Bringing Aquatic Invasive Species Management to Life: An Interactive Exhibit at Raystown Lake

At Raystown Lake in Pennsylvania, aquatic invasive species (AIS) management is a complex topic that can be difficult to explain to the public- especially when treatments occur underwater and out of sight. Through a recent collaborative project funded by the Mid-Atlantic Panel on Aquatic Invasive Species, staff from the U.S. Army Corps of Engineers Raystown Lake Project and students and faculty from Juniata College developed an innovative educational tool that makes the invisible visible.

The result is a portable, interactive exhibit that visually demonstrates how AIS is managed in the lake- helping visitors understand the treatment process, the ecological benefits of management, and the role visitors play in preventing the spread of invasive species.

Just as importantly, the design and materials were intentionally created so that other natural resource specialists could replicate the concept at their projects.

A Hands-On Look at Aquatic Invasive Species Management

For over 10 years, natural resource specialists at Raystown Lake have been actively monitoring and managing Hydrilla (Hydrilla verticillata), one of the most aggressive aquatic invasive plants in North America that poses a growing challenge for lake managers across the country. Once established, hydrilla can grow at a rate of two inches per day, forming dense underwater mats that outcompete native vegetation, alter aquatic habitat, restrict boat navigation, and interfere with recreation and water management operations. Because it spreads easily through small plant fragments transported on boats, trailers, and fishing gear, hydrilla can rapidly move between water bodies if preventative measures are not taken.

To resource managers, the benefits of treating hydrilla are obvious, but helping visitors to understand the "why" behind these treatments has proven more challenging, which prompted the creation of this educational tool.

The exhibit features three aquarium tanks mounted on a mobile cart, each representing a different stage of hydrilla management:

1. Pre-Treatment Conditions – illustrating dense hydrilla growth on the lakebed.
2. Treatment Phase – demonstrating how slow-release herbicide pellets target hydrilla rather than broad liquid applications.
3. Post-Treatment Conditions – showing reduced hydrilla, the return of native aquatic vegetation, and the addition of fish habitat structures.

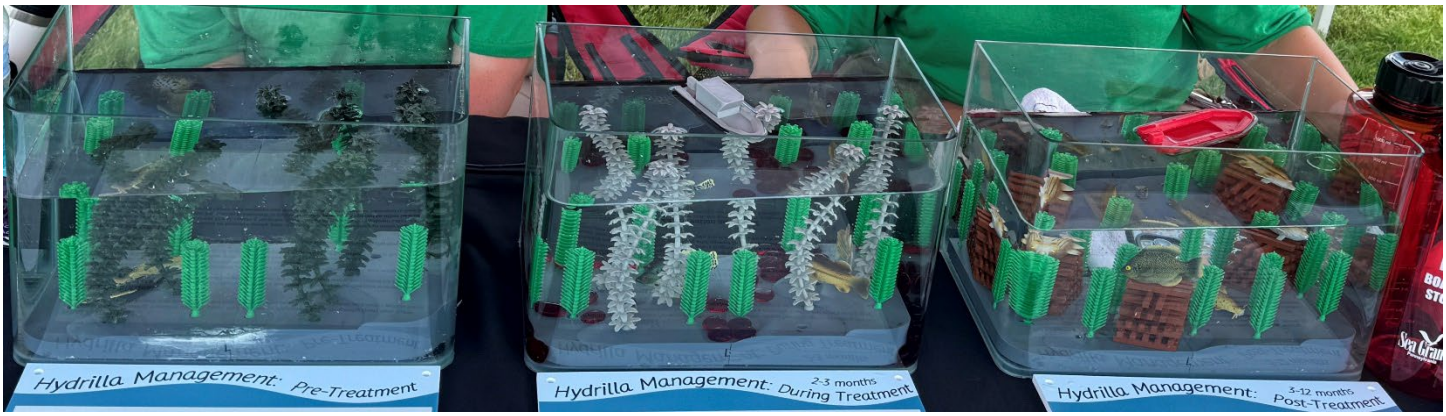

Figure 1. Tanks showing the pre, during and post-treatment processes of hydrilla treatment.

Figure 2. Tanks on display at a boat launch at the Raystown Lake project.

Inside each tank are 3D-printed models of the lakebed, hydrilla, native aquatic plants, fish habitat structures, and both recreational and treatment boats. Undergraduate students from Juniata College helped design and print these components, making the project a learning opportunity for both students and visitors.

Interpretive signage accompanies each tank, explaining how targeted treatments work and why they are necessary to maintain healthy aquatic ecosystems and recreational opportunities.

Because the exhibit is mounted on a mobile cart, it can be transported to community events, visitor centers, classrooms, and boat launches.

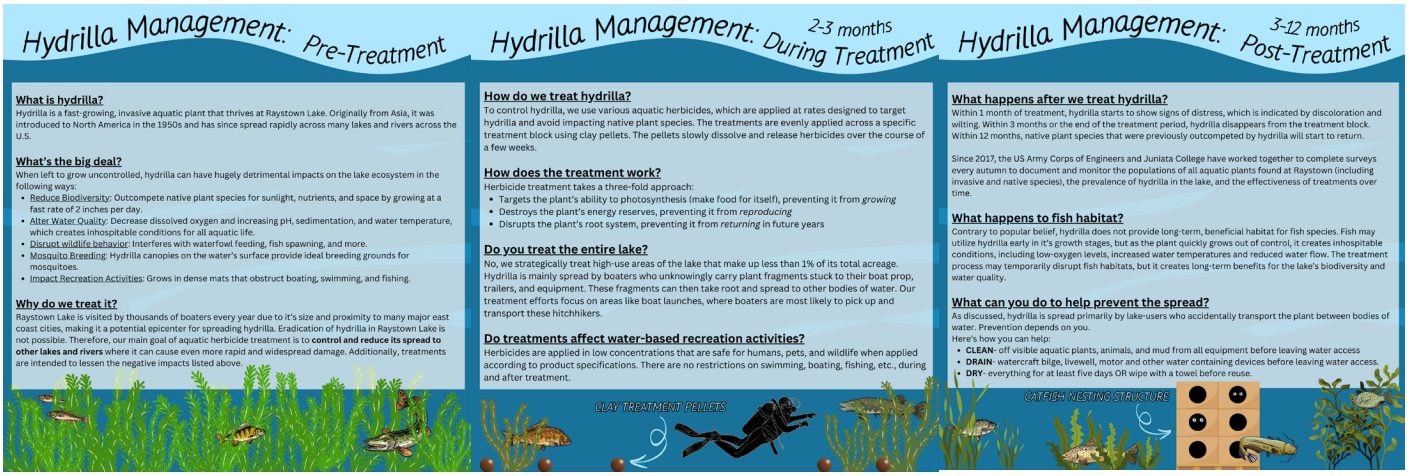

Figure 3. Educational signs for each tank explaining the hydrilla treatment process.

Reaching Visitors Where They Are

During summer 2025, the exhibit was used at six community events and environmental education programs, as well as outreach efforts near boat launches around Raystown Lake. The tanks will also be incorporated into future programming, including a permanent Visitor Center display, K-12 outreach conducted by USACE staff, summer environmental education internship programs, and college-level courses at the Juniata College Raystown Field Station.

Together, these settings will allow the exhibit to reach broad user groups at Raystown, including boaters, fishermen, students, and local community members- all key audiences for AIS prevention messaging.

Supporting Materials Reinforce the Message

The exhibit is supported by several additional outreach tools designed to encourage AIS prevention:

- A hydrilla education brochure explaining the ecology of the invasive plant, why management is necessary, and how treatments work.
- “Clean, Drain, Dry” fishing towels provided to participants as both an incentive and a practical reminder to follow AIS prevention practices.
- A short educational video documenting hydrilla management at Raystown Lake and explaining the exhibit.

Together, these materials help reinforce the central message: recreationists play a critical role in preventing the spread of invasive species between water bodies.

Figure 4. Trifold brochure created to distribute to AIS program participants.

What We Learned from Public Engagement

Outreach efforts revealed several important insights about public understanding of aquatic invasive species:

Hydrilla awareness was low.
Many visitors initially reported little familiarity with hydrilla. However, once shown specimens, many recognized that they had seen it in the lake without realizing it was invasive.

Management methods were often misunderstood.
Some visitors assumed herbicide treatments involved broad, non-species-specific liquid applications. Learning that Raystown uses slow-release pellet formulations that target hydrilla specifically helped alleviate concerns about environmental impacts.

Education increases willingness to act.
Survey results showed that participants gained confidence in their ability to prevent AIS spread and reported a higher likelihood of following prevention practices after the presentation.

Survey Results: Education Makes a Difference

Survey responses highlighted clear trends:

Before the presentation

- Most participants recognized AIS as a significant environmental issue.
- Confidence in prevention knowledge was relatively low.
- Many already believed AIS regulations were important.

After the presentation

- All respondents improved their understanding of hydrilla impacts.
- All reported increased confidence in preventing AIS spread.
- Nearly all felt AIS regulations were more important than before.

Perhaps most importantly, participants who initially indicated they were unlikely to take prevention actions reported that they were **likely or very likely to adopt AIS prevention behaviors** after engaging with the exhibit.

Lessons for Other USACE Lakes

With more than 400 lakes managed by the Corps, the need for effective AIS education tools is widespread. The Raystown project demonstrates several approaches that could be applied at other sites:

1. Make invisible management visible.
Aquatic treatments happen "out of sight, out of mind", making them difficult for the public to understand. Physical models can clearly demonstrate the process and outcomes.

2. Use portable exhibits.
Mobile displays allow staff to reach visitors wherever they are- at events, boat launches, schools, and visitor centers.

3. Pair exhibits with practical take-home reminders.
Items like brochures and "Clean, Drain, Dry" towels reinforce prevention behaviors long after the interaction.

4. Don't shy away from hard conversations.
AIS management can be controversial, especially for certain user groups. Educational props and physical models sometimes best serve as conversation starters that offer us the opportunity to connect with the public in an informal setting and generate deeper engagement, insight, and understanding of unpopular, difficult topics.

Resources for Replication

To support adoption at other projects, project materials will be made publicly available, including:

- Exhibit design templates
- Outreach materials and survey instruments
- The educational video describing the program
- 3D print templates

These resources have been shared with the USACE Invasive Species Leadership Team education and outreach working group and will be made available on the NRM Gateway.

Looking Ahead

As aquatic invasive species continue to threaten recreation waters across the country, effective public education will remain a key component of management strategies. By combining hands-on learning, student collaboration, and practical outreach materials, the Raystown Lake exhibit offers a creative and scalable model for engaging the public in aquatic invasive species prevention.

For USACE natural resource managers seeking new ways to communicate complex resource issues, this project demonstrates that interactive storytelling can turn a technical management practice into a compelling educational experience.