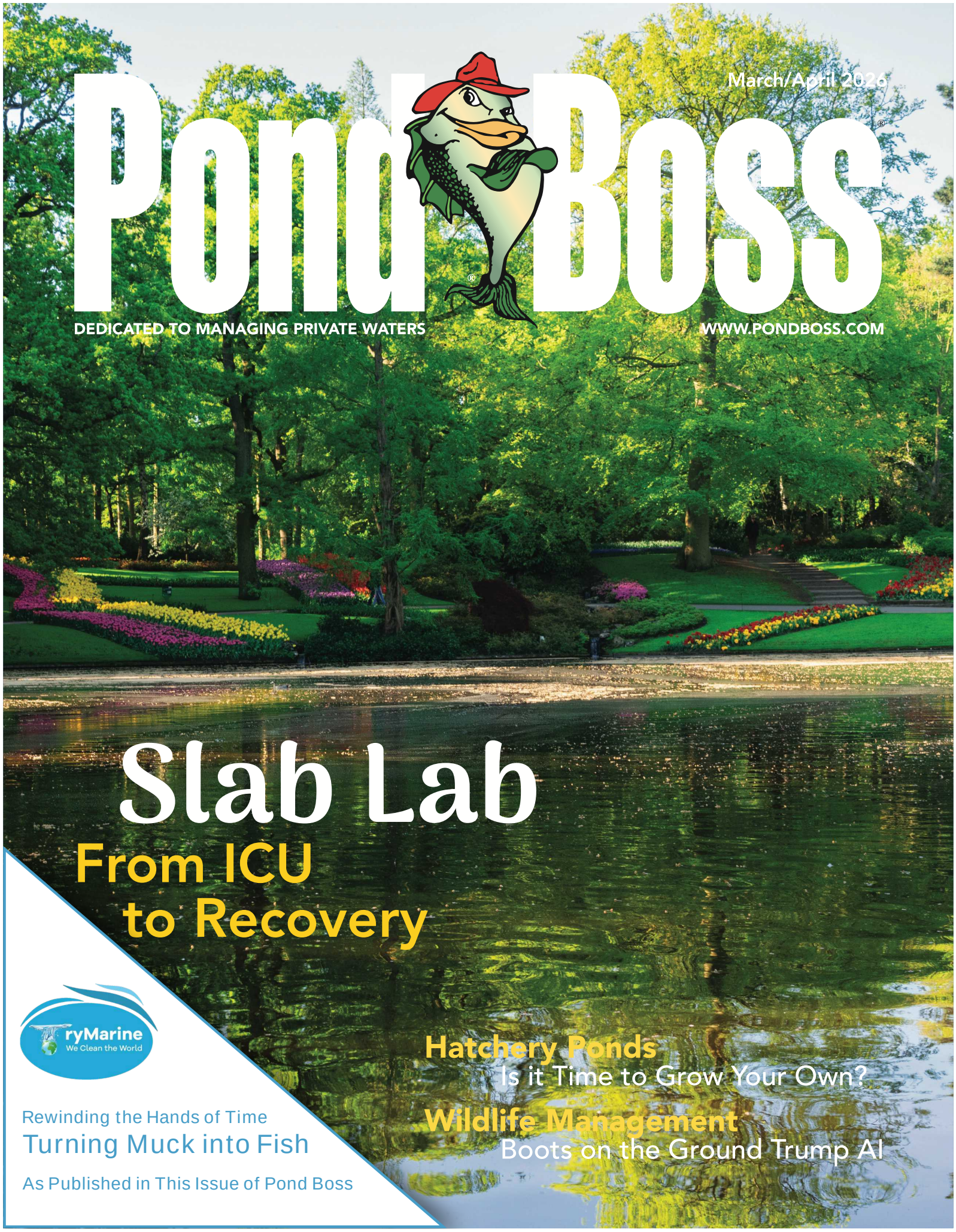


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Turning Muck into Fish

As Published in This Issue of Pond Boss



Rewinding the Hands of Time

Turning Muck into Fish

| by • Dave Beasley |

Menasha Hunting and Fishing Club is located in Arkansas, outside Memphis along a rural part of the Mississippi River. Rich in tradition, this prestigious 30-member club has existed for over a century, and boasts some of the best waterfowl hunting in the world, as well as a long-standing history of high catch rates of quality largemouth bass, black and white crappie, bluegill and redear sunfish.

The property includes more than 900 acres of water, with three interconnected lakes (Menasha, Stave and Mink). A levee along Lake Menasha has a water control structure, which controls the water level of all three lakes. Stave and Mink are old oxbow lakes, with over 350 acres of mature cypress forest surrounding them. A boat is the only way to access those two, but Lake Menasha has accessible levees. Amidst a mature cypress forest, a twenty to fifty-foot-wide bayou connects Menasha to Stave.

As you enter the cypress bayou, the environment transforms into a mystical feel, as if entering a different world. Moving from Stave to Mink is similar, with a couple smaller, ten-foot-wide paths through cypress trees as you make your way to Mink. The further back into the system you go, the more isolated and more tranquil it becomes. The starting access to the lakes is 2.5 miles away at the boat house on Lake Menasha.

Stave and Mink were previously part of the Mississippi River. Rich with incredible history, the lakes and trees date back to a time well before modern society. Despite its age, the ecosystem is a thriving paradise for fish and waterfowl, with a century-old track record of exceeding expectations of outdoorsmen.

It's truly an exceptional natural environment, not all created by man.

The club's rich tradition and the ecosystem's natural success allow the lakes to thrive on their own merit. This extraordinary system provides natural hunting and fishing experiences. Despite the natural success, a series of challenges over the past decade caused a shift in fish habitat (fish cover and water quality), as well as a shift in the fish species present. The challenges were interrelated and caused the fishery to shift off course slightly compared to club goals.

Not knowing if the changes to the fishing would be short-term or long-lasting, the club reached out for help to ensure the long-standing tradition and success were not at risk of deteriorating.

The lakes have been managed for the past two years to improve the fishing and enhance both water quality and sediment health. Our approach allows the food web to decompose the muck, driving organics into fish biomass. Before discussing further, let's first run through some of the backstory.

Throughout the club's history, coontail, a nuisance native species of submersed aquatic vegetation, made it difficult for anglers to access sections of the oxbow lakes each year, starting in mid-summer and going into the fall.

The members understood the importance of coontail to waterfowl and fish, but after many years of seasonal difficulty accessing areas, particularly when fishing, membership gained an appetite for less coontail. In 2012, Grass Carp were stocked, but they worked a bit too well. In the years following, coontail was eradicated, catching the members a bit off guard with how well they worked.

The abrupt loss of dense vegetative habitat was a moment that set the fishery on a different path. In following years, a second challenge presented itself as part of the club's cypress tree management program. Water level fluctuations occur in years of drought, and this is something cypress trees rely to stay healthy. Although natural, the reality is that accessing most areas in the oxbow lakes in a drought is impractical when the water level is down two feet. So, the club uses a well during dry conditions to keep the lakes at full pool. Staying full puts their cypress trees at risk of dying, so the water levels are drawn down in the summer once every 7-10 years to replicate nature's cycle.

Within a few years of coontail being eradicated by the carp, the lakes were drawn down a couple feet for two summers in a row. The oxbow lakes are only five feet deep in the middle, and the water being drawn down left smaller fish vulnerable. The dense vegetative cover they previously had was no longer present, and all of the fish were condensed into 40% of the normal water volume.

The lack of vegetation allowed nutrients to be utilized by plankton, likely leading to a dense bloom that comprised water quality. Dissolved oxygen levels dropped and pH, phosphorus, and ammonia became elevated. All this was teamed with only 2-3 feet of water in the oxbow lakes, allowing the relentless summertime heat of Arkansas to bring daytime water temperatures into the 90's. This was a recipe for change.

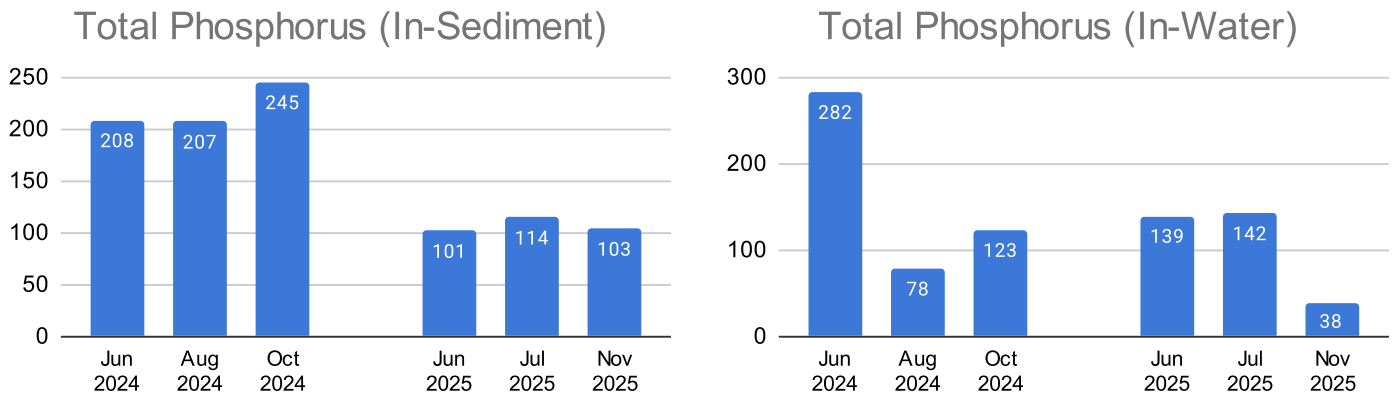
The primary target predator species were at a disadvantage. Less favorable species, channel catfish, spotted gar, bowfin, gizzard shad, common carp and bigmouth buffalo, which can better handle poor water quality, all had the opportunity to increase their populations. The lack of cover and the concentration of fish led the predator to prey ratio to become unbalanced, and the rough fish gained an advantage.



Left: Sunset on Stave Lake. **Above:** Bayou.

When water levels returned to full pool, the predators had the upper hand. As Bluegill and Redear Sunfish tried reestablishing, the lack of cover allowed their offspring to be consumed, diminishing their populations. Gizzard Shad fared better than the sunfish species, but because the predator to prey ratio favored predators, even their offspring had a difficult time surviving past a year old without being consumed.

The predominately forage base of gizzard shad meant that most forage was in open, shallow water, rather than along the perimeter. This pulled bass and crappie into random open water where anglers had difficulty catching them. While the membership could tell the fishing was deteriorating, it was difficult for them to understand if it was



Left: Menasha (all three lakes combined) Total Phosphorus (In-Sediment). **Right:** Menasha (all three lakes combined) Total Phosphorus (In-Water).

temporary. After several years, the decision was made to take corrective action.

SOLitude was hired to assess the fishery and ensure it was set up for long-term success. We collected data and reviewed a variety of management approaches.

After careful consideration, a strategy was finalized.

The lake had four primary issues:

1) too many rough fish,
2) not enough Bluegill and Redear Sunfish,
3) a lack of dense cover, and
4) an impaired food web stemming from nutrient-rich water as well as the organic-rich muck at the bottom of the lakes.

Using hoop nets, the fish population was actively managed by harvesting 5,000 catfish ranging between eight and twelve pounds. An additional 4,000 spotted gar, bowfin and yellow bass were removed using an electrofishing boat. A total of 20,000 bluegill and redear sunfish were stocked, as well as 1,200 1–2-pound largemouth bass. These bass would help fill the void created by harvesting over 9,000 predator fish.

Improving the dense fish cover was fairly simple, since the coontail was starting to re-establish in a few areas and would naturally spread. Transferring it around the lakes would help it along, and was done on a small scale, but overall re-establishing was already in motion.

Like most old lakes, water quality and sediment health were the lake's most complicated challenges. The backbone to a thriving fishery is a thriving food web. Elevated organics drive imbalance within the food web by creating stressful conditions, typically resulting in dense planktonic algae blooms. As the food web was out of balance, the fish and cypress trees also become stressed.

With dense plankton blooms comes elevated photosynthesis. This causes dissolved oxygen levels to become temporarily supersaturated in surface waters, which increases the pH above 8.5. This cycle of elevated pH can allow blue green algae to become dominant, reinforcing the unfavorable cycle. Coontail reestablishing would help, as it would compete with the blue-green algae and provide critical cover to small fish, but coontail would not solve excess organic load that accumulated in the sediments, some of which dated back to the Mississippi River flowing through the property eons ago.

Poor water quality at Menasha has likely been an ongoing problem for many years, but the lake's shallow nature provides relief, since oxygen levels tend to stay in better shape when lakes are shallow, thanks to good mixing from wind action. Therefore, the lakes do not need to solve for all of the muck that has accumulated. However, they needed help reducing some of the organic load so the food web could settle back into a favorable rhythm.

Using TryMarine to enable the food web in 2024, we started addressing poor water quality related to the immense amount of muck. Our intention is to address enough of the muck to create good water quality and a healthy food web. TryMarine is a cutting-edge solution to reduce organics in lake sediments. It assists the food web by initiating the decomposition process. Once initiated, the food web takes over and can decompose organic matter in the sediments as well as any other organic matter that otherwise would accumulate in the form of muck.

In 2024, we made a strong push and in 2025 we kept the momentum going. The results so far have been outstanding. fifty percent of the phosphorus in the top six inches of muck (105,000 ppb) has moved into the food web. During that same time period, in-water phosphorus levels have dropped 86 percent (from 282 down to 38 ppb). This phosphorus did not disappear—it assimilated into higher levels of the food web.

The fall 2024 vs fall 2025 electrofishing data shows a significant improvement in the relative weights (Wr) (i.e. body condition) of all species. The lakes are full of 3-5" Gizzard Shad. In the fall of 2024, the edible size forage was between rare and absent. Just twelve months later, edible forage was abundant, with small shad nearly everywhere.

The management strategies implemented at Menasha, with the exception of using TryMarine, should have caused the Wr's of the forage to decrease. 9,000 predators were harvested in 24 months, 20,000 Bluegill/Redear Sunfish were stocked, and the Gizzard Shad population increased significantly via excellent recruitment and survival. The forage base expansion is confirmed by club member observation, as well as electrofishing data showing the predator fish had more to eat, with the predator Wr's increasing by nearly 14 percent between fall 2024 and fall 2025.

The management strategies implemented have resulted in significantly more forage in the fall of 2025 versus 2024. When more forage is present, but their food source stays the same, the Wr's of the forage should decrease. Instead, the forage Wr's all increased significantly. For example, the Wr of Bluegill improved by 17 percent over the 12 months.

All water quality, sediment, and fish data directly indicate that TryMarine was

responsible for positive changes in the food web, by converting organic matter bound in the sediment, driving them into the food web, and ultimately into fish and other higher trophic-level wildlife.

This is a momentum play. The upcoming 2026 TryMarine application will further improve the ecosystem. By teaming TryMarine with other fisheries management strategies, like harvesting and improving cover, Menasha is taking necessary steps to turn back the hands of time and allow the ecosystem to thrive.

As humans, we like things to stay the same—or become better. Unfortunately, lakes age and ecosystems shift. Thanks to incredible advances in science and technology, clubs like Menasha, which have had great fishing for over 100 years, can take steps needed for a thriving fishery for decades to come.

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