

Juniata College Raystown Field Station and US Army Corps of Engineers Aquatics Invasive Species Educational Materials

- For access to our 3D print files, please email rfs@juniata.edu due to large file sizes
- Links to the materials we purchased for this exhibit can be found below:
 - [3 fish tanks for the different stages of hydrilla treatment](#)
 - [Red glass beads to mimic clay treatment pellets](#)
 - [Plastic fish to demonstrate biodiversity at different stages of treatment](#)
 - [Angler towels given to participants in educational programming](#)
- The signs that we designed to educate the public on hydrilla treatment can be found below
- The survey we designed to assess the effectiveness of the programming and the educational brochure that we created can be found on our web page.

Hydrilla Management: Pre-Treatment

What is hydrilla?

Hydrilla is a fast-growing, invasive aquatic plant that thrives at Raystown Lake. Originally from Asia, it was introduced to North America in the 1950s and has since spread rapidly across many lakes and rivers across the U.S.

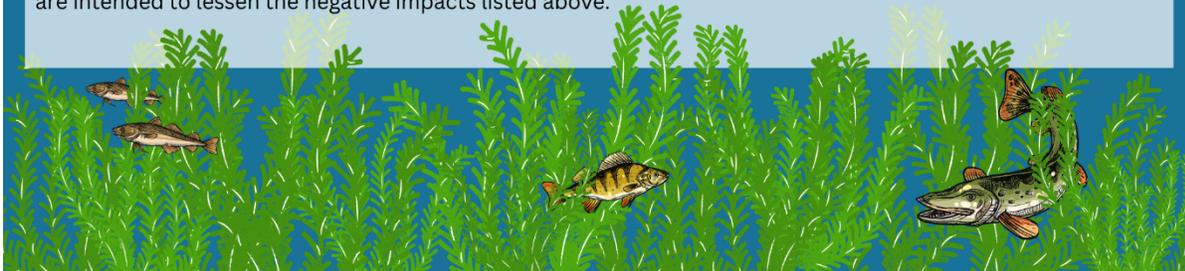
What's the big deal?

When left to grow uncontrolled, hydrilla can have hugely detrimental impacts on the lake ecosystem in the following ways:

- Reduce Biodiversity: Outcompete native plant species for sunlight, nutrients, and space by growing at a fast rate of 2 inches per day.
- Alter Water Quality: Decrease dissolved oxygen and increasing pH, sedimentation, and water temperature, which creates inhospitable conditions for all aquatic life.
- Disrupt wildlife behavior: Interferes with waterfowl feeding, fish spawning, and more.
- Mosquito Breeding: Hydrilla canopies on the water's surface provide ideal breeding grounds for mosquitoes.
- Impact Recreation Activities: Grows in dense mats that obstruct boating, swimming, and fishing.

Why do we treat it?

Raystown Lake is visited by thousands of boaters every year due to its size and proximity to many major east coast cities, making it a potential epicenter for spreading hydrilla. Eradication of hydrilla in Raystown Lake is not possible. Therefore, our main goal of aquatic herbicide treatment is to **control and reduce its spread to other lakes and rivers** where it can cause even more rapid and widespread damage. Additionally, treatments are intended to lessen the negative impacts listed above.



Hydrilla Management: ^{2-3 months} During Treatment

How do we treat hydrilla?

To control hydrilla, we use various aquatic herbicides, which are applied at rates designed to target hydrilla and avoid impacting native plant species. The treatments are evenly applied across a specific treatment block using clay pellets. The pellets slowly dissolve and release herbicides over the course of a few weeks.

How does the treatment work?

Herbicide treatment takes a three-fold approach:

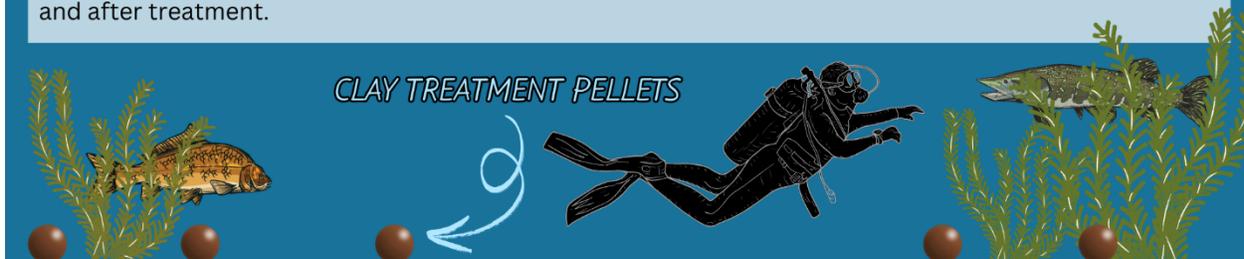
- Targets the plant's ability to photosynthesis (make food for itself), preventing it from *growing*
- Destroys the plant's energy reserves, preventing it from *reproducing*
- Disrupts the plant's root system, preventing it from *returning* in future years

Do you treat the entire lake?

No, we strategically treat high-use areas of the lake that make up less than 1% of its total acreage. Hydrilla is mainly spread by boaters who unknowingly carry plant fragments stuck to their boat prop, trailers, and equipment. These fragments can then take root and spread to other bodies of water. Our treatment efforts focus on areas like boat launches, where boaters are most likely to pick up and transport these hitchhikers.

Do treatments affect water-based recreation activities?

Herbicides are applied in low concentrations that are safe for humans, pets, and wildlife when applied according to product specifications. There are no restrictions on swimming, boating, fishing, etc., during and after treatment.



Hydrilla Management: 3-12 months Post-Treatment

What happens after we treat hydrilla?

Within 1 month of treatment, hydrilla starts to show signs of distress, which is indicated by discoloration and wilting. Within 3 months or the end of the treatment period, hydrilla disappears from the treatment block. Within 12 months, native plant species that were previously outcompeted by hydrilla will start to return.

Since 2017, the US Army Corps of Engineers and Juniata College have worked together to complete surveys every autumn to document and monitor the populations of all aquatic plants found at Raystown (including invasive and native species), the prevalence of hydrilla in the lake, and the effectiveness of treatments over time.

What happens to fish habitat?

Contrary to popular belief, hydrilla does not provide long-term, beneficial habitat for fish species. Fish may utilize hydrilla early in its growth stages, but as the plant quickly grows out of control, it creates inhospitable conditions, including low-oxygen levels, increased water temperatures and reduced water flow. The treatment process may temporarily disrupt fish habitats, but it creates long-term benefits for the lake's biodiversity and water quality.

What can you do to help prevent the spread?

As discussed, hydrilla is spread primarily by lake-users who accidentally transport the plant between bodies of water. Prevention depends on you.

Here's how you can help:

- **CLEAN**- off visible aquatic plants, animals, and mud from all equipment before leaving water access
- **DRAIN**- watercraft bilge, livewell, motor and other water containing devices before leaving water access.
- **DRY**- everything for at least five days OR wipe with a towel before reuse.

