



Northern Wild Rice (*Zizania Palustris*) inflorescences, Arthur Haines

# LAKE WINNEBAGO WILD RICE RESTORATION



By: Kenzie Connolly  
and MaryBeth Barker



Brothertown Indian Nation  
Eeyamquittoowauconnuck



Nelson Institute for  
Environmental Studies  
UNIVERSITY OF WISCONSIN-MADISON



HISTORY OF BROTHERTOWN  
1

HARVESTING AND PROCESSING WILD RICE  
2-3

WILD RICE RESTORATION  
4

COMPANION PLANTS  
5-6

STAGES OF MANOOMIN  
8

THREATS TO WILD RICE  
9-12

PLANTS OUT OF PLACE  
13-18

ABOUT THE PROJECT  
20

# TABLE OF CONTENTS



## Land Acknowledgement

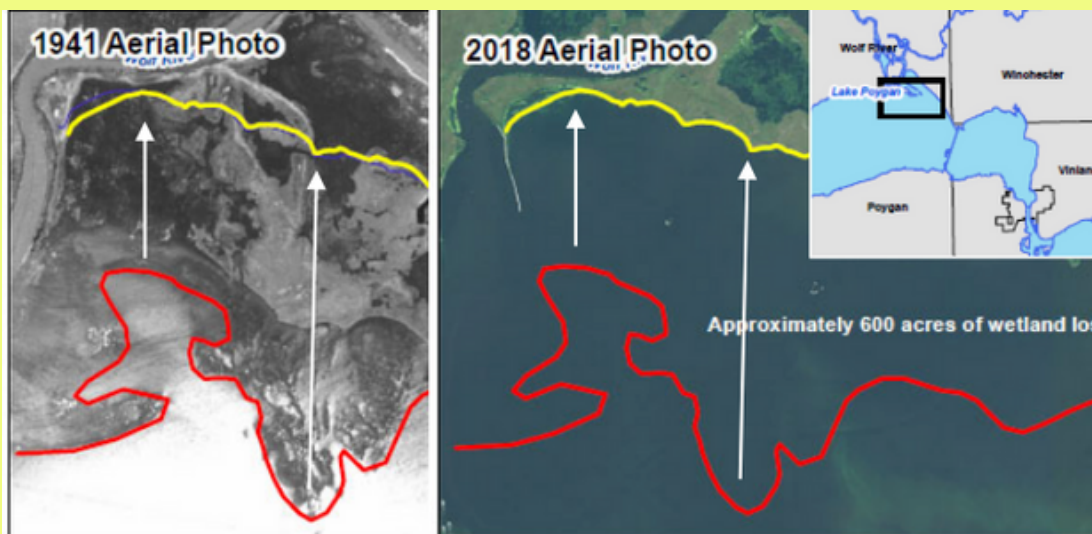
The Lake Winnebago waterways and watershed, and the land that is now known as Wisconsin, are the ancestral territories of Ho-Chunk, Menominee, Ojibwe, Potawatomi, Oneida, Stockbridge Munsee and Brothertown. Tribes in Wisconsin have historic and contemporary connections to, and responsibilities for, Lake Winnebago and her related waters. This Wild Rice Revitalization Project honors relationships, leverages Tribal Traditions and local knowledge, and promotes responsibility for water and wild rice stewardship by Tribes and all watershed citizens.

# History of Brothertown

Eeyamquittoowauconnuck, the people of the Brothertown Indian Nation, are originally from the East Coast, what is now New York. During colonization and warfare in the 1600s, Brothertown worked with Christians to convene seven Tribes in “prayer towns” as a means to live in prosperous communities (Cottrell, Personal Communication 4.14.22). When Brothertown was forced out of New York, they migrated to Wisconsin, where they secured land from the Menominee Nation. To avoid another federal displacement to Kansas, Brothertown opted for citizenship in 1839 (Loew, 2001), with the consequence being that they were stripped of their Native identity and Tribal sovereignty. Brothertown Indian Nation is not currently federally recognized, and they continue to advocate for federal recognition. Today, Brothertown Indian Nation convenes Tribal Council and community events in their Tribal headquarters in Fond du Lac, Wisconsin. The Tribe owns land in the town of Brothertown on the east shore of Lake Winnebago, their original lands in Wisconsin.

"The mission of the Brothertown Nation is to continue a stable and dynamic government which will promote and maintain the spiritual, physical, intellectual, social and economic well-being of our citizens; to restore and preserve our unique historical, cultural, and traditional beliefs; to preserve and protect our sovereignty in order to achieve self-determination and self sufficiency" (<https://www.brothertownindians.org/>).

Wild Rice is a cultural resource and important food for Tribes in Wisconsin and throughout the western Great Lakes. Wisconsin Indigenous language names for rice are: *Mayom* (Mohegan), *Wąqkšik sji* (Ho-Chunk), *Manoomin* (Ojibwe), and *Mnomen* (Potawatomi).



# HARVESTING

1

## **Being the Poler**

---

The Poler propels the canoe, moving and guiding the canoe close to wild rice beds, but not too close to damage the beds.

# AND PROCESSING WILD RICE

2

## **Being the Knocker**

---

The Knocker uses 1-2 knocking sticks to gently knock the grains off the top of the stalk into the canoe, being careful to bend and not break the rice stalks.

3

## **Parching the Rice**

---

The Rice is roasted in a large kettle and stirred consistently until the grains are parched and the hulls loosen.

4

## **Dancing the Rice**

---

The Rice is put on a tarp and dancers begin to dance on top of the rice while wearing rice moccasins. Hulls of the rice are separated from the rice.

5

## **Winnowing**

---

The hulls from the rice are blown away by the wind, encouraged by a flicking motion to leave the edible seed behind.

1

## Being the Poler



(2018). The Sacred Harvest of Rice.  
Retrieved from <https://wildernessnorth.com/the-sacred-harvest-of-rice/>.

# HARVESTING

# AND PROCESSING WILD RICE

2

## Being the Knocker



G-WOW. (2007). Ricing with Tommy Sky.  
Retrieved from <http://g-wow.org/en-us/wildrice/connect/default.aspx>.

3

## Parching the Rice



Killy, M. P. (1946). Parching wild rice at Nett Lake. MNOPEdia.  
Retrieved from <http://collections.mnhs.org/cms/display?irn=10852679>.

4

## Dancing the Rice



Barton, B., & Bucqueroux, B. (2004).  
*Manoomin: Dancing the wild rice*. Youtube.  
Retrieved from <https://www.youtube.com/watch?v=82lxRpL7DxE>.

5

## Winnowing



Livesay, N., & Nichols, J. D. (1937).  
Ojibwe woman winnowing wild rice. Ojibwe People's Dictionary . Retrieved from <https://ojibwe.lib.umn.edu/collection/ojibwe-woman-winnowing-wild-rice>.

# Start with questions:

01.

## HOW TO START WILD RICE RESTORATION?

Before starting wild rice restoration, it is important to research and understand the cultural significance of *Manoomin* (wild rice) to Indigenous Tribes and the ecological benefits to water, people, fish and wildlife.



Corbis Historical. (1900). Harvesting Wild Rice. Getty Images. Retrieved from <https://www.gettyimages.co.uk/detail/news-photo/elderly-objibwa-wild-rice-harvesters-thrash-grain-heads-with-news-photo/615320038>.

02.

## HAS THERE BEEN WILD RICE ON THE SITE HISTORICALLY?

Find out if wild rice has ever been recorded on that site.

Resources to use:

- Wisconsin State Flora Website
- Inaturalist
- Wisconsin DNR

In Wisconsin, *Manoomin* ranges from the Menomonee River to shores of Lake Superior and West to the Mississippi River.

When looking to revitalize wild rice beds, seeding with old seeds has a cultural importance of continuing growth. Under the right conditions seeds can remain viable for hundreds of years.

03.

## WILL YOUR SITE SUPPORT WILD RICE?

Main criteria to look for:

- Water Flow
  - Must have flowing water
- Water Depth
  - Water needs to be between 0.5-3 feet
    - 1-2 feet is optimal
- Water Clarity
  - Clear water works best
    - allows sunlight to reach through water
- Water Color
  - Water can be stained but only if water depth is less than 2 feet
- Water Fluctuations
  - Seasonal fluctuations are best for growth of rice
- Boats
  - Wakes from boats damage wild rice beds, specifically in the early floating leaf stage
- Sediment Type
  - Soft mucky soil
- Competing vegetation
  - Wild rice is an annual, so it needs space to establish itself amongst wetland perennials

# Companion Plants

Companion plants are plants that grow in the same ecosystem and support each other through:

**Nutrient Uptake, Improved Pest Management, Reduced need for pesticides**



Kansas State University Extension. [agronomy.k-state.edu/documents/nutrient-management/nmrg-soil-nutrients,-sources-and-uptake.pdf](https://agronomy.k-state.edu/documents/nutrient-management/nmrg-soil-nutrients,-sources-and-uptake.pdf)



"© [Bitter] / Adobe Stock"



© iStockphoto.com/alfoto



What is pollination? (2007). Eden Project . Retrieved from <https://www.edenproject.com/learn/eden-at-home/what-is-pollination-a-resource-for-kids>.

**Increased pollination**



Sketchify. (n.d.). Working Woman Farmer. Canva.

**Higher yields**



# Companion Plants to Wild Rice

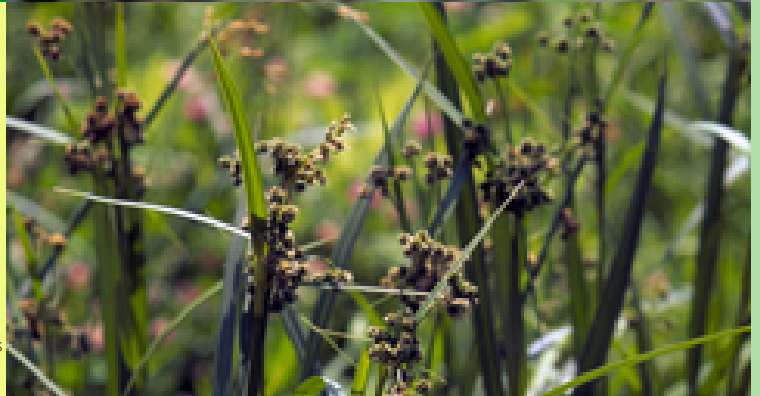
## Water Plantain

Water Plantain. Lady Bird Johnson Wildflower Center - the University of Texas at Austin. (n.d.). Retrieved April 29, 2022, from [https://www.wildflower.org/gallery/result.php?id\\_image=21193](https://www.wildflower.org/gallery/result.php?id_image=21193)



## Native Bulrush

Wasowski, S. and A. (n.d.). Plant database. Lady Bird Johnson Wildflower Center - The University of Texas at Austin. Retrieved May 5, 2022, from [https://www.wildflower.org/plants/result.php?id\\_plant=scat2](https://www.wildflower.org/plants/result.php?id_plant=scat2)



## Yellow and White Water Lily

Cressler, A. (n.d.). Plant database. Lady Bird Johnson Wildflower Center - The University of Texas at Austin. Retrieved May 5, 2022, from [https://www.wildflower.org/plants/result.php?id\\_plant=nulu](https://www.wildflower.org/plants/result.php?id_plant=nulu)



## Pickerel Weed

Cliffe, H. (n.d.). Plant database. Lady Bird Johnson Wildflower Center - The University of Texas at Austin. Retrieved May 5, 2022, from [https://www.wildflower.org/plants/result.php?id\\_plant=poco14](https://www.wildflower.org/plants/result.php?id_plant=poco14)



# How do you identify Wild Rice?



## ***Zizania Palustris***

**Pistillate lemma (male reproductive organ: Stamen) firm and tough, scabrous-hispid only on the nerves and at most at the base and apex (Scabs with short stiff hairs on base and tips of stem); aborted pistillate spikelets mostly 0.9–1.8 mm broad (Grains fall off around this size range); widest leaves 0.5–1.7 cm wide.**

Dister. (n.d.). *Zizania Palustris*. *Zizania Palustris* - michigan flora. Retrieved April 29, 2022, from <https://michiganflora.net/species.aspx?id=2250>

## ***Zizania Aquatica***

**Pistillate lemma (Male Reproductive organ: Stamen) thin and membranous. At least sparsely hispid-scabrous (Scabs with short stiff hairs) between the strong nerves; aborted pistillate spikelets mostly 0.5–0.9 mm broad (Grains fall off around this size range); widest leaves 1.5–4.5 cm wide.**



# Stages Of Manoomin

## Babaamaangon Manoomin

Manoomin is highly vulnerable in June, while it is in the “floating leaf” stage of growth. During this period, the leaves of the plant float on the water surface, and the roots are not yet well developed, leaving it particularly vulnerable to physical disturbances and abrupt fluctuations in water levels.



## Zaagakiimagad Ojiibik

Roots development begins early, both to help anchor the plant and to absorb nutrients, such as nitrogen, phosphorus, and potassium. Because the roots of Manoomin are capable of growing in soil conditions that are unfavorable to other aquatic plants, and because its roots deteriorate more slowly, Manoomin enhances water quality by retaining nutrients that encourage algal blooms and reduce oxygen levels.



## Manoominashk

The stem emerges from the water and grows to be 2-6 feet above the surface late in June and early in July. Plants may have only one primary stem which produces a seed head, or the plant may develop multiple stems, sometimes 20 or more, each with its own seed head.



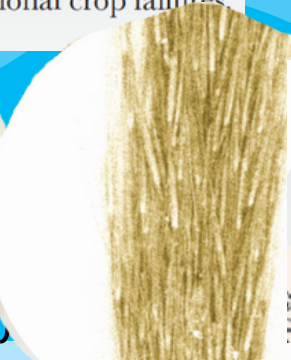
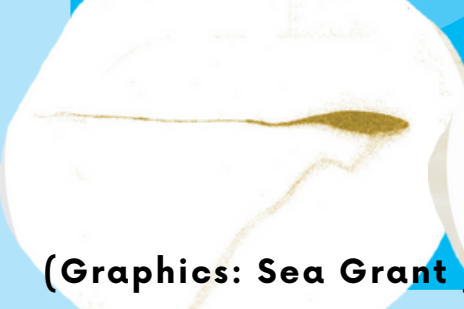
## Ani-aditewan Waabigwaniinsan

There are two types of flowers. Tiny white flowers bloom first, and 3-4 days later, yellow and pink flowers bloom. Manoomin is wind-pollinated. However, because flowers open at different times, cross pollination and self-pollination likely occur.



## Maajiigin Manoomin

In order to germinate, Manoomin requires cold water temperatures below 35°F. In Spring, when water temperatures rise above 45°F, germination begins. If conditions are unsuitable, seeds may remain dormant until the following Spring. Some seeds remain dormant for five or more years. This extended dormancy allows Manoomin to survive occasional crop failures.



## Manoomin

Manoomin generally matures later in August or early in September, but maturation varies from water to water. Harvesting should only begin when seeds are fully developed, and are ready to drop off.

# What are some Human-Induced Environmental Threats to Wild Rice?

## Flooding

In Wisconsin, one main consequence of climate change is more frequent extreme precipitation events. This means increased flooding. Wild rice populations require a certain level of water, and rapid water fluctuations can prohibit its growth. Dams also pose a threat to wild rice as they increase water levels wherever they are constructed. Beaver dams alter water levels, potentially affecting rice beds.

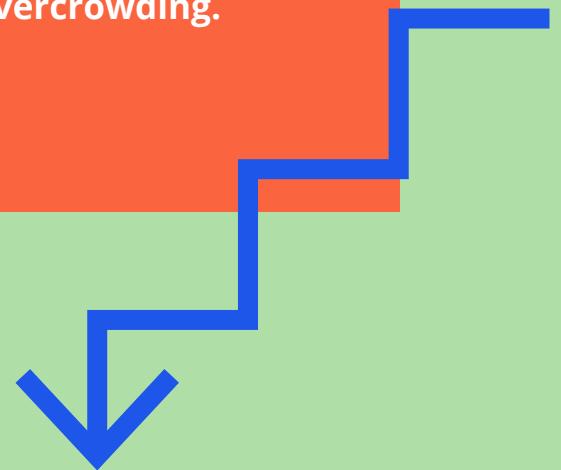
## Herbivory

Although most wild rice populations have been able to adapt to herbivory, certain vulnerable populations are more threatened by it. Canada geese often feed on young wild rice plants.

## Plants out of Place

There are many different definitions for a plant out of place. One definition of what is commonly referred to as an invasive species is a non-native plant or animal that has adapted to a highly competitive environment.

We prefer to call them plants out of place, because “invasive species” are not always quite as threatening as the name implies. Only some species still have the potential to harm wild rice populations with overcrowding.



# FLOODING IS A THREAT TO WILD RICE

*Manoomin* is highly sensitive to fluctuations in water level and temperature. The species prefers shallow slow-moving water. When water levels are too high the seeds cannot germinate and young plants are uprooted from their floating leaf stage, which is an important stage of growth for wild rice populations.



# 1 Dam Construction

Dams constructed since the industrial era have significantly altered the waterways of Wisconsin. Dams are built for the purpose of hydropower, irrigation, flood control, or water storage. A 2019 study from the University of Minnesota (CITATION NEEDED) demonstrated that flooding riverways through dam construction has the potential to hurt manoomin populations, especially when in their growth stages.



# 2 Climate Change and Increased Flooding

According to the EPA (CITE) the effect of climate change on Wisconsin's environment will be increased precipitation, earlier snow and ice melt, and increased temperatures. One of the greatest climate threats to *manoomin* is high humidity levels and unpredictable fluctuations in water level due to high precipitation. This means that as climate change continues to be a threat to the environment, it also acts as a threat to manoomin populations.

# Damage by Wildlife

## Beaver Dams

Dams built by beaver populations have the potential to raise the local water levels of an area. Although beavers are a healthy part of an ecosystem, they still have the potential to cause high water conditions for local wild rice populations. However, this threat requires more study.

## Canada Geese

Geese often like to feed on young wild rice plants. Although these populations are not a main threat to rice species, this feeding habit is something to consider when thinking about potential factors that impact *manoomin*.

## Common Carp

Carp are considered ecosystem engineers due to their ability to alter biotic and abiotic factors in a waterway. This includes negative impacts on manoomin populations. The fish are bottom feeders in lakes and streams, and can disturb germinating wild rice plants. Wisconsin tribes are actively working on removing carp populations from waterways.



Pixabay. (n.d.). Illustration of a Fish . Canva.



Pixabay. (n.d.). Illustration of a Beaver . Canva.



Pixabay. (n.d.). Pair of Grazing Geese . Canva.

# PLANTS OUT OF PLACE

## How they Pose a Threat to Wild Rice

## Plus, a survey of plants out of place and how to mitigate them

---

### IMPORTANT TERMS TO KNOW



Twemoji. (n.d.). Sheaf of rice . Canva.

Colonization of the Americas by Europeans brought seeds from many different countries which spread onto the land and into waterways. Many invasive species are still spread today through human activity. Some plants out of place have become naturalized to the landscape and do not pose as a threat to the vegetation; others are capable of causing harm to native plants and must be mitigated.

"We need to look into the future at other management practices on wild rice. I have seen a lot more aquatic vegetation that out competes with wild rice and it is important to look at other factors instead of just water levels." - Joe Graveen, Lac du Flambeau Band of Lake Superior Chippewa, Tribal Natural Resources Department



Sketchify Philippines. (n.d.). Filipino planting rice . Canva.



# Competition

All plants, native or non-native experience competition every day. They compete for light, nutrients, and space for themselves and their offspring. Many non-native species that pervade Wisconsin habitats come from an area with a higher level of competition than WI native species, and therefore are much more aggressive. Because the native species have not adapted to this level of competition, they can be choked out by this new unfamiliar species.



## Adaptation

The ability of a plant or animal to become better able to survive in its natural habitat

## Mitigation

One way to address plants out of place that are threatening important native species is mitigation. Mitigation is the act of making something less severe or painful. Mitigation does not mean completely ridding the state of non-native plants. We cannot completely rid WI habitat of plants out of place, but we can make efforts to mitigate them.

## Non-Native Species

A species of plant or animal that is found displaced from its natural habitat.

## Chemical Control

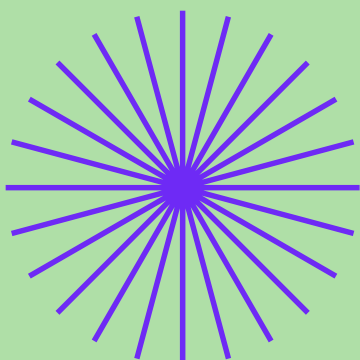
involves the use of herbicides applied directly to the plant. This is an option, but not a preferred method of mitigation.

## Native Species

A species of plant or animal that is found growing in its natural habitat.

## Mechanical Control

Includes digging, pulling, mowing, or cutting down a plant out of place in order to reduce its biomass.



## Biological Control

Involves introducing a species that is a natural predator to the targeted plant out of place

# PLANTS OUT OF PLACE: A SURVEY

## How to Identify and Mitigate Plants Displaced from their Native Habitats



Sketchify. (n.d.). Couple planting illustration. Canva.

Pixabay. (n.d.). Grass. Canva.

# Purple Loosestrife

*Lythrum Salicaria L.*



Purple Loosestrife. Purple Loosestrife | (*Lythrum Salicaria*) | Wisconsin DNR. (n.d.). Retrieved April 29, 2022, from <https://dnr.wisconsin.gov/topic/Invasives/fact/PurpleLoosestrife.html>

## Identification

- Simple lance-shaped leaves
- Flowers pink/purple, in groups of five to six and attached closely to the stem
- Stem green, sometimes tinged purple

## Mitigation

- Mechanical: Small plants can be pulled but most large plants should be dug out
- Biological: Galerucella beetles have been effective in controlling purple loosestrife



Cattail hybrid. Cattail hybrid | (*Typha x glauca*) | Wisconsin DNR. (n.d.). Retrieved April 29, 2022, from <https://dnr.wisconsin.gov/topic/Invasives/fact/CattailHybrid.html>

# Hybrid Cattail

*Typha X Glauca*

## Identification

- Leaves linear and erect, about 15 leaves per shoot
- Flowers: characteristic brown tube-shaped top; numerous tiny flowers densely packed

## Mitigation

- Cut all stems in late summer or early fall; if possible keep stems submerged in water

# Non-Native *Phragmites*

## Identification

- Plants usually grow tall - up to 20 feet
- Leaves smooth, linear; blue-green color; leaf sheaths clasp the stem and are difficult to remove
- Flowers bushy, plumes resemble feather dusters



## Mitigation

- According to the Wisconsin DNR, herbicide may be necessary for removal
- Reduce biomass through cutting

Non-native phragmites or Common Reed. Non-native Phragmites or Common Reed | (Phragmites australis) | Wisconsin DNR. (n.d.). Retrieved April 29, 2022, from <https://dnr.wisconsin.gov/topic/Invasives/fact/Phragmites.html>



Curly-leaf Pondweed. Curly-leaf Pondweed | (*Potamogeton Crispus*) | Wisconsin DNR. (n.d.). Retrieved April 29, 2022, from <https://dnr.wisconsin.gov/topic/Invasives/fact/CurlyLeafPondweed.html#:~:text=A%20perennial%2C%20submerged%20aquatic%20herb,deep%2C%20still%20or%20flowing%20water.>

## Identification

- Leaves with distinctly wavy edges; submersed in water and alternate
- Flowers tiny, in spikes, with four petal-like lobes

## Mitigation

- Mitigation should occur in spring or early summer because this plant has early growth
- Reduce biomass through raking, cutting, or harvesting

## Ecological threat

- Has the potential to outcompete aquatic plants
- Causes an increase of phosphorous levels in freshwater, causing algae blooms

# Curly Leaf Pondweed *Potamogeton Crispus*

# Eurasian Water Milfoil

## *Myriophyllum spicatum*

### Ecological threat

- Forms large floating mats that can keep native plants from growing
- Invades freshwater lakes in WI

### Identification

- Greyish-green and finely divided pairs of fine, thin leaflets about ½-2" long
- Flowers small yellow or reddish; 4-parted on a spike projected 2-4 inches above the water

### Mitigation

- Increased difficulty due to aquatic nature
- Can be mechanically removed by divers or snorkelers; usually as a followup to chemical application



Elizabeth J. Czarpata

Eurasian Watermilfoil. Eurasian Watermilfoil | (*Myriophyllum Spicatum*) | Wisconsin DNR. (n.d.). Retrieved April 29, 2022, from <https://dnr.wisconsin.gov/topic/Invasives/fact/EurasianWatermilfoil.html>

# Flowering Rush

## *Butomus Umbellatus*

### Identification

- flowers white to light pink-rose
- 3 petals
- bloom June-August
- will not bloom if submerged in deep water



Flowering Rush. Flowering Rush | (*Butomus Umbellatus*) | Wisconsin DNR. (n.d.). Retrieved April 29, 2022, from <https://dnr.wisconsin.gov/topic/Invasives/fact/FloweringRush.html#:~:text=Leaves%3A%20These%203%20sided%20leaves,light%20pink%20dRose%20in%20color.>



### Mitigation

- cut plants several times throughout the year, below the water line
- small populations can be dug out with care for all root fragments

# Reference Page

- Invasive species. Invasives | Wisconsin DNR. (n.d.). Retrieved April 29, 2022, from <https://dnr.wisconsin.gov/topic/Invasives>
- Purple Loosestrife. Purple Loosestrife | (*Lythrum Salicaria*) | Wisconsin DNR. (n.d.). Retrieved April 29, 2022, from <https://dnr.wisconsin.gov/topic/Invasives/fact/PurpleLoosestrife.html>
- Cattail Hybrid. Cattail Hybrid | (*Typha X Glauca*) | Wisconsin DNR. (n.d.). Retrieved April 29, 2022, from <https://dnr.wisconsin.gov/topic/Invasives/fact/CattailHybrid.html>
- Non-native phragmites or Common Reed. Non-native Phragmites or Common Reed | (*Phragmites Australis*) | Wisconsin DNR. (n.d.). Retrieved April 29, 2022, from <https://dnr.wisconsin.gov/topic/Invasives/fact/Phragmites.html>
- Curly-leaf Pondweed. Curly-leaf Pondweed | (*Potamogeton Crispus*) | Wisconsin DNR. (n.d.). Retrieved April 29, 2022, from <https://dnr.wisconsin.gov/topic/Invasives/fact/CurlyLeafPondweed.html#:~:text=A%20perennial%2C%20submerged%20aquatic%20herb,deep%2C%20still%20or%20flowing%20water.>
- Cliffe, H. (n.d.). Plant database. Lady Bird Johnson Wildflower Center - The University of Texas at Austin. Retrieved May 5, 2022, from [https://www.wildflower.org/plants/result.php?id\\_plant=poco14](https://www.wildflower.org/plants/result.php?id_plant=poco14)
- Cressler, A. (n.d.). Plant database. Lady Bird Johnson Wildflower Center - The University of Texas at Austin. Retrieved May 5, 2022, from [https://www.wildflower.org/plants/result.php?id\\_plant=nulu](https://www.wildflower.org/plants/result.php?id_plant=nulu)
- Eurasian Watermilfoil. Eurasian Watermilfoil | (*Myriophyllum Spicatum*) | Wisconsin DNR. (n.d.). Retrieved April 29, 2022, from <https://dnr.wisconsin.gov/topic/Invasives/fact/EurasianWatermilfoil.html>
- Flowering Rush. Flowering Rush | (*Butomus Umbellatus*) | Wisconsin DNR. (n.d.). Retrieved April 29, 2022, from <https://dnr.wisconsin.gov/topic/Invasives/fact/FloweringRush.html#:~:text=Leaves%3A%20These%203%2D-sided%20leaves,light%20pink%2Drose%20in%20color.>
- Butterfield . (n.d.). American Lotus-Lily Marsh. American Lotus-Lily Marsh - Wisconsin DNR. Retrieved April 29, 2022, from <https://dnr.wi.gov/topic/EndangeredResources/Communities.asp?mode=detail&Code=cpher054wi>
- Bramley . (n.d.). *Sparganium Americanum* - American Bur-Reed. Native Plant Trust: Go Botany. Retrieved April 29, 2022, from <https://gobotany.nativeplanttrust.org/species/sparganium/americanum/>
- Crow. (n.d.). *Zizania Aquatica*. *Zizania Aquatica* Image - Michigan Flora. Retrieved April 29, 2022, from <https://michiganflora.net/image.aspx?img=18580&id=2249>
- Dister . (n.d.). *Zizania Palustris* . *Zizania Palustris* - michigan flora. Retrieved April 29, 2022, from <https://michiganflora.net/species.aspx?id=2250>
- Dziuk. (n.d.). *Glyceria borealis* (northern manna grass). Minnesota Wildflowers. Retrieved April 29, 2022, from <https://www.minnesotawildflowers.info/grass-sedge-rush/northern-manna-grass>
- Enger, J. (2019, July 14). Explaining Minnesota's 1837, 1854 and 1855 treaties. MPR News. Retrieved April 29, 2022, from <https://www.mprnews.org/story/2016/02/01/explaining-minnesota-ojibwe-treaties>
- Graphics. *Manoomin* Education and Outreach Project. (n.d.). Retrieved May 3, 2022, from <https://seagrant.wisc.edu/manoomin/literature-background>
- Harvesting wild rice. The Ojibwe People's Dictionary. (n.d.). Retrieved April 29, 2022, from <https://ojibwe.lib.umn.edu/collection/harvesting-wild-rice>
- Minnesota DNR. 2008. "Natural Wild Rice in Minnesota." Minnesota Department of Natural Resources.
- *Manoomin*: Climate change impacts & conservation. NORTHEAST INDIGENOUS CLIMATE RESILIENCE NETWORK. (n.d.). Retrieved April 29, 2022, from <http://www.nicrn.org/manoomin-climate-change-impacts--conservation.html>
- *Manoomin*: Dancing the wild rice - youtube. (n.d.). Retrieved April 30, 2022, from <https://www.youtube.com/watch?v=82IxRpL7DxE>
- Michigan State University. (n.d.). Michigan Natural Features Inventory. *Zizania* (Wild rice) - Michigan Natural Features Inventory. Retrieved April 3, 2022, from <https://mnfi.anr.msu.edu/species/description/15796/Zizania-aquatica>
- Ojibwe lifeway: Wild Rice Harvesting ("Dagwaagin"-fall). GWOW - Wild Rice (*Manoomin*). (n.d.). Retrieved April 29, 2022, from <http://www.gwow.org/en-us/wildrice/default.aspx>
- Ojibwe woman winnowing wild rice. The Ojibwe People's Dictionary. (n.d.). Retrieved April 29, 2022, from <https://ojibwe.lib.umn.edu/collection/ojibwe-woman-winnowing-wild-rice>
- Olivia Mōhala Takeko Aiona and Tyler Tran. (2021, February 2). Importance of and threats to *Manoomin*. ArcGIS StoryMaps. Retrieved April 29, 2022, from <https://storymaps.arcgis.com/stories/07f1a45881a14d198bd0d9b3dd51e>
- Parching wild rice at Nett Lake. MNopedia. (n.d.). Retrieved April 29, 2022, from <https://www.mnopedia.org/multimedia/parching-wild-rice-nett-lake>
- Water Plantain. Lady bird johnson wildflower center - the University of Texas at Austin. (n.d.). Retrieved April 29, 2022, from [https://www.wildflower.org/gallery/result.php?id\\_image=21193](https://www.wildflower.org/gallery/result.php?id_image=21193)
- Wiigwaasi-Jiimaan. Tradition. (n.d.). Retrieved April 29, 2022, from [https://canoe.csumc.wisc.edu/LdFCanoe\\_subpage\\_Tradition.html](https://canoe.csumc.wisc.edu/LdFCanoe_subpage_Tradition.html)
- Wasowski, S. and A. (n.d.). Plant database. Lady Bird Johnson Wildflower Center - The University of Texas at Austin. Retrieved May 5, 2022, from [https://www.wildflower.org/plants/result.php?id\\_plant=scat2](https://www.wildflower.org/plants/result.php?id_plant=scat2)
- *Zizania Palustris* - Northern Wild Rice. Native Plant Trust: Go Botany. (n.d.). Retrieved April 28, 2022, from <https://gobotany.nativeplanttrust.org/species/zizania/palustris/>
- Great Lakes Indian Fish and Wildlife Commission. (2019). Tribal Great Lakes Restoration Culturally Inspired Restoration. GLIFWC. Retrieved April 2022, from <http://glifwc.org/publications/pdf/2019BIAGLRI.pdf>
- Loew, P., DeMain, P., & Leary, J. P. (2013). Indian nations of wisconsin: Histories of endurance and Renewal (2nd ed.). Wisconsin Historical Society Press.



# About the Project

Lake Winnebago, Wisconsin's largest inland lake, connects major rivers to Lake Michigan. Historically this watershed supports diverse wetlands, wildlife, and fisheries.

The waterways and connecting lakes have been altered by dams and other development. Wild rice persists and continues to offer habitat for fish, wildlife, and waterfowl. The Wisconsin InterTribal Lake Winnebago Connectivity Project for Wild Rice convenes Tribes, InterTribal, state and federal agencies, non-profits, and university employees in partnership for sustaining fisheries, traditions, and healthy food and water for communities.

In winter and spring of 2022, Brothertown and Nelson Institute for Environmental Studies undergraduates worked together on projects for research, community education, and policy. The goal of the student projects is to integrate Traditional Ecological Knowledge and Western science through community engagement.



## Looking for more information?

Dr. Jessie Conaway  
[jessie.conaway@wisc.edu](mailto:jessie.conaway@wisc.edu)