

GLIFWC STORY - FINAL ITEP

Dennis Wall

ITEP editor

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Climate Action: Melding Western Science and Traditional Ways of Understanding

Tribes across the U.S. work to manage natural resources on the lands they now call home. But "home" for tribes now represents just a fraction of the lands on which most tribes once roamed and subsisted. In addition to the land within present-day reservation boundaries, additional lands that could be termed "traditional Indian territories" include surrounding acreage the government has claimed from tribes via treaties and sales over the past two centuries.



Figure 1 GLIFWC assists Great Lakes tribes in managing over 73 million acres of "ceded land." Image shows ceded land and dates of treaties in which land was ceded and more-recent court action has been based to determine tribal land access and management agreements. Image courtesy of GLIFWC.

On this "ceded land"—which can include state, federal, county and some private land—tribal members have continued to practice their traditional ways, including hunting, fishing and the harvesting of resources for cultural and spiritual uses. More and more, climate change is impacting the species that live and move through these expansive territories, fellow beings that regional tribes have depended on for centuries for physical, cultural and spiritual sustenance.

In the Upper Midwest, The Great Lakes Indian Fish and Wildlife Commission assists its eleven member tribes in implementing their treaty rights and co-managing resources on ceded lands. One of three such organizations assisting Upper Midwest tribes (the other two are the 1854 Treaty Authority in MN and the Chippewa Ottawa Resource Authority (CORA) in Michigan), GLIFWC provides natural-resource resource management and assistance on ceded territories that total more than 73 million acres of public land across Minnesota, Wisconsin and Michigan.

GLIFWC's management structure includes a team dedicated to responding to climate-driven changes in the health and numbers of wild species.

"The tribes are our bosses," says GLIFWC's Climate Change Program Coordinator, Kim Stone.

"Through our governing board and committees, they tell us what to do." Under Stone's leadership, the commission is involved in several climate-related projects, including studies on lake temperatures and fish diets in the Great Lakes; research on changes in fish populations in the area's inland lakes; and the development of a climate-related vulnerability assessment and climate adaptation plan for the ceded lands. A phenology study has GLIFWC biologists monitoring ten target plants to determine changes in the timing of several of their life-cycle phases.

The Old in the New

A foundation for the commission's scientific efforts is its ongoing Traditional Ecological Knowledge (TEK) program in which tribal harvesters and elders share their real-world observations on past and present ecological conditions. From ongoing TEK interviews, complemented by reviews of archival material gathered from elders and harvesters in years past, the commission has generated a list of 60 species of concern (many regional tribal members prefer to call all lifeforms "beings" rather than "species").

Once the study is complete, plans will be drawn up to suggest possible management approaches under future climate scenarios. "The vulnerability assessment," Stone says, "will provide GLIFWC with a greater understanding of how climate change is and will be affecting treaty resources. There are a number of different approaches that can be taken by land and resource managers."

She points out one major obstacle that tribes face in adapting to ecological change as their ancestors did in pre-Settlement days: the tribes' fixed geographic boundaries. Where once they could utilize the land freely to harvest the resources they needed, treaty-set boundaries now

limit tribes' ability to move about in response to changes in local resources. "As climate change impacts entire ecosystems, species that tribes have used for centuries will be shifting out of these boundaries, which are set and can't be changed," Stone says. Thus, difficult decisions might need to be made about beings who inhabit ceded territory but who might move away or decline in number as climate change alters the landscape's ability to support them.

Beings of Concern

Re-emphasizing that each being is important to the tribes, Stone notes some of the species of particular concern. "Wild rice is certainly one; it's a food staple for the Ojibwe and part of their sacred teachings. It's a northern-adapted plant, so the fact that 'the south is coming north' is definitely a concern." The rice, which grows in shallow water, is important to Ojibwe tribes for its spiritual significance, economic benefits and rich web of interactions with other species from ducks to fish to muskrats. "There are any number of ways climate change could impact the rice, including changes in water temperature and precipitation events. Dramatic water-level fluctuations can wipe out a whole season if, for example, a hard rain comes during the floating-leaf stage of growth."

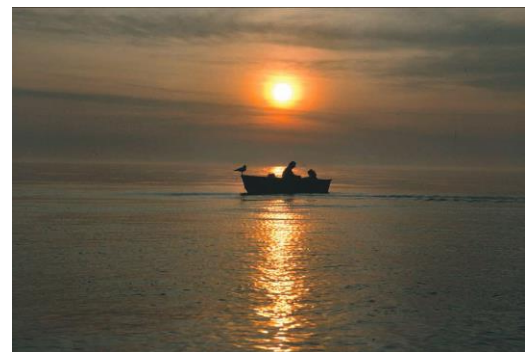


Figure 2 Sunset over Gichigami (Lake Superior), parts of which are ceded territory managed by GLIFWC and used by area tribes. Image courtesy of GLIFWC.

Sugar maple, which produces syrup that is part of the traditional Ojibwe diet and is connected to tribal cultural traditions, is projected to decline in the region under several climate-change risk scenarios. Paper birch trees that yield a bark used for basket- and canoe-making are another resource under threat due to the changing climate. "Under the climate-modeling scenarios, suitable birch habitat will be shifting north," Stone says. Tribal observers have already seen a decline in trees with bark that is suitable for canoe-making.

Populations of the region's inland-lakes fish have changed in recent decades, likely due, at least in part, to climate change. "We know walleye, a significant species for many of our tribes, have

been on a general downward trend in many lakes," Stone says. "At the same time, bass [a warm-water species] are increasing. So that's a focus for our inland fisheries biologist." Some regional aquatic changes, likely impacted by climate change, include water-temperature rises and changes in the timing and amount of seasonal frozen ice. The volume of winter ice on Lake Superior, for example, has decreased significantly in recent years. "So we're looking at what the fish eat and also whether temperature changes might impact lake trout in terms of where they are in the lake."

Birds are more difficult to study and manage due to the migratory habits of many species, but tribal members have reported concerns about a number of birds that inhabit or pass through the ceded lands. Birds included in GLIFWC's vulnerability assessment, from which management decisions will be determined, include Bald Eagle, Wild Turkey, Sharp-tailed Grouse, Sandhill Crane, Trumpeter Swan, Common Loon, Crow, Raven, and three duck species. Changes in blooming and insect-hatching dates in relation to the timing of migrations are among possible issues to be explored.

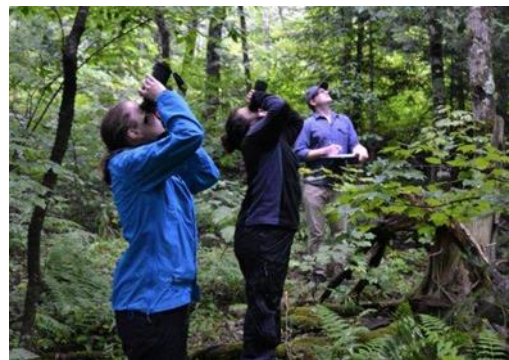


Figure 3 GLIFWC scientists Hannah Panci (left) and Travis Bartnick (right) with 2016 intern Madison Bear (middle) doing fieldwork at a phenology study site. Photo courtesy of GLIFWC.

Blueprint for a Changing Future

Drawing on both TEK and Western science, GLIFWC is developing a vulnerability assessment scheduled for completion in 2018. From their list of 60 species of concern they will develop possible adaptation strategies to address climate change impacts on selected species. "The tribes don't rank the species in order of importance," Stone says. "That's always a difficult part of any vulnerability assessment. To the tribes we represent, each being is just as important as another. Some tribal members might favor 'assisted migration,' based on the belief that the earth has always changed, the Ojibwe people are resilient and have always changed with the earth and the land, and so perhaps we should be assisting these other beings in moving to where they need to be. Other tribal members might favor a different approach, seeking to

resist climate change impacts and fighting to keep species that might shift without some type of intervention or management."

Gathering TEK input from elders and harvesters is an ongoing effort. "As our Outreach Specialist continues the interviews, she's hearing more things," Stone says, "so we can continue to incorporate that information as we go along. For example, we heard recently that at Lac du Flambeau, Northern White Cedar [used for, among other things, making "rice sticks" to harvest wild rice] is declining in general and is expected to continue declining under any climate model, as suitable habitat decreases or shifts geographically. But in another area of the Ceded territory, people had been feeling like they were seeing *more* cedar. So that's an area we can follow up on, using the observations and knowledge of our tribal members to help us understand what's happening in that particular area and why. In other places, the data is very much in sync with what our Ojibwe hunters and gatherers have been seeing."

As of Summer 2017, GLIFWC had completed research for the vulnerability assessment draft reports in the 1837 and 1842 treaty areas; other research and assessments are ongoing. In spring of 2017, the phenology study, which involves observing 3–5 individuals in each target species and is integrated with TEK information, had yielded one year's data. When all the reports are in and the assessment is complete, GLIFWC's next phase of work begins.

That phase will likely require heavy jurisdictional and political lifting. As co-managers of the resources on these lands, the tribes and GLIFWC must forge management agreements with a



Figure 4 GLIFWC scientists monitor the health of the region's elk. Photo courtesy of GLIFWC.

variety of nontribal land managers on Ceded Territory lands. The interests and political directives of federal and state agencies and other public land managers may not always mesh with those of tribal interests. But GLIFWC has worked with outside interests in the region for three decades, and the relationships they've

forged with surrounding entities should help the process along. And, more important than

GLIFWC's relationships, the federal government as a treaty signatory and guarantor has an obligation to consult with tribes and to manage resources in a way that is consistent with the exercise of treaty rights.

Determining how GLIFWC can respond to climate change impacts, Stone says, is in part a matter of the level of resources available to both the commission and its nontribal partners. "Will it involve resistance, resilience, full adaptation? The process could be anywhere along that spectrum. It will be very much shaped by the tools we have to address the problems."

BOX:

To learn more about treaty issues and impacts in general and in Ojibwe country, watch a GLIFWC-produced YouTube video you'll find at the following link:

<http://www.glifwc.org/TreatyRights/>

BOX: list of eleven tribes

Misi-zaaga'iganiing (Mille Lacs)

Bikoganoogan St.Croix (Danbury)

Mashkiigong-ziibiing (Bad River)

Waaswaaganing (Lac du Flambeau)

Zaka'aaganing (Mole Lake/Sokaogon)

Nagaajiwanaang (Fond du Lac)

Gaa-miskwaabikaang (Red Cliff)

Ginoozhekaaning (Bay Mills)

Gete-gitigaaning (Lac Vieux Desert)

Gakiiwe 'onaning (Keweenaw Bay)

Odaawaa-zaaga'iganiing (Lac Courte Oreilles)

POSSIBLE BOX: Melonee Montano is GLIFWC's Traditional Ecological Knowledge Outreach Specialist. Here she shares her personal understanding of the Ojibwe tribes' relationship to the marten and fisher, two mammals that inhabit the ceded territories and are under review for GLIFWC's climate adaptation plan.



Figure 5 The fisher, a land mammal of spiritual importance to tribes of the Great Lakes region. Photo credit: Wiki Commons.

All beings are considered important to the Ojibwe people and that is often relayed in traditional teachings and legends. Some of these traditional teachings and legends take days to tell and years to learn, but some basic points can sometimes be relayed for others to understand. Significant points about both the *waabizheshi* (marten) and *ojiig* (fisher) are examples of that.

The Ojibwe people deeply believe in and still follow a clan system. The *waabizheshi* is one of those clan animals. Most often, those who belong to the *waabizheshi* clan are respected for their common trait of possessing good hunting skills (as the *waabizheshi* does). In many of the traditional teachings and legends, the role of the *waabizheshi* is that of a messenger. The fur pelt of the *waabizheshi* has been sought after more commonly than that of the *ojiig*. The pelt is sold, traded, and more importantly, used in certain Ojibwe ceremonies.

The *ojiig* is also highly respected by the Ojibwe people and known to be the only animal that can kill and eat a porcupine. It also is often on the go during both day and night. The *ojiig* hold a place in the traditional teachings and legends as well. For example, the Ojibwe hold star knowledge in which the *ojiig* is a constellation in the night sky (the Big Dipper). Through the teachings of the *ojiig* constellation, one can learn about the origin of the seasons and the importance of certain values such as cooperation and self-sacrifice.

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