Introduction of Manoomin at Hiles Millpond provides cultural and ecological functionality

With favorable conditions, restoration can enhance Manoomin habitat

Establishing Manoomin (wild rice) at Hiles Millpond significantly enhances its cultural and ecological functionality. It also helps to make up for the loss of Manoomin on other waters throughout the region. Although recent restoration efforts have shown preliminary success, Manoomin has been absent from Hiles Millpond for a long time. Therefore, additional restoration could help counter-balance lost cultural and ecological functionality. Based on the methods applied in this study, 864 additional acres of similar Manoomin restoration would counter-balance the lost cultural and ecological functionality that have occurred over time. This is equivalent in scale to nearly three times the current restoration efforts at Hiles Millpond. The successful introduction of Manoomin at Hiles Millpond suggests that naturally suitable soils, combined with seeding and modifications in water-level management, can yield high-quality Manoomin and habitat.

Threats to Manoomin at Hiles Millpond

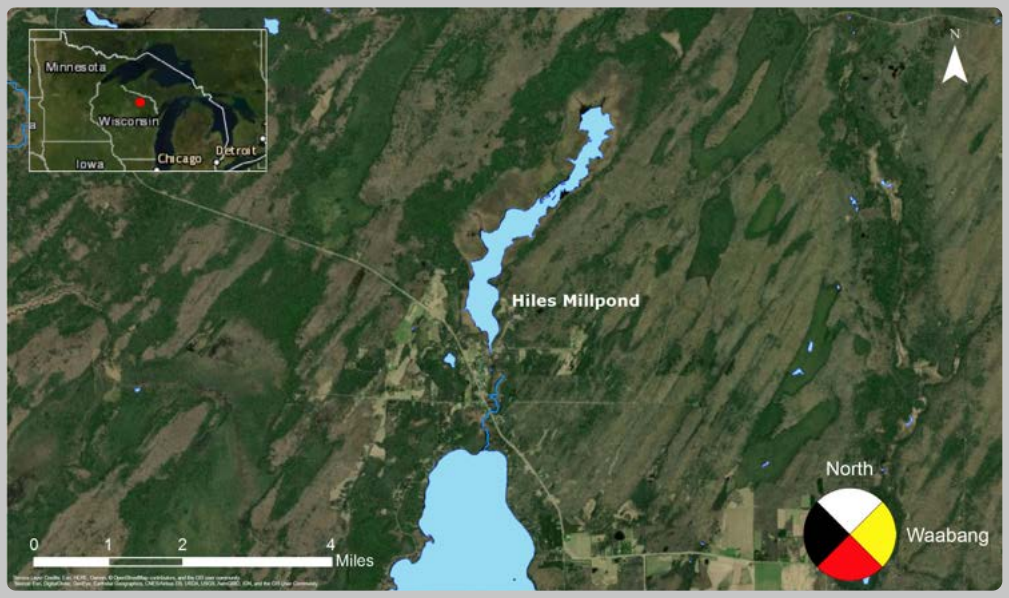
Water became ponded at Hiles Millpond in the late 1880s when the Hiles Lumber Company built a dam for logging purposes. Although there is no record of the presence of Manoomin at Hiles Millpond, it may have been there prior to dam construction since Manoomin is in nearby waters. If Manoomin was present at Hiles Millpond historically, it could have been negatively affected by changes in water levels associated with construction of the dam.

The area and waters around the Town of Hiles were traditionally used by the Lac du Flambeau Band of Lake Superior Chippewa Indians (LDF Band), the Sokaogon Chippewa Community, and other Ojibwe Bands and their ancestors. However, use of the area by Bands for hunting, gathering, fishing, and trapping was limited during much of the last century up until the 1980s. Use of this area increased after this time when relations with the local community in the Town of Hiles improved.

About Hiles Millpond

Hiles Millpond is an approximately 300-acre lake located in Forest County, Wisconsin, an 1842 Ceded Territory.

The millpond provides excellent wildlife habitat, especially for waterfowl, furbearers, eagles, and other wetland-dependent species. The lake also supports a northern pike and panfish fishery.



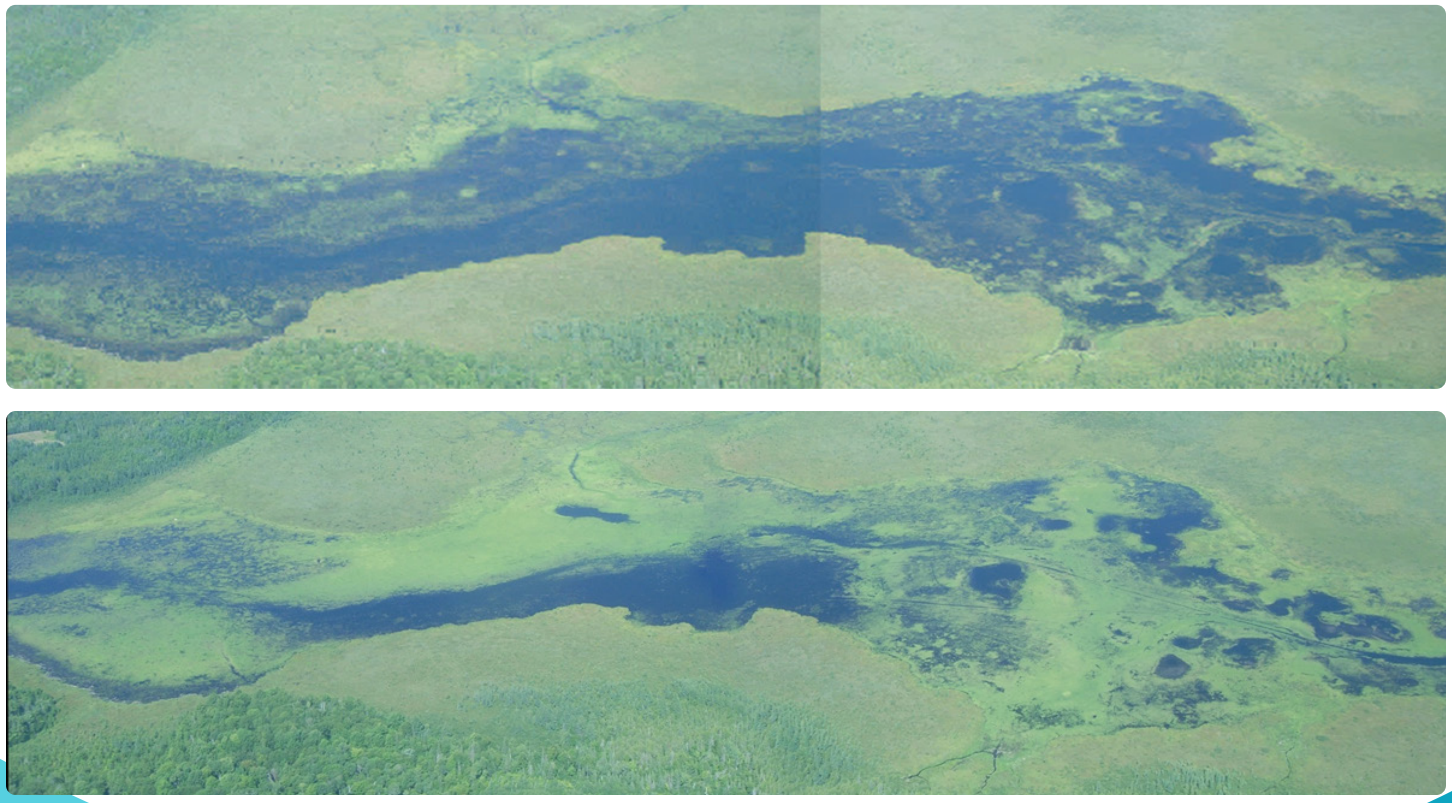
Actions taken to improve the abundance of Manoomin at the Hiles Millpond

In 1992, safety inspections found several problems with the dam structure at Hiles Millpond. To meet contemporary safety standards, the Town of Hiles needed to replace the dam structure. Since the town lacked adequate funds, federal, state, tribal, and nongovernmental organizations entered into a cooperative effort. A Memorandum of Understanding included a provision for the town to cooperate with the Forest Service to manage the millpond for productive wildlife and fish habitats, including possible manipulation of water levels, following completion of the project. The dam and water control structure were rebuilt in fall 1993.

Shortly after, biologists realized that the ecological benefits of Hiles Millpond could be significantly enhanced by establishing Manoomin on the millpond. Establishing Manoomin could also help to make up for the loss of Manoomin on other waters in the region, many of which were difficult or impossible to recover due to excessive development, conflicting uses, or other threats to Manoomin (Peter David, GLIFWC, personal communication, November 27, 2019).

In 1998, GLIFWC and the Forest Service cooperatively seeded the Hiles Millpond flowage with a relatively modest amount of Manoomin (329 pounds). Small patches of Manoomin then expanded modestly over the next several years. In 2011, Manoomin expanded significantly under natural drought conditions, which led biologists to believe that Manoomin might increase if the typical summer water level was lowered slightly.

Although the Town of Hiles was initially concerned that lower water levels might negatively affect the northern pike fishery, it ultimately agreed to manage the water level for Manoomin. Once lowered, Manoomin showed an immediate response. Manoomin abundance increased significantly from 2013, before water levels were lowered, to 2014, following a lowering of water levels. In recent years, over 125 acres of Manoomin can be found growing across the lake (Peter David, GLIFWC, personal communication, November 27, 2019).



Manoomin abundance on a portion of the Hiles Millpond, 2013 above, and 2014 below, following a lowering of water levels. Credit: Peter David, GLIFWC

Approach to characterizing Manoomin at Hiles Millpond

Twelve metrics characterize the cultural and ecological functions of Hiles Millpond Manoomin and its associated habitat. These metrics describe how Manoomin at Hiles Millpond contributes to maintaining connections with the Anishinaabe culture, how ecological functionality is supported and resilient to changing conditions, and how continued learning and sharing of Anishinaabe values are promoted.

Cultural Metrics

Anishinaabe (original people) – The place provides Manoomin, which is sacred to the Anishinaabe and central to the foundations of their culture, sovereignty, and treaty rights.

Community relationships – Manoomin at this place contributes to bonding, traditions, and strengthening family and community connections.

Spirit relationships – Manoomin at this place enables the Anishinaabe to maintain connections and balance with spirit beings (or relatives) from all other orders of creation (first order: rock, water, fire and wind; second order: other plant beings; third order: animal beings; fourth order: human beings).

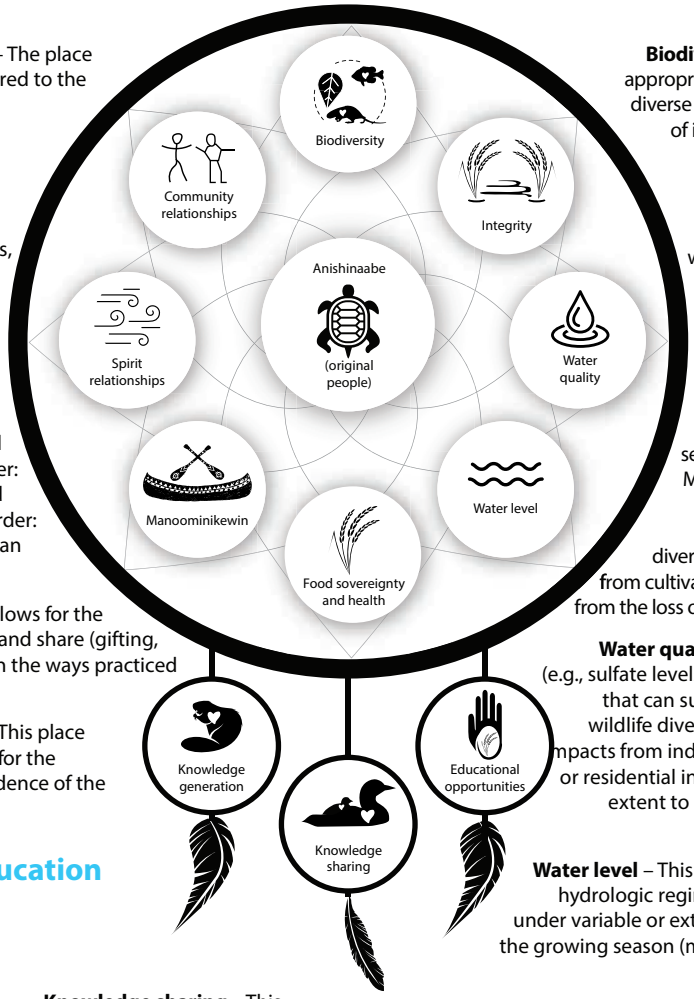
Manoominikewin – This place allows for the Anishinaabe to harvest, prepare, and share (gifting, healing, and eating) Manoomin in the ways practiced by their ancestors for centuries.

Food sovereignty and health – This place provides the capacity to provide for the sustenance, health, and independence of the Anishinaabe.

Cultural and Ecological Education Metrics

Knowledge generation – This place allows for continued learning and generation of the Anishinaabe practices, values, beliefs, and language through experience.

Knowledge sharing – This place allows for the continued sharing and transmittal of the Anishinaabe practices, values, beliefs, and language among family members and community.



Ecological Metrics

Biodiversity – Healthy Manoomin and appropriate habitat at this place supports diverse biological communities (e.g., free of invasive species) that indicate the capacity of the place to support abundant associated plant and animal species (e.g., other native aquatic vegetation, fish, waterfowl, muskrat), providing for spiritual and subsistence needs.

Integrity – Physical habitat and hydrology, and water and sediment chemistry support stands of Manoomin that exhibit natural annual variability; viable seed bank ensures that sustainable Manoomin populations will persist even after occasional poor production years. Natural genetic diversity is maintained without impact from cultivated strains, or reduced gene flow from the loss of nearby Manoomin populations.

Water quality – This place has clean water (e.g., sulfate levels below 10 ppm) and sediments that can support robust stand density and wildlife diversity; is free of contamination or impacts from industrial, agricultural, recreational, or residential influence; and is of sufficient areal extent to sustain a Manoomin population.

Water level – This place has a natural or managed hydrologic regime that can maximize resilience under variable or extreme climatic conditions across the growing season (maintaining optimal depth range and flow).

Educational opportunities – This place provides opportunities for language, land stewardship, and other educational programs, such as educational rice camps.

Cultural and ecological characterization at Hiles Millpond

Manoomin and its associated habitat at Hiles Millpond were characterized over three time periods. Each metric was ranked using the following five-point descriptive scale: No use, Very bad, Not very good, Pretty good, Doing great

The characterization starts in 1980 because prior to that time community members were less likely to travel to Hiles Millpond to harvest Manoomin, and undertake other traditional hunting and gathering practices.

1980 to 1997: Before Manoomin seeding

Based on the combined ranking of cultural and ecological metrics, Hiles Millpond was characterized as "very bad" during this period. Because of the absence of Manoomin in the millpond, most of the metrics – particularly cultural metrics – ranked low on the score range.

1998 to 2013: After Manoomin seeding

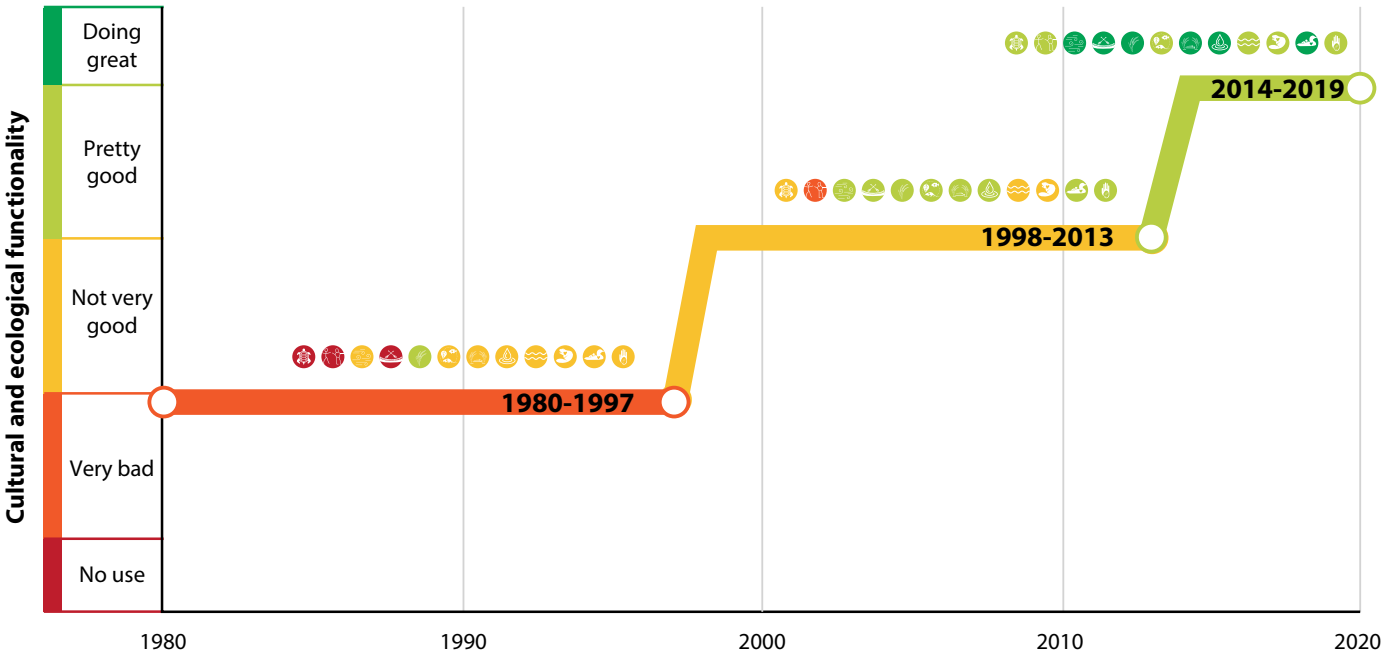
Once seeding activities began in 1998, Manoomin began to grow at the Millpond. The presence of Manoomin improved the rankings for most of the cultural and ecological metrics. In particular, the presence of Manoomin at Hiles Millpond allowed for some harvesting, preparation, and sharing of Manoomin by the community. It also improved the Anishinabee's connections and balance with spirit beings and relatives, and it supported diverse biological communities. During this period, Hiles Millpond ranked as "not very good" based on the combined ranking of the cultural and ecological metrics.

2014 to 2019: With water level management

After resource managers adjusted water levels for Manoomin in 2014, its coverage continued to expand. More Manoomin allowed for harvesting, preparation, and sharing of Manoomin in ways practiced by ancestors. It also allowed for knowledge generation and sharing of Anishinaabe practices, values, beliefs, and language. Although Manoomin provides many cultural and ecological functionality, additional management of water levels could continue to improve Manoomin and its associated habitat at Hiles Millpond. During this period, Hiles Millpond ranked as "pretty good" based on the combined ranking of cultural and ecological metrics.

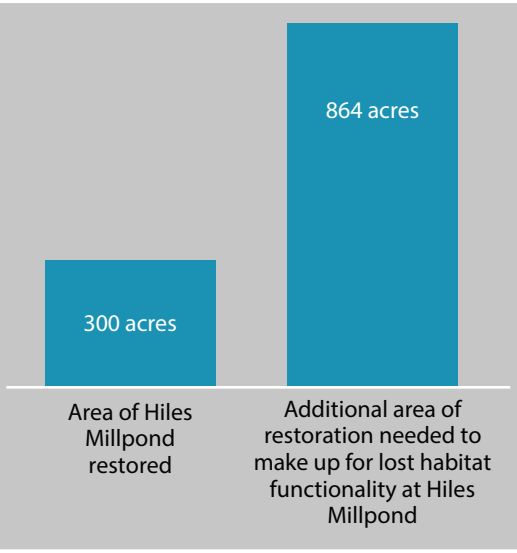
Cultural and ecological characterization at Hiles Millpond

Cultural and ecological functionality provided by Manoomin and its associated habitat at Hiles Millpond have increased over time, both in aggregate and for individual metrics.



Additional restoration needed

Based on the characterization of the degree of cultural and ecological function over the three time periods, a Habitat Equivalency Analysis demonstrates the additional equivalent units of restoration needed to counter-balance the severity and timespan of degradation. With modest seeding and slight modifications in water-level management, resource managers successfully established Manoomin across the Hiles Millpond. The analysis indicates that an additional 864 acres of similar Manoomin restoration is needed to counter-balance the lost habitat functionality that has occurred over time. In other words, nearly three equivalent restoration efforts at Hiles Millpond (from 1998 to 2019) are needed to counter-balance the lost cultural and ecological habitat functionality (from 1980 to 1997).



About this effort

This case study is part of the Lake Superior Manoomin Cultural and Ecosystem Characterization Study. The project was initiated by a team of Lake Superior Basin Anishinaabe communities, and federal and state agencies, with technical support from Abt Associates. This project aims to describe the importance of Manoomin to help foster community stewardship and education; and to inform Manoomin stewardship, protection, and policy in the Lake Superior region and throughout the Great Lakes. Funding for this project was received via Great Lakes Restoration Initiative. For more information on the Initiative and Action Plan go to https://www.glri.us/.

Acknowledgments

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