Arboretum Leaflets
restoration • discovery • research
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Eco-Cultural Restoration at Ho-Nee-Um Pond

Eight of the Arboretum's diverse ecosystems are readily accessible in the area surrounding Ho-Nee-Um Pond. These are: **coldwater springs, fen, groundwater seepages, cottonwood bottomland, oak savanna, woodland,** and an excavated **pond** and **shoreline**. Of special significance are the 2 springs that flow year-round. These are 2 of only 8 historical springs that still feed Lake Wingra; another 22 have dried up. Here, steps away from a busy street, visitors can still see where groundwater becomes surface water.

"Ho-Nee-Um" is said to mean sanctuary, perhaps in reference to springs as entrances to the underworld of water spirits (Birmingham and Eisenberg 2000).


Isabel Rojas-Viada

In past centuries, savanna trees offered shade, springs gave fresh water, and wildrice beds, wildlife and fish provided food to support an Indian village and numerous camps near the western shore of Lake Wingra. Wildrice (*Zizania* spp.) extended over a hundred feet across the lake's shallow waters. When a dam was added in 1908, it stabilized the lake's water level. Then, dredging in 1940 converted lakeshore wetland to a pond, and the spoils were piled high to create an island between the pond and the lake. Wildrice did not persist, nor did clean water. Urban runoff flowed into the pond for decades and was only recently diverted through a pipe that now discharges directly into the lake. Invasive shrubs and trees have displaced much of the native vegetation that was known to historical cultures.

To highlight the rich history of the Ho-Nee-Um Pond landscape, this self-guided tour introduces eight ecosystems and selected plants that Native Americans or early European settlers used for food, fiber, medicinal and ceremonial purposes. For each ecosystem we highlight at least one plant species of historical cultural value.

Native Americans bent and formed tree saplings to mark trails. In keeping with this tradition, we point the way along our tour using an icon drawn from a marker-tree image.

Visitors are not allowed to collect or eat any species in the Arboretum, whose mission is to conserve and restore lands and research and foster the land ethic.

The limestone steps on the south side of the parking lot once formed a grand entry to the savanna; please use them to follow the footpath under the oak trees.


Isabel Rojas-Viada

Look up to the **oak savanna** canopy, which is dominated by large bur oaks (*Quercus macrocarpa*). Imagine the Indian village that overlooked Lake Wingra. In the absence of human occupation, the Arboretum uses prescribed fire to control exotic buckthorn (*Rhamnus cathartica*) and other invasive vegetation.

Smooth sumac (*Rhus glabra*) is a native, perennial, deciduous shrub. Every part of this species was used by Native Americans (Meeker et al. 1993). Roots were used to make infusions to control bleeding, induce vomiting and treat colds; bark provided an astringent; poultices of leaves were used to dress wounds; a decoction of flowers helped with teething and sore eyes; and the berries were made into a tangy drink.

Sumac is growing very well under the oaks; it tends to be weedy, so annual monitoring will help managers decide when it is time for control measures.


Isabel Rojas-Viada

4 Continue along the limestone footpath to the council ring and you will see the main spring flowing between limestone rocks just below.


Isabel Rojas-Viada

Springs have spiritual meaning for Ho-Chunk people; they are places for gratitude, reverence, and links to the underworld. Many water-spirit effigy mounds have long tails that point toward springs (Birmingham and Eisenberg 2000).


Joy Zedler

Watercress (*Nasturtium officinale*) was brought to North America from Europe and Asia, where it was an early food plant. Settlers likely made good use of this highly productive water plant, which grows year-round in springs that never freeze.

Like many invasive plants that dominate local wetlands (esp. reed canary grass, *Phalaris arudinacea*; giant reed, *Phragmites australis*, hybrid cattail, *Typha x glauca*), it is clonal (vegetatively reproducing), aggressive, and able to outcompete native plants. Photo-monitoring can alert managers to the need for control measures.

Continue on the short trail along the spring, but avoid the former path immediately adjacent to the spring. The trampled area needs to be restored.

Groundwater seepages are areas where water oozes to the surface, too slowly to form a spring. Several seepages occur along the boardwalk headed south. Please remain on the boardwalk to avoid trampling. Bare spots that are not heavily shaded should be suitable for introducing sweetgrass.


Joy Zedler

Sweetgrass (*Hierochloe odorata*) is a hardy native perennial grass that grows well in moist soil. It was an especially important healing plant for Native Americans, and it is still widely used in ceremonies, for example, by burning braids of the leaves as incense. Baskets are made of stems, but not leaves, which crumble on drying. Stems are bundled, then sewn to make flexible, scented baskets.

Sweetgrass is a short plant that is not likely to persist where nutrients allow competitors to outshade it. The soil fed by low-nutrient groundwater is a good prospect for this culturally important plant.


Joy Zedler


Robert H. Mohlenbrock

Cross the stream carefully where there are stepping stones. The boardwalk continues through a groundwater discharge area that is wet enough to support native cattails. This area is a fen.

Fens are groundwater fed wetlands that are low in nutrients due to continuous discharges of nutrient-poor water. They are rich in native species, because no single plant can absorb enough nitrogen to outgrow others. This fen supports native cattail as a "matrix dominant" (Frieswyk et al. 2008) meaning that it allows other plants to coexist.


Joy Zedler

Cattail (*Typha latifolia*) leaves have been woven into floor mats and bags, belts, straps, shoes, and dolls. The Ojibwa used crushed roots as a poultice for sores. Several parts were used for food: starch from the rhizomes; "greens" from young shoots and stem bases, and flour from pollen.


Joy Zedler

An indicator of groundwater eutrophication would be a rapid increase in the density of cattails in this fen. Given photo-monitoring, managers could see when control measures are needed to keep cattails from displacing other native plants.

Follow the boardwalk east at post R2, where it meanders between the shoreline and the large trees.


Isabel Rojas-Viada

Cottonwood bottomland is represented by a grove of tall trees (*Populus deltoides*) near the southwest corner of Ho-Nee-Um Pond. Here the soil is poorly drained, due to a high water table. The understory vegetation varies in response to plantings following shrub removal, differential water levels, and microtopography. There is opportunity to highlight two Native American food plants in this ecosystem.

Hog peanut (*Amphicarpaea bracteata*) is called "mouse bean" by the Lakota, who use it to make soups, with preference for the beans that are produced below ground (L. Different Cloud-Jones, pers. comm.). The vine-like plants are native to open forest, moist slopes and shaded areas. Prairie voles (*Microtus ochrogaster*) harvest the beans and cache them under the cottonwood litter, where skilled Lakota elders find and collect them—and replace the beans with corn to sustain the helpful vole population (Duke 2001). This mostly-annual plant has 3 leaflets, while a close perennial relative, ground-nut (*Apios americana,* pictured here), has 5-7 leaflets. Ground-nut tubers are known from ancient Native American campsites, and early colonists learned to use ground-nuts like potatoes.


Joy Zedler

Hog peanut might need to be planted, while ground-nut is already abundant nearby.

4 Continue north along the boardwalk, walking parallel to the pond and re-crossing the stepping stones. At the north end of the boardwalk, continue walking alongshore on the lawn, until you see an opening where the pond water is visible.

The **shoreline** along Ho-Nee-Um pond is dominated by woody vegetation that helps stabilize the shallow banks. Where trees have fallen and uprooted, the bare soil provides opportunities to restore tussock sedge, which grows ample roots and dense litter than can help stabilize the shallow bank.


Joy Zedler

Tussock sedge (*Carex stricta*) was culturally important in the early 1900s, when leaves were harvested from sedge meadows in northern Wisconsin by the Crex Meadows Carpet Co. to make rugs and wicker furniture. Tussock sedge also provides multiple ecosystem services by creating micro-habitats that support other vascular plants and shelter small mammals, storing carbon in its tussocks and potentially removing nitrogen from eutrophic water (research underway).

Tussock sedge is easy to grow and transplant (Leaflet #22, Sept. 2010, uwarboretum.org). Photo-monitoring would document transplant survival and tussock formation.


Joy Zedler

Look across the water, southeast and toward the dredge-spoil island, to see where the pond has open water, without water lily pads.

Ho-Nee-Um pond provides shallow water that is used by turtles, geese, ducks, and fish, including non-native carp that stir up sediments and nutrients. Before dredging, the area that is now a pond supported sedge meadow and wildrice.


Joy Zedler


Larry Allain, USDA-NRCS

Wildrice (*Zizania* spp.) was a major grain crop for the Ho-Chunk and other Indians. This grass grows in shallow, clear water in sediment with sufficient nutrients to support the annual germination of seeds and tall growth. Today, the pond water is murky due to eutrophication and mixing by the wind and carp. Herbivory by geese and ducks is another constraint.

Cages with closed tops will be needed to exclude carp and herbivores, while allowing wildrice to grow through the water column. Planting experiments are planned to identify the most appropriate depths and proximity to spring water.

Proceed north along the lawn and dirt path, under the giant silver maple tree (*Acer saccharinum*).

Woodland between the pond and Arbor Drive supports a variety of tree species, including hackberry (*Celtis occidenalis*), black walnut (*Juglans nigra*), silver maple (*Acer saccharinum*), ash (*Fraxinus* spp.) and willow (*Salix* spp.). The latter two produce materials for basketry and related crafts.


Joy Zedler

Willows (e.g., *Salix interior*, the sandbar willow) produce twigs that are straight, strong and flexible. Among their many uses were to make arrows, roasting sticks, bead-weaving looms and baskets. Ojibwe made basketry for many purposes by splitting the willow twigs, then using the wicker/over-and-under weave. Additional uses of willow parts were for dyes (leaves, bark), medicines (roots), and straps and ties (bark strips).


Joy Zedler

Willow saplings would make suitable trail markers in the lowland areas, and the Arboretum would benefit from volunteers who would protect tied branches and plantings from harm.

H Continue walking northeast until you encounter a sycamore (*Platanus occidentalis*) tree, where you can walk upslope and look east toward the water to view both the pond and Lake Wingra. You may return to the parking lot by heading southwest along the edge of Arbor Drive or continue northeast toward recent shrub plantings and weedy woods.

Native shrubs were planted on land disturbed by the City's new stormwater outfall. The short canopies allow a view of Lake Wingra, and data on survival and growth will help managers choose native shrubs that could be used to replace the exotic buckthorn.

To the north, you will see a wooded lowland where ~200 white cedar seedlings were planted several decades ago, to test the potential for establishing a cedar swamp. The site was invaded by buckthorn and other weedy species.

White cedar (*Thuja occidentalis*) is used by Native Americans as incense during ceremonies and to make soup and tea. The timber was used to make ribs in birch bark canoes. This evergreen species also has significance to wildlife as winter cover.


Isabel Rojas-Viada

The wet lowlands will remain wooded if not cleared, burned and/or herbicided. A woodland could be weeded gradually, reducing the non-natives and aiming for native species. Photo-monitoring would help track the persistence of white cedar.

If you enjoyed the tour and are inspired to become a citizen scientist, you are invited to volunteer to help sustain and photo-monitor the culturally-important species. The Arboretum cannot achieve eco-cultural restoration (Stevens 2011) without help controlling invasive species, tracking progress, and taking corrective actions.

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