

Below and Above,  
A Floating Wetland Supports Life



This project combines diverse ways of knowing to explore the artist's role in creating ecologically functional art.

An alternative to petroleum-based materials used for buoyancy, it proposes two modular floating wetland structures made of dried Japanese Knotweed.

We are learning from the ways in which indigenous communities have built floating islands for hundreds of years by harvesting natural materials found in their surroundings.

By incorporating native plants from freshwater marsh and pond ecosystems, we are supporting a variety of other life forms.

## Team Members

**Hope Leeson**, a botanist, sources native plants and experiments with natural cordage.

**Holly Ewald**, visual and community artist, and founder of Urban Pond Procession Arts, promotes environmental stewardship through public art-making, coordinates the team, and documents the floating wetland.

**Alexandra Ionescu**, ecological artist and Biomimicry practitioner, researches floating wetland ecology and construction, inspiring design.

**Matthew P. Muller** and **August Lehrecke**, co-founders of Pneuhaus, an inflatable architecture studio, lead project construction.

**Maxwell Fertik**, an interdisciplinary artist, and designer, contributes to construction with material knowledge of Japanese Knotweed (*Reynoutria japonica*).

The floating wetland is currently situated on Ice Pond at the Beals Preserve in Southborough, MA, and is a featured component of the outdoor site-specific exhibition "Art on the Trails."

It was initially on June 11th and will remain on the pond until September 17th.

The floating island on site













The Japanese Knotweed used to create this floating wetland was harvested as dry stems from Mashapaug Pond and Gano Park on Providence, RI. Utilizing invasive species removes their biomass from the environment and allows us to repurpose them as a buoyant structure. By doing so, we are transforming this invasive species into an opportunity to improve water quality and promote biodiversity.

Human activities continue to degrade freshwater ecosystems as a result of agricultural and stormwater runoff, and wastewater discharges. Algae present in water respond to excess nutrients with increased growth. This causes people to apply algaecides as chemical treatment to kill the algae. A response which does not remove nutrients from the water, and interrupts a natural cycle wherein pond organisms attempt to remediate pollutants introduced into the waterbody. In contrast, wetland plants within a floating wetland ecosystem consume nutrients, while creating habitat for the more-than-human world below and above the water line. Through the plants' life cycles, they regenerate the food web, amplifying the natural processes between plants, sunlight, water, and microorganisms.

Over time, the 20 native wetland plant species that we have selected for this floating wetland, will contribute to nutrient removal by upcycling them into their leaves, stems, roots, and flowers. Importantly, the plants in this floating wetland will grow dense columns of roots into the water as they seek nutrients. Surface area within the root layer is key to floating wetlands, where diverse communities of bacteria, algae, protozoans, and fungi known as periphyton grow on plant roots and form a biofilm. The periphyton cleans water by nutrient uptake, filtration, oxygenation, and toxin removal.

Ice Pond, where the structure is currently floating doesn't require remediation as it is a thriving ecosystem. Nonetheless, it provides us with an opportunity to learn how floating wetlands create a habitat for non-humans, observe the decay of natural materials, document the growth of the native wetland plants, learn what microorganisms find a home on the roots of plants and think through the lens of timescales unknown to us.

the design

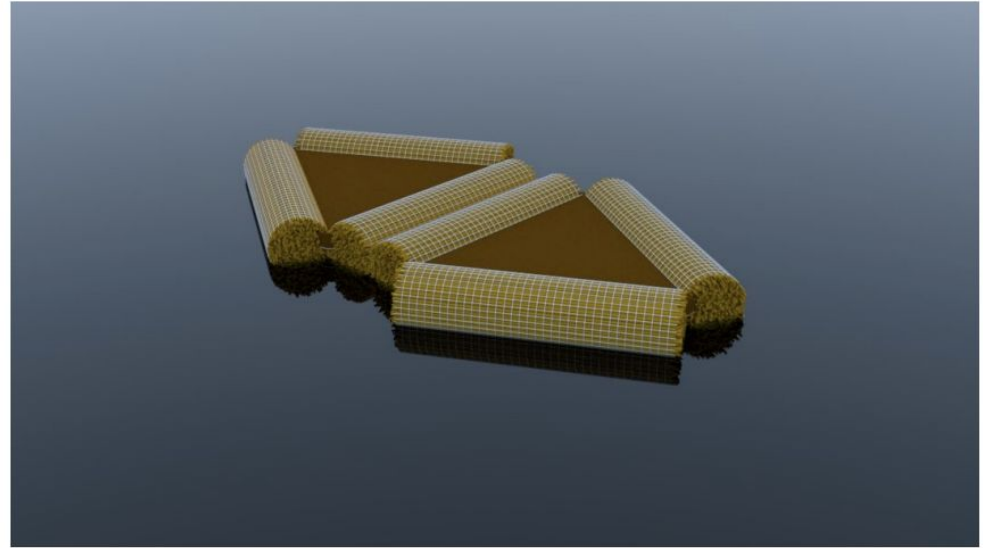
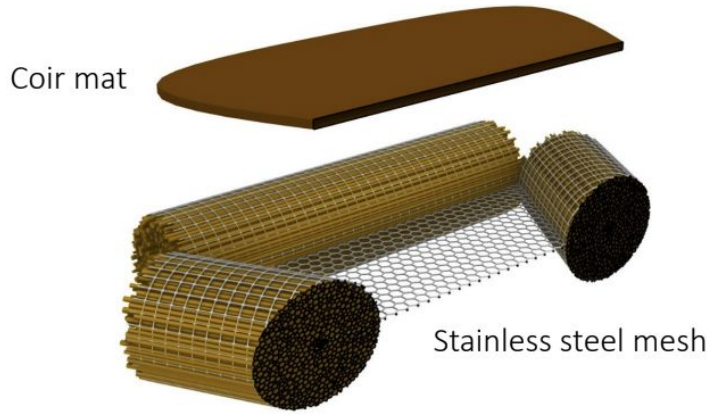






A miniature model of one of the two modular units representing the tightly-bounded bundles of buoyant plant stalks with the stainless-steel mesh onto which the pre-cultivated coir mat is placed with vegetation.





The two modular units of the proposed constructed floating wetland structure.



gathering material









constructing the raft

















planting the wetland























installation











