



Introduction of Manoomin at Net River Impoundment and Vermillac Lake provides cultural and ecological functionality

With favorable conditions, restoration can enhance Gichi-manidoo gitigaan

Tending to Gichi-manidoo gitigaan (The Great Spirit's Garden) through Manoomin (wild rice) seeding efforts at Net River Impoundment and Vermillac Lake has benefited natural resources at these locations. Seeding the Net River Impoundment also has the potential to create a Manoomin seed bank for other lakes in the area, including Vermillac Lake.

Efforts to introduce Manoomin in these waterbodies have shown preliminary success. Therefore, additional seeding could help counter-balance the lost ecological functionality and inspire cultural practices to occur at these locations. Based on methods applied in this study, it would take an additional 1,129 acres of similar Manoomin seeding to counter-balance the lost ecological functionality that have occurred over time, which is equivalent in scale to nearly 12 times the current restoration efforts at the Net River Impoundment and Vermillac Lake.

Threats to Manoomin at Net River Impoundment and Vermillac Lake

Both the Net River Impoundment and Vermillac Lake possibly had Manoomin beds in the past. Many believe that historical trails around the Net River Impoundment indicate traditional use of these places for cultural practices (Evelyn Ravindran, KBIC personal communication, August 20, 2019). Land use changes have altered the local landscape, which may have contributed to the presence or absence of Manoomin at these places.



KBIC NRD, 2019

Credit: KBIC NRD.

About Net River impoundment and Vermillac Lake

The Net River is nearly 15 miles long and flows from Baraga County to Iron County, Michigan. Impounded in 1990 as a wetland mitigation site to provide waterfowl benefits, the Net River Impoundment is now 35 acres in size. Vermillac (or Worm) Lake is a 423-acre lake in Baraga County. Both the Net River Impoundment and Vermillac Lake are located outside the L'Anse Indian Reservation, but within Ceded Territory.





Actions taken to improve Manoomin at Net River Impoundment and Vermillac Lake

KBIC is receiving more and more teachings from Manoomin and is working to understand which locations on the L'Anse Indian Reservation and within Ceded Territory have conditions that are conducive to grow and sustain Manoomin (BIA, 2019). KBIC is interested in having local sources of Manoomin as seed banks for future restoration activities; as well as places where community members can harvest, prepare, and gift Manoomin. KBIC is currently assessing suitable Manoomin habitat across their territory, and focusing restoration in lakes with the most favorable conditions for Manoomin.

In the early 2010s, KBIC worked with the Michigan Department of Natural Resources to identify additional areas for Manoomin restoration. The Net River Impoundment and Vermillac Lake were selected as lakes with potential for Manoomin beds, and KBIC seeded test plots at both lakes. Given their success, KBIC then seeded the Net River Impoundment and Vermillac Lake with nearly 2,000 pounds of Manoomin seed. Cultural teachings and practices related to Manoomin are beginning to occur at the Net River Impoundment. KBIC continues to seed 97 acres across both lakes with nearly 2,000 pounds of Manoomin each year.

The ultimate goal of seeding efforts at the Net River Impoundment is to produce a Manoomin seed source for Vermillac Lake and other KBIC restoration sites. In keeping with the principles of the honorable harvest, KBIC aims to achieve conditions that will allow the rice to reseed itself to feed wildlife and nourish the people.



Survey point. Credit: KBIC NRD.



Rice stand. Credit: KBIC NRD.

Approach to characterizing Manoomin at Net River Impoundment and Vermillac Lake

Twelve metrics characterize the cultural and ecological functions of the Net River Impoundment's and Vermillac Lake's Manoomin and associated habitats. These metrics describe how Manoomin at these areas 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.



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

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.



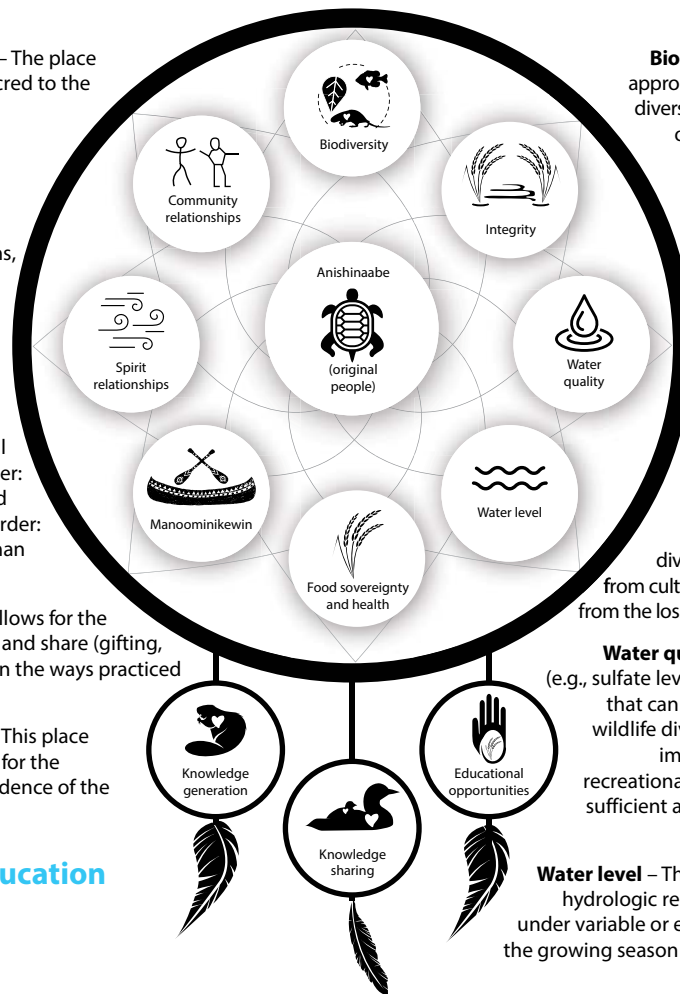
Integrity – Physical habitat and hydrology, and water and sediment chemistry support stands of Manoomin that exhibit natural annual variability; viable seed bank ensures that sustainable Manoomin populations will persist even after occasional poor production years. Natural genetic diversity is maintained 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).





Cultural and ecological characterization at Net River Impoundment and Vermillac Lake

Manoomin and its associated habitat at the Net River Impoundment and Vermillac Lake were characterized over two time periods. Each metric was ranked using the following five-point descriptive scale:

 No use  Very bad  Not very good  Pretty good  Doing great

This characterization begins after the Net River was impounded as a wetland mitigation bank in 1990.



1990 to 2013: Before Manoomin seeding



Based on the combined ranking of cultural and ecological metrics, conditions at the Net River Impoundment and Vermillac Lake were characterized as “not very good” during this period. This ranking reflects the absence of Manoomin from the Net River Impoundment and Vermillac Lake before 2013. Although Manoomin was absent, these areas were culturally and ecologically important. Community members used these sites for gathering, fishing, and hunting activities; during these activities, families passed down knowledge to their children or grandchildren about traditional practices and resources. Given the intrinsic cultural and ecological value of these places, some metrics – including spirit relationships, food sovereignty, knowledge generation and sharing, and water level and quality – ranked higher in cultural and ecological characterization.



2014 to 2019: After Manoomin seeding

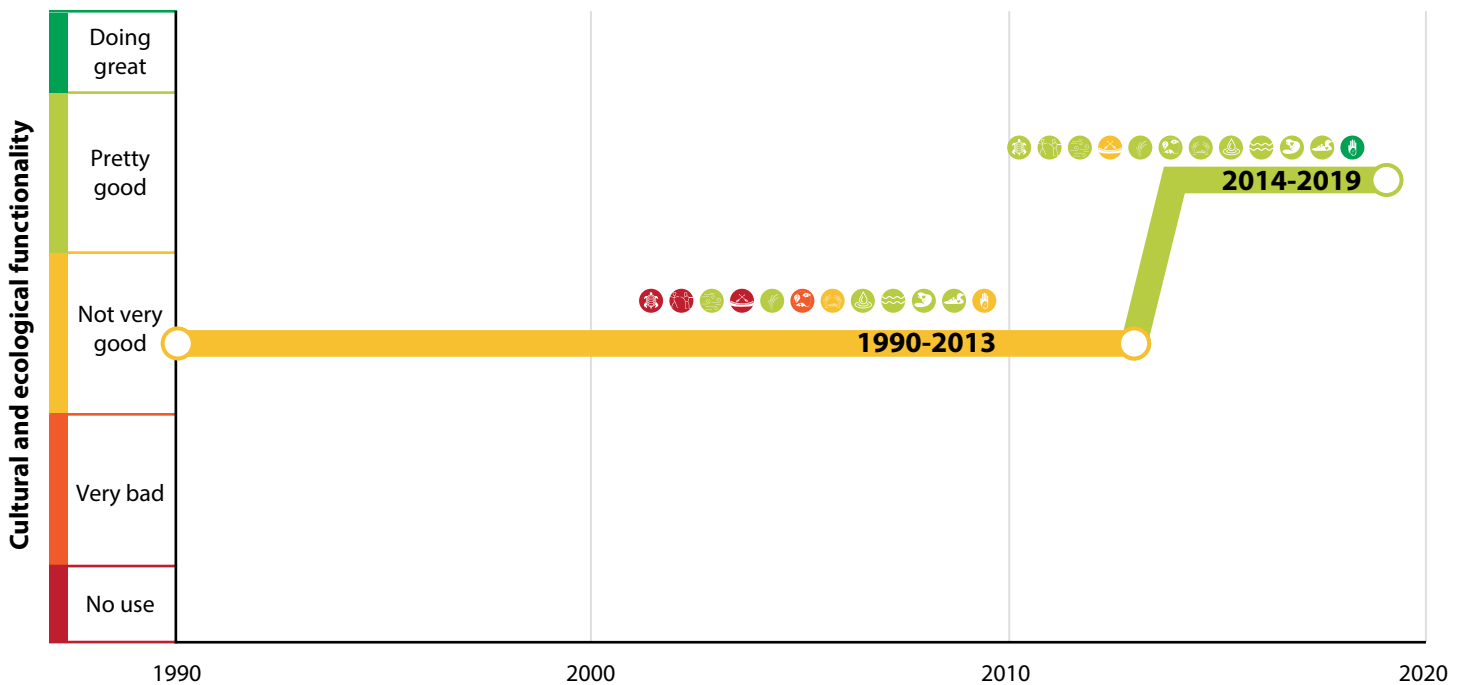


Once KBIC began seeding the Net River Impoundment and Vermillac Lake, Manoomin grew at these places. Currently, Manoomin supports wildlife and other ecosystem functions. These places have the potential for Manoomin harvesting in the future, although they cannot yet support it. The presence of Manoomin significantly improved the ranking of most of the cultural and ecological metrics. During this period, conditions at the Net River Impoundment and Vermillac Lake ranked as “pretty good” based on cultural and ecological metrics. Although Manoomin provides cultural and ecological functionality, additional management of water levels at the Net River Impoundment could continue to improve the abundance of Manoomin and the long-term sustainability of healthy Manoomin beds.



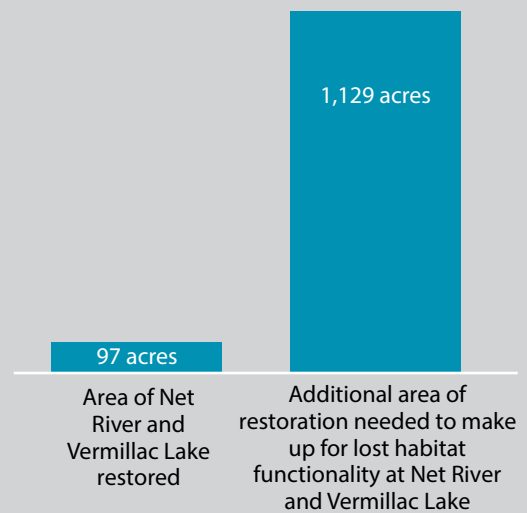
Cultural and ecological characterization at Net River Impoundment and Vermillac Lake

Cultural and ecological functionality provided by Manoomin and its associated habitat at the Net River Impoundment and Vermillac Lake have increased over time, both in aggregate and for the individual metrics.



Additional restoration needed

Based on the characterization of the degree of cultural and ecological function over the two time periods, a Habitat Equivalency Analysis can demonstrate the additional equivalent units of restoration needed to counter-balance the severity and timespan of degradation. With seeding, resource managers successfully established Manoomin across the Net River Impoundment and Vermillac Lake. However, given that the period of degradation is much larger (over 20 years) than the period of restoration (around 5 years), an additional 1,129 acres of similar Manoomin restoration is needed to counter-balance the lost habitat functionality that has occurred over time. In other words, nearly 12 equivalent restoration efforts at the Net River Impoundment and Vermillac Lake (from 2014 to 2019) are needed to counter-balance the lost cultural and ecological habitat functionality (from 1990 to 2013).





References

BIA. 2019. Tribal Great Lakes Restoration: Culturally Inspired Restoration. Great Lakes Restoration. U.S. Department of the Interior, Bureau of Indian Affairs. Available: <http://www.glifwc.org/publications/pdf/2019BIAGLRI.pdf>. Accessed February 5, 2020.

KBIC NRD. 2019. Native Plants Wild Rice Management and Restoration. Keweenaw Bay Indian Community Natural Resources Department. Available: <http://nrd.kbic-nsn.gov/wild-rice-management-and-restoration>. Accessed February 11, 2020.

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 management, 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/>.

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