those who have an interest in trying out fish composting:

1. **Compost Solution to Dockside Fish Wastes.** Lynn Frederick, Robin Harris, Lloyd Peterson, and Stacy Kehmeyer. 1989. Available online: <http://www.aqua.wisc.edu/publications/ProductDetails.aspx?productID=374>.

2. **The Rodale Book of Composting.** Edited by Deborah L. Martin and Grace Gershuny. 1992.

3. University of Cornell's Composting Website: http://compost.css.cornell.edu/Composting_Homepage.html.

Feel free to contact me with your questions at: mhudson@glifwc.org or 715-682-6619 ext. 109.

Biological control agents

(Continued from page 14)

1900's a number of accidental and intentional releases of this insect in the US occurred, culminating in an extensive release program by the USDA-ARS in the eastern and southern US in the 1960's through the 1980's.

Whether the Asian lady beetle's establishment in the US is due to the accidental or intentional releases (or both), this pesky beetle is now irrevocably established across the continent.

Asian lady beetles are particularly evident in the fall, when they congregate on houses and other buildings, and again in the spring, when they attempt to go back outside. They can deliver a harmless but annoying bite, and release a foul-smelling orange fluid when disturbed. This liquid can cause an allergic reaction in some people.

While Asian lady beetles have reduced the pecan aphid and impacted certain other agricultural pests, they have caused unforeseen problems as well. Even the domestic wine industry has been affected—it takes only a few of these beetles hiding in the fruit to taint the flavor of a batch of wine!

The future of biological control

Biological control has a number of advantages, including the ability to control large populations of invasive plants indefinitely, at relatively little cost. Biocontrol agents can reduce or eliminate the need for harmful and expensive pesticides and herbicides, and can be safely used in wildlands and in agricultural and residential areas.

While biocontrol agents generally will not completely eradicate invasive plants, they can significantly reduce their abundance and their ability to invade and dominate native vegetation. As more and more plants from around the world are transported to this country, biocontrol agents are likely to play an increasing role in reducing their impact on the environment.

The best strategy for preventing the spread of invasive introduced plants is to keep them from becoming established in the first place. But once an invasive plant has spread across large areas and is causing significant environmental and economic damage, biological control is often the only practical and effective control option available.

For more information

A nice USDA-ARS pamphlet on biological control can be downloaded from www.ars.usda.gov/SP2UserFiles/Place/19260000/brochure1a.pdf.

The Nature Conservancy's Weed Control Methods Handbook has an excellent chapter on biocontrol—see <http://tncweeds.ucdavis.edu/products/handbook/06.BiologicalControl.pdf>.

Well-written and comprehensive information on biocontrol can be found at www.invasive.org/eastern/biocontrol/30FutureTargets.html#NWIW.

More on the Asian lady beetle can be found on the Ohio State University website, at <http://ohioline.osu.edu/hse-fact/1030.html>. The University of Kentucky (www.ca.uky.edu/entomology/entfacts/ef416.asp) and Iowa State University (www.ipm.iastate.edu/ipm/iin/ladybeetles.html) have great online fact sheets also.



2008 Board of Commissioners officers elected



The GLIFWC Board of Commissioners elected 2008 officers at its January meeting in Mole Lake. Mille Lacs' Curt Kalk (left) became board chairman and William "Gene" Emery from Keweenaw Bay was voted in as board secretary. Current Red Cliff Tribal Chairperson Rose Gurnoe (not pictured) was elected board vice-chair. The GLIFWC Board is comprised of one representative from each of the 11 member tribes. (Photo by Charlie Otto Rasmussen.)

New inland fisheries biologist readies for his first spring tour of duty

By Sue Erickson
Staff Writer



When not working, Mark Luehring, GLIFWC's new inland fisheries biologist, might well be found out on Gichigami's Chequamegon Bay pulling up a few coho through the ice for dinner. For him fish equal both work and play.

Luehring joined GLIFWC's Biological Services Division as of November 5, so is not exactly a new face in the office anymore. However, he is still engaged in a lot of "first times" with the Inland Fisheries Section. Assigned to assist in the management of the Wisconsin and Michigan off-reservation inland fisheries, he is currently involved for the first time with spring walleye declarations and preparing for biological monitoring of spearfishing landings once the lakes open this spring. It will also be his first time out on the annual spring walleye population assessment runs with the electrofishing crews—usually a two to three week tour of duty on lakes scattered across the Wisconsin and Michigan ceded territory landscape—and often associated with some wintry nights spent electrofishing on lakes whose shorelines have recently been freed of ice.

Luehring came to GLIFWC directly from Michigan State University after having completed a Master of Science degree in fisheries. His thesis focused on the use of mating pheromones to attract adult female lamprey. His undergraduate work was completed at UW-Stevens Point where he also majored in fisheries.

He grew up and completed high school in Lake Mills, Wisconsin, in the Madison area, but became attracted to the Northwood's when hunting near Cable, Wisconsin. His love for outdoor activities, such as hunting and fishing, attracted him to the region and GLIFWC's fisheries program, identifying with GLIFWC's mission to protect and preserve the natural resources.

Mark Luehring. (Photo by SE.)

GLIFWC All Staff meeting

Photos by Charlie Otto Rasmussen



University of Minnesota Ojibwe language instructor Dennis Jones (center) attended GLIFWC's annual staff meeting along with several Ojibwemowin students. The Twin Cities group taught conversational Ojibwe words and phrases to GLIFWC staff in small breakout groups. Pictured from left: Laura Waawaasegaming Pawlacyk, Adam Güzzhig-anang Linklater, Pebaamibines Jones, David Biidaashimi Rodriguez and Lucia Bonacci.



Long-serving GLIFWC registration clerks were recognized during the February 20 All Staff meeting in Odanah. Bad River clerk Maggie Kolodziejski (left) marks her 14th year and Vicki Leask has worked the Red Cliff registration post for 19 years. Clerks issue hunting, fishing and gathering permits and tally the harvest of animals taken off-reservation like whitetailed deer.



Neil Kmeicik and Lynn Plucinski, GLIFWC's longest serving staff members at 25 years, received Pendleton blankets at the February 20 All Staff meeting in Odanah.



GLIFWC employees recognized for their years of service during the All Staff meeting were, from the left, Vern Stone (20), Jim Stone (5), Ann McCammon Soltis (15), Bill Mattes (15), Leanne Thannum (20) and Esteban Chiriboga (10). Additional pin award recipients not pictured include: Mike Howen (10), Duane Parrish (15), Gigi Cloud Mannila (15) and Jim St. Arnold (20).



GLIFWC wardens work with regional youth



Part-time GLIFWC Warden Tom Kroeplin demonstrates a trapping scenario during a two-day Inter-Cultural Leadership Initiative at the YMCA Camp Jorn, Manitowish Waters, Wisconsin. GLIFWC wardens participated in two separate two-day programs, one in January for 6th graders and one in February for 4th and 5th graders. (Photo by Heather Naigus.)



GLIFWC Chief Warden Fred Maulson (center) explains the traditional techniques of spearing through the ice to a group of elementary students participating in the Inter-Cultural Leadership Initiative (ILI) at YMCA Camp Jorn, Manitowish Waters, this winter. Also presenting during the hands-on workshop was Warden Adam McGeshick, Lac Vieux Desert. The event attracted around 60 young participants. (Photo by Heather Naigus.)

GLIFWC shares the Wisconsin experience with Michigan DNR

By Sue Erickson
Staff Writer

Odanah, Wis.—GLIFWC Executive Administrator James Zorn and Enforcement Chief Fred Maulson provided input regarding the Wisconsin experience to Michigan Department of Natural Resources (MDNR) staff during two sensitivity training workshops late last year.

Two one-day events, one at Northern Michigan University, Marquette, and the other at Central Michigan University, Mount Pleasant, were attended by MDNR wardens and staff and covered a wide-range of tribally-oriented topics, including cultural and historical information regarding hunting, fishing and gathering activities as well as contemporary issues and implementation of off-reservation treaty rights.

GLIFWC presented on behalf of the Bay Mills Band, a GLIFWC member band, along with representatives from the Sault Ste. Marie, Little River, and Grand Traverse Bands—all signatories to the 1836 Treaty, the subject of a recently negotiated treaty rights agree-

ment between the State and Tribes. Zorn provided information on the development of cooperative management between GLIFWC and state and federal resource management agencies as well background on the 1980s protest and non-Indian backlash in Wisconsin.

Maulson presented on the logistics of practical off-reservation law enforcement in Wisconsin, such as hunting and fishing violations, youth activities and the working relationship with the Wisconsin Department of Natural Resources conservation enforcement.

Representatives from the other Michigan bands shared family accounts of historical hunting and gathering activities and their value both culturally as well as for subsistence. They also discussed protocol if state enforcement staff encountered spiritual ceremonies, such as sweats or fasting, being undertaken in the ceded territories.

Maulson was pleased with the opportunity to become acquainted and share information with Michigan officers and other MDNR personnel. He believes it will help open doors for communication in the future.



Visiting our neighbors to the north, GLIFWC Chief Warden Fred Maulson (center) was invited by the Ontario Ministry of Natural Resources (OMNR) to provide a presentation on treaty commercial fishing to the Blind River First Nations and work with the OMNR conservation officers last fall. Maulson is pictured with Ontario conservation officers (from the left) Brian Morrison, Ernest Heerschap, David Harnish, and Dennis Bellemare. (Photo submitted.)

2008 safety class schedule

Bad River

Class Name	Dates	Times
Snowmobile	March 13-14 (Th-F)	6:00–9:00 p.m.
	March 15	8:00 a.m.–4:00 p.m.

Snowmobile classes will be held at the Chief Blackbird Center. For more information contact Mike Wiggins, Bad River area warden (715) 292-8325.

Lac du Flambeau

Class Name	Dates	Times
Boating	March 17-20 (M-Th)	3:00–6:00 p.m.
ATV/Snowmobile	May 12-15 (M-Th)	3:00–6:00 p.m.
Hunter Education	August 18-20 (M-W)	3:30–6:30 p.m.

All classes will be held at the Lac du Flambeau (LdF) Grade School. For more information contact Emily Miller, LdF area warden (715) 892-6789.

Mole Lake

Class Name	Dates	Times
ATV/Snowmobile	March 17-20 (M-Th)	5:00–8:00 p.m.
Boating	May 19-22 (M-Th)	5:00–8:00 p.m.
Hunter Education	June 2 (M)	5:00–8:00 p.m.
	June 9 & 10 (M-T)	3:00–8:00 p.m.

All classes will be held at the Sokaogon Chippewa Community Tribal Office. For more information contact Roger McGeshick, eastern district supervisor (715) 889-3200.

Red Cliff

Class Name	Dates	Times
Snowmobile	March 28 (F)	6:00–8:00 p.m.
	March 29 (Sat.)	8:00 a.m.–4:00 p.m.

All classes will be held at the Red Cliff Fire Hall. For more information contact Red Cliff Area Warden Jim Stone (715) 292-3234.



Ready for a quick dip into Lake Superior, GLIFWC wardens prepare to polish ice rescue skills as part of their annual winter training program. GLIFWC wardens routinely carry ice rescue equipment while on duty during the winter months. (Photo by Emily Miller.)



Three new GLIFWC officers patrol ceded territory

By Charlie Otto Rasmussen, Staff Writer

Odanah, Wis.—The Enforcement Division announced the appointment of three new conservation officers over the past winter. Two of the GLIFWC recruits are stationed primarily in Michigan with overlapping service areas in northeast Wisconsin. The remaining position covers the Lake Mille Lacs region and Minnesota's 1837 ceded territory. All three officers are scheduled to attend a law enforcement training program at Chippewa Valley Technical College this summer.

Mille Lacs

As a Minnesota Department of Natural Resources creel technician, Robin Arunagiri witnessed violations like overbagging walleyes but couldn't do much beyond lecture fishermen about conservation laws and make reports to local authorities. In his upgraded role as a local GLIFWC conservation officer, Arunagiri looks forward to better protecting the waters and lands around his home at Lake Mille Lacs.

A native of Penang, Malaysia, Arunagiri left his computer engineering position in Bloomington and moved north to Mille Lacs with wife Chris in 1999. They soon had a son and Arunagiri split time working for a Mille Lacs resort and the DNR, counting fish harvested by tribal members and state anglers. He also served as a DNR crew leader for the 2004-05 hooking mortality study and participated in annual fishery assessments.

A familiar face on the Mille Lacs fishing scene, Arunagiri targets the lake's impressive muskie population during the open water angling season and hunts deer in autumn. Arunagiri can be reached by telephone at (320) 838-3653.

Marquette

No matter where Heather Naigus lived as a youngster, her dad found local forests, parks and campgrounds where the family spent much of their leisure time. The daughter of a NASA aeronautical engineer, Naigus said her family frequently moved but quality time outdoors was a constant.

That appreciation for the natural world spurred her to study at Northern Michigan University where she earned a Bachelor Degree in Conservation Biology and a Minor Degree in Native American Studies. Naigus' NMU experience ultimately exposed her to the work of GLIFWC and career opportunities with the agency.

Posted on the divide between two treaty jurisdictions, warden Naigus is now charged with enforcing tribal conservation laws in both the 1836 and 1842 ceded territories. She is a single mother and enjoys outdoor recreation like kayaking. Naigus is also pursuing cultural preservation projects with an emphasis in documenting traditional ecological knowledge, or TEK, associated with native peoples.



GLIFWC's Enforcement Division welcomed three new conservation officers during winter 2007-08. Pictured from left: Dan North, Heather Naigus and Robin Arunagiri. The wardens are primarily stationed in the eastern region of the ceded territory with the exception of Arunagiri who is based in the far west at Mille Lacs. (Photo by COR.)

Lac Vieux Desert

With the arrival of the New Year, GLIFWC journeyman Dan North transferred to the Enforcement Division taking up responsibilities for the Lac Vieux Desert region of Upper Michigan. A wildlife technician since spring 2000, North previously served three, limited-term stints as a Great Lakes fisheries aide working on fisheries assessments and sea lamprey control. North was also an Enforcement Division part-time dispatcher for one year.

With his conservation officer position, North comes full circle with career aspirations laid out in 1991 when he applied but was not selected for a GLIFWC warden opening at Mille Lacs. Like many of his colleagues, the prospect of working principally in the outdoors—on the water and in the woods—was always a strong incentive. North holds a Bachelor of Science Degree in biology from Northland College. He can be reached at (715) 292-5165.

Wildlife disease workshop cont.

(Continued from page 1)

where disease is easily spread; 3.) ecotourism, which promotes close contact between humans and wildlife; 4.) wildlife pets, such as the Gambia rats carrying an infectious disease while being warehoused with prairie dogs for pet shop sales; 5.) zoological parks with substantial human contact and high-density wildlife populations; 6.) wildlife feeding; 7.) wildlife rehabilitation efforts; 8.) captive propagation.

Richards also noted that several of the diseases now confronting the northern deer and elk herds, brucellosis and bovine tuberculosis, originated from cattle. The infection did not originate with the wildlife.

Prevention

He emphasized that now is the time to "get our house in order" to face the challenge of prevention. "Getting the message out is getting harder and harder," Richards said, "because 80 percent of humans in the lower 48 states live in urban areas." Consequently, their concern for and understanding of wildlife is diminished, leaving a larger burden for a small percentage of the population to face.

Getting the house in order actually equates to proactive and forward-looking wildlife management. Some of the proactive, preventative measures that need to be encouraged include: 1.) examining for disease prior to any translocations; 2.) reporting and information exchange; 2.) sharing information among management organization—can't have secrets; 3.) cooperating and collaborating on prevention efforts 4.) educating resource managers as well as the general public, including establishing an infrastructure for collaboration, providing open forums and creating



The second day of the wildlife disease workshop took participants to Northland College for dissection of a variety of wildlife specimens. Above GLIFWC's Dr. Jonathan Gilbert dissects a small bobcat as Tanya Aldred, GLIFWC wildlife technician, and wardens Mike Soulier and Jonas Moermond observe.

standing working groups dealing with EID issues; and 5.) planning more comprehensively in the event of a disease outbreak.

The later involves knowing what actions need to be taken if a "big disease drops in on you." For one you need to know sources and availability of equipment needed. The disease will have to be specifically identified with diagnostics performed. There should also be a plan for initial response and communications, establishing who to tell, how to relate it to the public and the media, how to handle field investigations; how to identify specific biological, sociological, political and physical considerations, and finally how to establish the reasons for occurrence.

While Richards gave a broad picture of EIDs and the need for more effective proactive planning and prevention, Langenberg applied much of it specifically to the subject of Avian botulism.

Botulism has been around for a long time, and comes in a seven forms. Type A is a poultry disease, Type C is found in waterfowl and Type E is also found in fish-eating birds. Humans are susceptible to infection from Types A, B, E and F. Type E, she said, can affect any vertebrate.

Botulism is a bacterium, which under certain conditions, produces a neurotoxin that can result in the loss of motor control, paralysis and eventually death.

Type E, she says, is an emerging problem in Wisconsin with increasing incidence in Great Lakes birds since about 2000. Birds impacted include loons, gulls, long-tail ducks, merganser, terns and fish-eating birds. Incidence of the disease has also increased in Lake Michigan.

Langenberg attributes the emergence of this disease partially to invasive species, such as round gobies and invasive mussels. They have the ability to concentrate toxin and present it to birds when eaten. The toxins are essentially fed up the food chain.

Botulism toxins can be destroyed in foods that are thoroughly cooked. However, carcasses of animals need to be burned or destroyed so not to be consumed by other species. For example, she mentioned Type C botulism being found in dogs after used to retrieve botulism infected waterfowl carcasses.

Botulism is most likely to occur in the late summer or early fall in mid-sized ponds, she says, using Wisconsin's Horicon Marsh as an example. Prevention, (See Wildlife workshop, page 23)

Imagining native plants in your garden

By Karen Danielsen
GLIFWC Forest Ecologist

Odanah, Wis.—As the days lengthen, but winter prolongs its grip, our minds wander towards our gardens, envisioning a kaleidoscope of flowers blowing in warm breezes. Also at this time, flower catalogs arrive in our mail boxes, offering us endless pages of inspiration. Sometimes, the sheer joy of browsing these catalogs brightens our winter-weary souls.

Yet, within these catalogs, a scourge can lurk—unruly non-native flowering plants capable of invading and disturbing our northwoods' wild lands. Their beauty provides the lure for innocent, unsuspecting buyers. Past beauties include purple loosestrife, daylily and periwinkle.

So, what's a gardener to do? First of all, if you decide to purchase non-natives plants, make sure they require a lot of maintenance. Non-native plants that can grow without your encouragement will more likely invade wild lands. Or, you might consider purchasing native plants. A decade ago, few nurseries sold native plants appropriate for our northwoods. Now, recognizing an increased interest in natives, nurseries have begun selling a greater selection of these plants.

Native plants offer many benefits. They require less water, fertilizers, and pesticides. They provide excellent habitat for butterflies, birds and other wildlife. They increase our appreciation for natural landscapes. They also decorate our gardens with an array of colors and textures, just as vividly as non-native plants.

If you decide to purchase natives, you need to consider the site in which they will be planted. Note the light availability, soils and ground moisture. A shady site with wet, clay soils will require different plants than a sunny site with well-drained, sandy soils. It also helps to determine the surrounding plant community, whether it be northern hardwoods, pine barrens or cedar swamps.

This information helps you select the plants most appropriate for your site. Most nurseries have employees who can assist with plant selection. If not, most plant guides provide this information. The following plant guides list most of the common natives you might consider planting in your garden.

Wildflowers of Wisconsin and the Upper Midwest

- by Merel R. Black and Emmet J. Judziewicz
- North Woods Wildflowers by Doug Ladd
- Wildflowers of Wisconsin by Stan Tekiela
- Wildflowers of Minnesota by Stan Tekiela
- Wildflowers of Michigan by Stan Tekiela

Most importantly, purchase your plants close to home—local plants from a local nursery. Local native plants will be best adapted to your garden conditions. For example, plants that originate from southern Wisconsin may have genotypes unable to survive the shorter growing season of northern Wisconsin. Conversely, non-local native plants may actually survive exceedingly well and become as invasive

as non-native plants. In this case, non-local genotypes essentially replace local genotypes.

You can begin small by replacing a few non-natives with native plants, or you can remove all your non-natives at once and completely redesign your garden. Either way, let creativity be your guide.

Consider using native plants with less showy flowers. Grasses and sedges can provide a canvass



Wezawab-gonik (black eyed susan) (left) grows well in sandy soil, while namepin (wild ginger) grows in moist forested sites. (Photos submitted.)



Waabigoniin (marsh marigold) grows best in wet soil. (Photos submitted.)

of varying shades of green, along with differing textures that can serve to soften or delineate borders.

If you choose to hire a commercial landscaper, ask for credentials to verify their expertise in growing native plants local to your region. Also, ask for references and visit gardens they have already designed and installed. Make sure they will agree to perform initial garden maintenance until the plants become successfully established. Initial maintenance activities, including watering and weeding, are essential during the first two years.

Once established, native plants require less maintenance. Of course, that does not mean no maintenance. Just like any in garden, your native plants may occasionally need to be pruned or replaced if they grow too old. Also, weeding may be necessary, especially if adjacent areas support non-native invasive plants such as dandelions or Kentucky bluegrass. Nonetheless, native plants, as opposed to non-native plants, can look great in a less maintained, less structured garden.

Many gardeners who begin planting natives enjoy breaking away from meticulously manicured lawns and flower beds. Their gardens grow rough at the edges, but invite unexpected surprises such as a brilliant monarch butterfly, a ruby-throated hummingbird or a warty American toad. After planting natives, their gardens seem less like a sterile museum and more like an explosion of movement, sound and fragrance.

So this year, spark your imagination—browse your catalogs, but also peruse a few inspirational books about native landscaping. Following are some popular books noted for their unconventional approach to gardening.

Natural Landscaping: Designing with Native Plant Communities by John Diekelmann & Robert Schuster

The Authentic Garden: Five Principles for Cultivating a Sense of Place by Claire Sawyers

Noah's Garden: Restoring the Ecology of our Own Backyards by Sara Stein

Bringing Nature Home: How Native Plants Sustain Wildlife in our Gardens by Douglas Tallamy

The Landscaping Revolution: Garden with Mother Nature, Not Against Her by Andy & Sally Wasowski

Northwoods' Native Plant Nurseries

Boreal Natives
3943 Munger Shaw Road
Cloquet, MN 55720
(218) 729-7001

Borealis Seed Company
529 West Bluff Street
Marquette, MI 49855

Hanson's Garden Village
2660 County Road G
Rhineland, WI 54501
(715) 365-2929

Leaning Pine Native Landscape Company
3130 South Camp Amnicon Road
South Range, WI 54884
(715) 398-5453

Wildflower Woods
75415 Church Corner Road
Washburn, WI 54891
(715) 373-0214

Northwoods' Native Plant Landscapers

Leaning Pine Native Landscape Company
3130 South Camp Amnicon Road
South Range, WI 54884
(715) 398-5453

Northern Native Plantscapes
25350 South Garden Avenue
Cable, WI 54821
(715) 794-2548

Native Plant Suggestions

	Wet Sites	
<p>Ojibwemowin bagizowin biaskagemesek sasabwaksing waabigoniin zhaabozigan</p>	<p>English swamp milkweed joe-pye weed boneset marsh marigold blue Iris</p>	<p>Species <i>Asclepius incarnata</i> <i>Eupatorium purpureum</i> <i>Eupatorium perfoliatum</i> <i>Caltha palustris</i> <i>Iris versicolor</i></p>
Moist Forested Sites		
<p>bagwaji zhigaagawinzhiiig baushkindjibgwaun namepin wunukibugauh zhaashaagomin</p>	<p>wild leek large-flowered trillium wild ginger starflower jack-in-the-pulpit</p>	<p><i>Allium tricoccum</i> <i>Trillium grandiflorum</i> <i>Asarum canadensis</i> <i>Tridentalis borealis</i> <i>Arisaema triphyllum</i></p>
Sandy Sites		
<p>mekmi swa miinagaawanzh miskwaabiimag wezawab-gonik wiinisibag</p>	<p>bluebell wild blueberry bearberry black-eyed Susan wintergreen</p>	<p><i>Campanula rotundifolia</i> <i>Vaccinium angustifolium</i> <i>Arctostaphylos uva-ursi</i> <i>Rubeckia hirta</i> <i>Gautheria procumbens</i></p>

A language too beautiful to lose

Native American languages are dying out with the elders

By Dr. David Treuer, Leech Lake tribal member
Noted Native American novelist and anthropologist

Only three Native American languages now spoken in the United States and Canada are expected to survive into the middle of this century. Mine, Ojibwe, is one of them. Many languages have just a few speakers left—two or three—while some have a fluent population in the hundreds. Recently, Marie Smith Jones, the last remaining speaker of the Alaskan Eyak language, died at age 89. The Ojibwe tribe has about 10,000 speakers distributed around the Great Lakes and up into northwestern Ontario and eastern Manitoba. Compared with many, we have it pretty good.

If my language does die—not now, not tomorrow, but, unless something changes, in the near future—many understandings, not to mention the words that contain them, will die as well. If my language dies, our word for “bear,” makwa, will disappear, and with it the understanding that makwa is derived from the word for box, makak (because black bears box themselves up, sleeping, for the winter).

So too will the word for “namesake,” niyawen’enh. Every child who gets an Ojibwe name has namesakes, sometimes as many as six or eight of them. Throughout a child’s life, his or her namesakes function a little like godparents, giving advice and help, good for a dollar to buy an Indian taco at a powwow. But they offer something more too. The term for “my body,” niyaw (a possessive noun: ni- = “I/mine”; -iyaw = “body/soul”), is incorporated into the word for a namesake because the idea (contained by the word and vice versa) is that when you take part in a naming, you are gifting a part of your soul, your body, to the person being named. So, to say “my namesake,” niyawen’enh, is to say “my fellow body, myself.”

If these words are lost, much will happen, but also very little will happen. We will be able to go to Starbucks and GameStop and Wal-Mart and the Home Depot as before. We will tie our shoes the same way and brush our teeth and use Crest Whitestrips. Some of us will still do our taxes. Some of us still won’t. The mechanics of life as it is lived by modern Ojibwes will remain, for the most part, unchanged. The language we lose, when we lose it, is replaced by other languages.

And yet, I think, more will be lost than simply a bouquet of discrete understandings—about bears or namesakes. If the language dies, we will lose something

personal, a degree of understanding that resides, for most fluent speakers, on some unconscious level. We will lose our sense of ourselves and our culture. There are many aspects of culture that are extralingual—that is, they exist outside or in spite of language: kinship, legal systems, governance, history, personal identity. But there is very little that is “extralingual” about story, about language itself. I think what I am trying to say is that we will lose beauty—the beauty of the particular, the beauty of the past and the intricacies of a language tailored for our space in the world.

Yes, that’s it: We will lose beauty.

My older brother Anton and I, among many others, have been trying to do something about that. For the last year, we have been working on a grant to record, transcribe and translate Ojibwe speech in order to compile what will be the first (and only) practical Ojibwe language grammar. Since December, we have traveled once, sometimes twice, a week, from our homes on the western edge of our Minnesota reservation to the east, to small communities named Inger, Onigum, Bena and Ball Club, where we record Ojibwe speakers. We’ve also taken longer trips to Red Lake Reservation (to the north) and south to Mille Lacs.

Recording Ojibwe speech in Minnesota, where the average age of fluent Ojibwe speakers is 55, means recording old people. My brother, at 38, is very good at this, much better than I am. For starters, he is much more fluent. And he looks like a handsome version of Tonto: lean, medium height, clear eyes and smooth face, very black shiny braids and very white shiny teeth. This helps. He has made this kind of activity his life’s work; it is what he does.

Right after college, he apprenticed himself to Archie Mosay, at that time the oldest and most influential Ojibwe spiritual leader, who grew up in the hills of the St. Croix River Valley in Wisconsin and did not have an English name until he was 12 and a white farmer he worked for gave him a pocket knife and the name “Archie.” He kept the knife and the name for another 82 years. Archie and my brother were friends. Deep affection and respect and tenderness ran in both directions.

The people we are interviewing are also our friends. There is Tom Stillday, from the traditional village of Ponemah on the Red Lake Reservation. Tommy Jay, as he’s known, is somewhat famous for his spiritual work and for his sense of humor; he refers to his knees as his baakinigebishkigwanan, which means “openers,” and once he described his Indian name, Ozaawaabiitang (Yellow Foam), as the “puke of the waves as they wash up onshore.” He is a Korean War combat veteran, has served on the tribal council and was the spiritual advisor for one or two sessions of the Minnesota Senate. He is also my daughter’s namesake.

Then there is Anna Gibbs, also from Ponemah, also famous—for her voice and her special and spectacular brand of endearing crabbiness and her wild salt-and-pepper hair. Anna can be scary if you don’t know her. She is abrupt and short, not more than 5 feet tall, one leg 2 inches shorter than the other (a condition she suffered through until just a few years ago when she finally got a few sets of orthopedic shoes). But she has the most beautiful Ojibwe name of Waasabiik, which describes the way moonlight will twinkle on the water on an almost still night. She is my son’s namesake.

There is also Eugene Stillday, perhaps the best storyteller of them all. He is from Ponemah, Tommy Jay’s first cousin. As we recorded him, he told stories of staging powwows out in the woods, of using his grandmother’s wash tub as a drum until it caved in, of making a boxing ring with vines, and of one harrowing winter when his entire family was near death from influenza and he sat by the stove, feeding it wood and watching the flames through the grate, until his uncle, Tommy’s father, walked through the snow and took Eugene to his house, where he was given two slices of bread, before his uncle returned to feed the stove and nurse the family back to health.

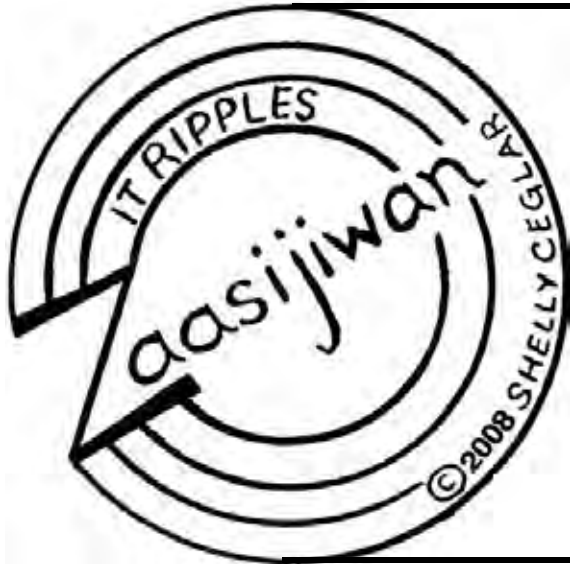
Anton is able to draw these stories out of our elderly friends with enviable ease. He’s been doing that—without funding or help or a fancy award—for the last 15 years. He is a people person, I suppose. And I am more of a book person. I think it will take both for our language to survive. We will need things like a grammar and more complete dictionaries and databases of recorded speech. But we will also need people, because languages cannot live without them. Languages can be stored without people to act as the shelves, but they cannot be retrieved except by human grasping.

Since we’ve begun our project, six of our informants, our friends, have died, including Mark Wakanabo, who worked as a janitor at our tribal school for decades until someone realized that since he was a fluent speaker, it would be better if he pushed young minds toward the language rather than pushed a broom. He was a sweet man, about whom I knew very little, except that he was gentle, with a soft voice. Two of his sons (identical twins) were my friends through middle and high school.

Luckily, other people are working on making more Ojibwe speakers. My good friends Keller Paap, along with his wife Lisa LaRonge, David Bisonette, Thelma Nayquonabe, Harold Frogg, Rose Tainter, Monica White and others, have started an Ojibwe language immersion school named Waadookodaading (We Help Each Other) on the Lac Courte Oreilles Reservation in north-central Wisconsin. The school has been in operation for six years, and all the children in the program have passed fifth-grade aptitude tests mandated by the state of Wisconsin. Sixty-six percent of them scored in the top 10 percentiles in English and math, compared with a much lower passing rate among students in the tribal and public schools on and near the reservation. And yet the students at Waadookodaading received no instruction in English and their math was taught in Ojibwe.

Last spring, I went spearing with Keller Paap and Dave Bisonette on a lake in their treaty area. Band members fought for and won the right to (See Native American languages, page 23)





Ziigwan—It is Spring

Mino-biboonagad. Noongom, ziigwan. Oshki-gikinoonowagad. Ningagwejimaag abinoojiiyag, “Aaniin ezhichiged ziigwang?” Gaagiigidowag, “Gimiwan ziigwang. Gaawiin zoogiponzinoon. Zaagibagaa agwajiing. Maajigaa. Aandeg idash nenookaasi, bi-izhaawag. Ogaawag, aamiwag imaa. Aabawaa, gaye.”

(It is a good year (winter) passing. Now it spring. It is a new year. I ask them, the children, “What is happening when it is spring?” They say, “It is raining in the spring. No, it is not snowing. Leaves bud outside. Sap starts to run. Crow and hummingbird, they come. Walleye, they spawn there. It is mild weather also.”)

Bezhiig—1 OJIBWEMOWIN (Ojibwe Language)

Double vowel system of writing Ojibwemowin.

—Long vowels: AA, E, II, OO

Aaniin—as in father

Miigwech—as in jay

Ziigwan—as in seen

Noongom—as in moon

—Short Vowels: A, I, O

Idash—as in about

Imaa—as in tin

Niizho—as in only

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

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

Niiwin—“4” 4 Verb Types— One each season.

Ziigwan—The “it is” verbs.

VII—verbs, inanimate, intransitive

Miskwaa.—It is red. (non-living)

Miskwaawan.—They are red.

Gaawiin miskwaasinooon.—It is not red.

B-form—add a g or change d to k:

Miskwaag, wawezhichigaademagad.

When (or if) it is red, it is pretty.

Mino-giizhigak, niminwendaamin.

When (or if) it is a good-day, we are glad. Weather

words, seasons, days of the week and time are VIIs.

Noodin.—It is windy. Ziigwan.—It is spring.

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

A. Biigwakamigibijige dash gitigaan gitigaade.

B. Niizho diba'iganed. Niso diba'iganek niwii-maajaa.

C. Ishpi-dibikak giwendinong gisinaa agwajiing.

D. Giziibiigiisaginige-giizhigak, niwii-izhaa iskigamiziganing.

E. Waawaate ishpeming inashke! Howah!

F. Keyaa iwidi aanikegamaamad.

G. Miskwaa, waabishkaa, dash ozhaashkwaa.

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

Niswi—3

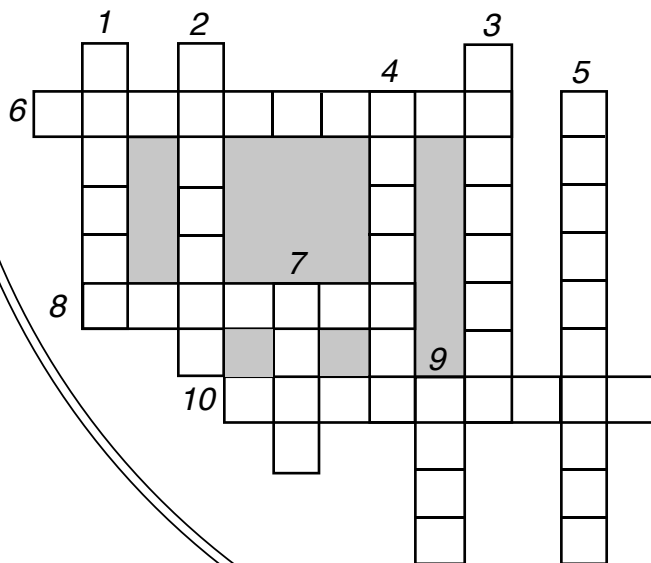
IKIDOWIN ODAMINOWIN (word play)

Down:

1. crow
2. walleye
3. northern lights
4. It is cold.
5. hummingbird
7. there
9. and

Across:

6. Leaves bud.
8. no
10. It is black.



Niiwin—4

VII Conjugation Practice

Miskwaanagwad. There is a red ski.

Gaawiin miskwaanagwasinooon. No there is not

a red sky. Ningwaanagwad. It is cloudy.

Ningwaanagwak, nimbiindige. When it is cloudy,

I go inside. Ozaawaa. It is yellow or brown.

Gii-zaawaa. It was yellow/brown.

Wii-makadewaa. It will be black.

Wii-makadewaawan. They will be black.

Wendak, wendad! When it is easy, it is easy!

Goojitoon! Try it!

Translation below.

1. Gaawiin awan _____. Mizhakwad.
2. Miskwaa _____, noogishkaan! Ozhaawashkwaa, _____ izhaan!
3. Aabawaa. _____ gisinaasinooon.
4. Aabita-dibika _____ giga-nibaa nibaawigamigong.
5. Giinaa _____ iniw anitiin. Badaka'igewag, nisayeyag.

Gaawiin
-g
(d to) k
wan
-zinoon

Translations:

Niizh—2 A. S/he plows and the garden it is planted. B. It is 2 o'clock. When it is 3 o'clock, I will leave. C. When it is late night to the north it is cold outside. D. When it is Saturday (floor washing day), I will go to the sugar camp. E. There are northern lights in the sky. Look! Wow! F. In the direction over there it is a chain of lakes. G. It is red, it is white and it is blue.

Niswi—3 Down: 1. Aandeg 2. Ogaawag 3. Waawaate 4. Gisinaa 5. Nenookaasi 7. Imaa 9. Dash

Across: 6. Zaagibagaa 8. Gaawiin 10. Makadewaa

Niiwin-4 1. No it is not foggy. 2. When it is red, stop! When it is green, go! 3. It is warm and mild. No. It is not cold. 4. When it is mid-night, you will go to sleep in the bedroom. 5. They are sharp those spears. They spear things, my brothers.

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



Be a Gichigami guru (master)

Learn Gichigami (Lake Superior) facts

Gichigami means big water in Ojibwe. Gichigami is known as Lake Superior to us today.

According to some accounts, Ojibwe people came from the East Coast and built their homes all around Gichigami in what are now the states of Michigan, Wisconsin, Minnesota, and the Canadian Province of Ontario.

By the early 1600s, that's about 400 years ago, the Ojibwe had a community of several thousand people on Madeline Island.

When French explorers first came to Gichigami, they called the big lake "le lac superieur," meaning the lake above the other Great Lakes.

Gichigami is the world's biggest freshwater lake by surface area. It is 31,700 square miles in surface area.

It contains 10 percent of the earth's fresh surface water.

Gichigami is 350 miles long and 160 miles wide.

The deepest point in Gichigami is 1,300 feet in the Michigan waters of the lake.

The lake has 2,720 miles of shoreline. If run in a straight line, it would reach from Duluth, Minnesota to the Bahama Islands.

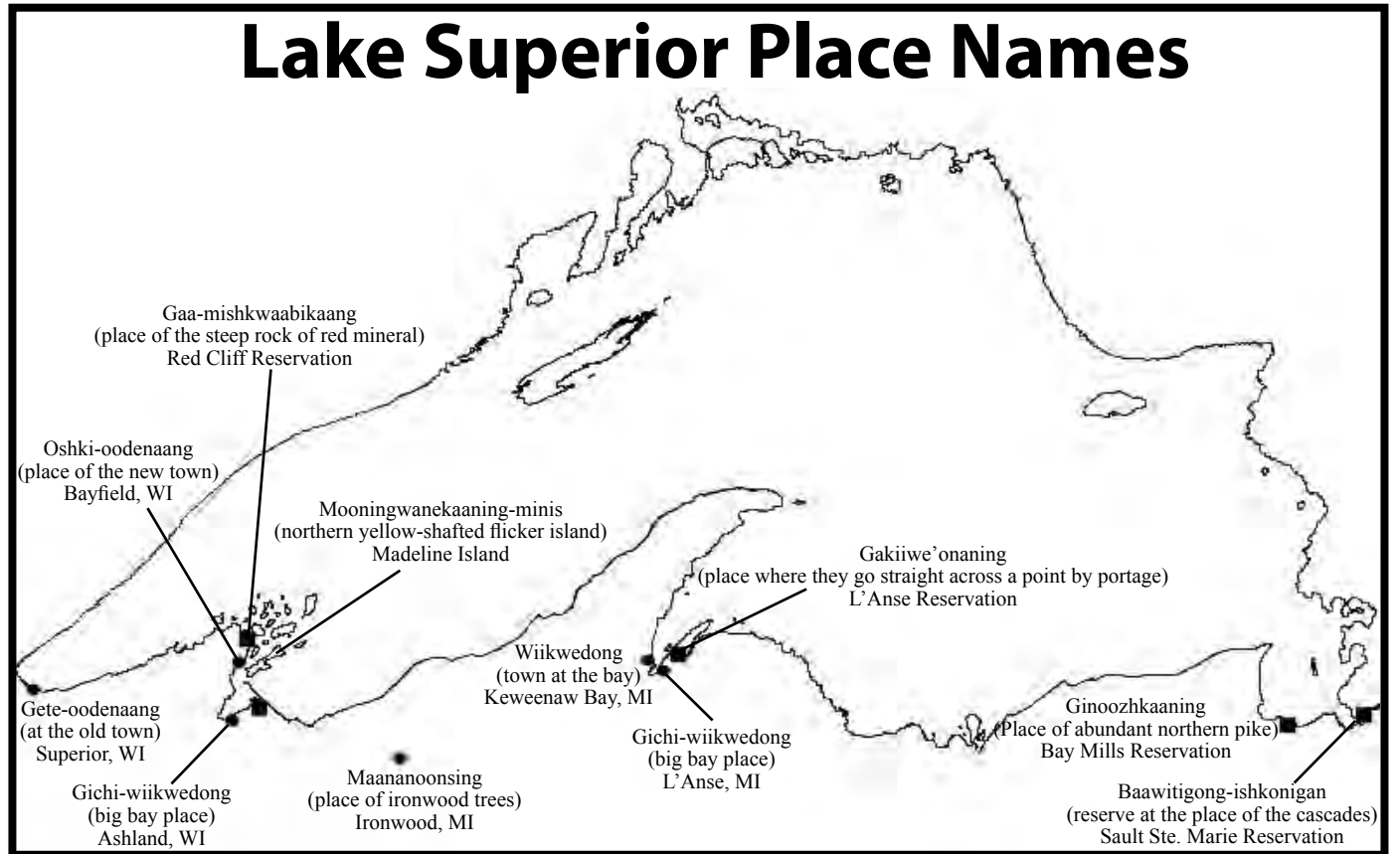
Moving from the East coast, Gichigami is the last of five Great Lakes, including Lakes Ontario, Erie, Huron, Michigan, and finally Lake Superior.

Gichigami is so big it could hold all the other Great Lakes and still have room for three more lakes the size of Lake Erie.

Gichigami is about 10,000 years old, created by retreating glaciers.

When European explorers first came, they reported seeing giant sturgeon about nine feet long and pike over seven-feet long. Some of the fish native to Gichigami are name (sturgeon), namebin (sucker), namecush (lake trout), adikameg (whitefish), and ginoozhe (northern pike).

Gichigami receives water from over 300 streams and rivers that flow into the lake.



The average temperature of Gichigami is 40°F. It rarely freezes completely over and then only for a matter of hours. The last time it froze over briefly was in 1979.

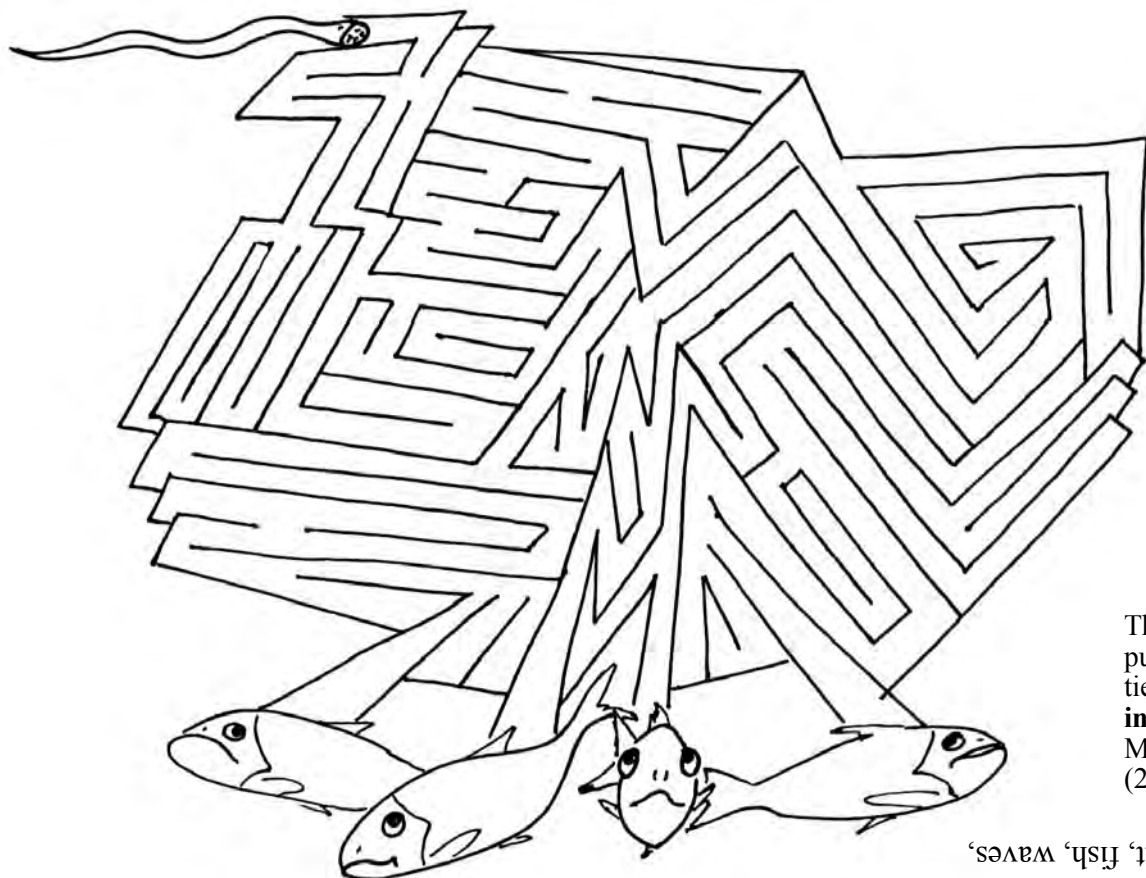
(Information from Lake Superior Facts at www.law.umkc.edu/faculty/projects/ftrials/superior/superior.html/)

How many times does the word "Gichigami" show up on this page? _____

Attack of the Vampire Fish

Sea lampreys are the most damaging invasive species in the Great Lakes. Lampreys suck the fluids out of other large fish. These primitive fish were able to get into the upper lakes when canals were built connecting them with the Lower Great Lakes about 85 years ago.

Follow the path of this sea lamprey to figure out which lake trout it attacked.



Gichigami words to unscramble

- kale rrpusoie _____
- edep _____
- ndsa _____
- elka otrut _____
- shif _____
- sevaw _____
- andliss _____
- fiwhestih _____
- isonnteam _____
- siwcoinns _____
- chingaim _____

(Hint: The last three words are the states that border Lake Superior.)

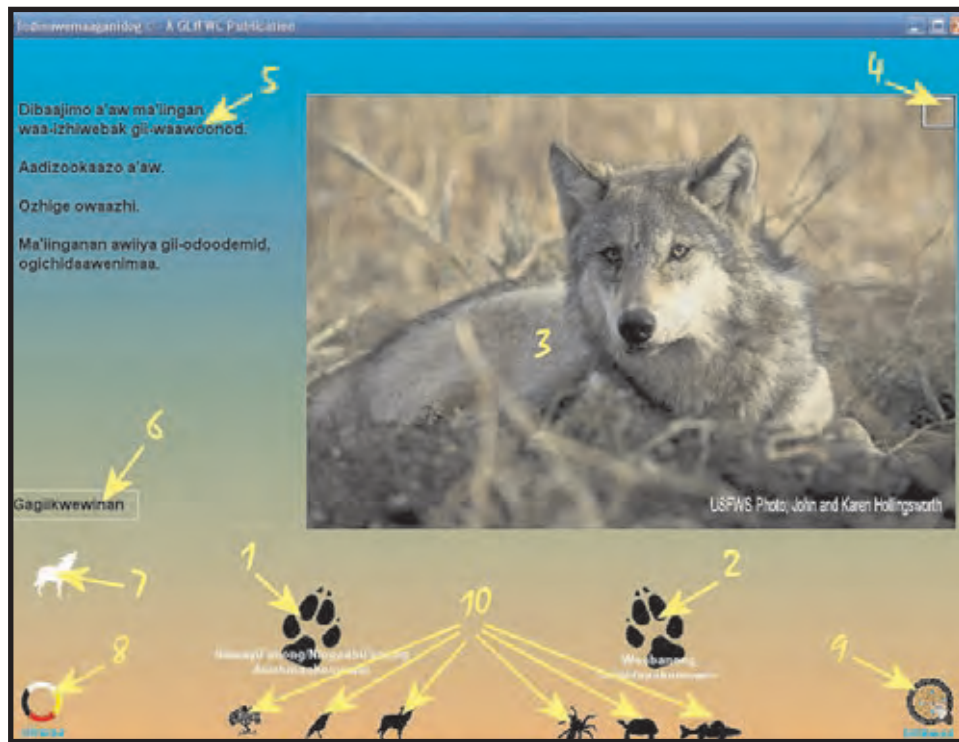
The activity on the left is reprinted from **A-maze-ing Lake Superior** published by the Minnesota Sea Grant. The book includes 29 activities and features interesting facts about a very great lake. **A-maze-ing Lake Superior** costs \$6.00, plus tax and can be purchased from: Minnesota Sea Grant, 2305 E. 5th Street, Duluth, MN 55812. Phone (218) 726-6191.

The world Gichigami shows up 17 times on this page. Unscramble answers: Lake Superior, deep, sand, lake trout, fish, waves, islands, whitefish, Minnesota, Wisconsin, Michigan.



New from GLIFWC

Indinawemaaganidog (All My Relations) CD



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.

Wildlife workshop

(Continued from page 18)

she said, can be instituted by trying to control invasive species and discouraging water discharges during the warm months, also promptly removing any dead fish found in water bodies.

Langenberg also briefly discussed Avian influenza, recommending planning for early detection by testing of live birds, testing samples from birds taken by hunters, performing mortality investigations, environmental sampling, such as sampling goose droppings; and sentinel bird flocks.

The presentations were followed with dissections of sample birds, fish and carnivores at the Northland College laboratory on February 13th, where participants were able to take a firsthand look at how wildlife samples can be investigated for signs of infectious diseases.

Gilbert was pleased with the workshop's turnout and the interest taken by all participants. GLIFWC warden staff were among the attendees. As professionals who routinely come in contact with all forms of wildlife their ability to observe and recognize any signs of EID could prove invaluable. "Given the response, which is double the number anticipated, there is a greater interest and need for this information than I have otherwise noted," Gilbert commented, considering the possibility of further outreach on this topic in the future.

Notice

If you notice diseased wildlife or wildlife deceased for no apparent reason, contact your local DNR or GLIFWC at (715) 682-6619.

Dead Bird Hotline 1-866-537-BIRD

If handling dead or diseased wildlife, protect yourself—wear gloves!!!

Mille Lacs walleye population estimate

(Continued from page 3)

and electrofishing gear will be used during the spawning season to collect adult walleye that will be marked with tags. After marking, fish will be live-released back into the lake. Shortly after spawning season, state and tribal biologists will use short term sets of standard graded mesh gill nets for recapture.

As in previous years, tribal netters should expect to see some walleye in their catches that are marked with plastic tags which stick out from the side of the fish next to the dorsal fin. These tags will be yellow in color and will have "MN DNR" plus a number printed on them. Tribal creel clerks will collect these tags as they are observed in tribal catches.

The Committee agreed to maintain the northern pike harvest cap and yellow perch quota for Mille Lacs Lake at existing levels. As in previous years, tribes

may collectively declare up to 50% of these species.

The Committee also agreed to discontinue quota management of tullibee and burbot in Mille Lacs Lake while maintaining existing regulations and harvest.

Due to the ongoing presence of zebra mussels and Eurasian water-milfoil in the waters of Mille Lacs Lake, tribal spearers and netters are reminded of their responsibility to comply with tribal rules and regulations that protect against the spread of these harmful invasive species into other ceded territory waters.

All water should be drained from livewells, bait containers, and bilges when leaving infested waters such as Mille Lacs Lake. Aquatic vegetation should also be removed from watercraft, trailers, nets, and associated equipment.

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) CD

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.

Special purchase: *Gidakiiminaan* atlas & CD \$18.00

The Sandy Lake Tragedy DVD

A critical event in Ojibwe Indian history, the Sandy Lake Tragedy solidified the resolve of Lake Superior bands to live forever in their homelands and helped pave the way for establishing tribal reservations.

The 28-minute video by GLIFWC and award winning filmmaker Lorraine Norrgard traces the illegal government scheme to trap some 5,000 Ojibwe men, women and children at Sandy Lake, Minnesota over the winter of 1850-51. Approximately 400 Ojibwe died of disease, starvation and exposure at Sandy Lake and on the frozen, bitter trails homeward.—\$12.00.

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Item	Unit Price	Quantity	Total
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<i>Gidakiiminaan CD</i>	\$12.00	_____	_____
<i>Gidakiiminaan atlas & CD combination</i>	\$18.00	_____	_____
<i>Indinawemaaganidog (All My Relations)</i>			
<i>Anishinaabe language CD</i>	\$12.00	_____	_____
<i>The Sandy Lake Tragedy DVD</i>	\$12.00	_____	_____
<i>Ojibwe Journeys: Treaties, Sandy Lake & the Waabanong Run</i>	\$16.00	_____	_____
DVD/Book combination	\$25.00	_____	_____

Merchandise Total \$ _____

Make checks payable to: Great Lakes Indian Fish & Wildlife Commission (GLIFWC) and mail to: P.O. Box 9, Odanah, WI 54861 email pjo@glifwc.org; phone (715) 685-2150 or visit our website www.glifwc.org

GLIFWC accepts purchase orders, personal checks, cashiers checks and money orders. We do not charge shipping or handling fees for orders shipped within the US. 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.

Native American languages

(Continued from page 20)

continue exercising their treaty rights on ceded land, and so they do. One of those rights is to spear and net walleye pike during the spring spawn. It is cold on the water in April, and it was that night. We took the boat across Round Lake to the northeastern shore and into the shallow waters where the fish spawn. One person ran the motor, the other stood in front wearing a headlamp and speared the fish with a long pole. With a few modern modifications, this is something we have done for centuries.

The night was very foggy. Mist skated over the water and billowed up, disturbed, over the gunwales of the boat. We kept close to shore. Round Lake is a resort lake and many of its bays and inlets are packed with houses. (It is rumored that Oprah Winfrey has a house there.) Most of these places were closed up, shuttered, waiting for the tourists to come in for the summer. The docks reached down into the lake as if testing the water, but finding it too cold, drew up halfway on the banks. Yet here and there, lights shone from living room windows. And

when the house was perched especially close to the lake, we could see televisions glowing ghostly and blue.

It was past 10—time for Letterman and Leno. Dave and Keller and I spoke Ojibwe over the pattering motor and the watery stab of the spear going down into the water and the clang as it came out with a walleye wiggling against the barbs. The pile of fish grew on the bottom of the boat, and they flapped dully, trying to fly against the unforgiving aluminum sky of the boat. A dog barked from shore. I could hear, clearly, Letterman's Top Ten List coming from an open window. Fish scales, knocked loose by the tines of the spear, were plastered all over the inside of the boat, and they sparkled like jewels when swept by the lamplight.

This way of life and the language that goes with it felt suddenly, almost painfully, too beautiful to lose; too impossibly beautiful and unique to be drowned out by the voice of a talk show host or by any other kind of linguistic static. And I thought then, with a growing confidence I don't always have: We might just make it.



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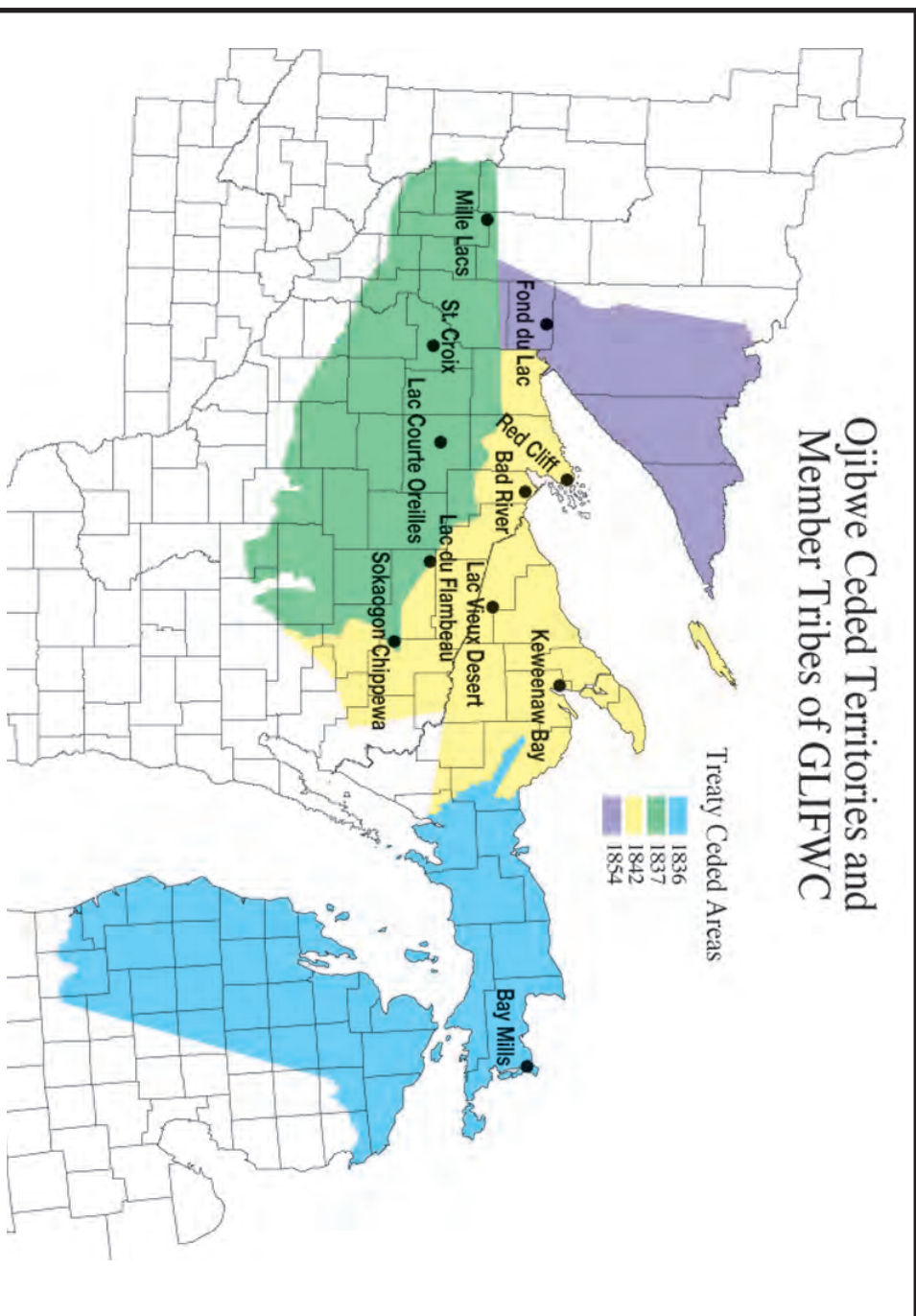
informed if you are planning to move or have recently moved so we can keep our mailing list up to date. Also, if you plan to be away for an extended period, please let us know so we can put a temporary stop on your subscription.

While MAZINA'IGAN enjoys hearing from its readership, there is no "Letters to the Editor" section in the paper, and opinions to be published in the paper are not solicited.

Queries as to potential articles relating to off-reservation treaty rights and/or resource management or Ojibwe cultural information can be directed to the editor at the address given above.

For more information see our website: www.glifwc.org.

Ojibwe Ceded Territories and Member Tribes of GLIFWC



Ziigwan 2008