

Chairman Schaffer, Vice Chair Landis, Ranking Member Hicks-Hudson, and members of the Senate Ag & Natural Resources Committee, I am Dr. Lauren Kinsman-Costello, Assistant Professor in the Department of Biological Sciences at Kent State University and a member of the Lake Erie and Aquatic Research Network, or LEARN. I'm presenting this testimony along with Dr. Chris Winslow, Director of Ohio Sea Grant and Executive Director of LEARN, as an interested party.

Our testimony concerns the H2Ohio Wetland Monitoring Program, which is funded by the Ohio Department of Natural Resources (ODNR) and led by a team of university scientists through LEARN. Since the H2Ohio program's inception in July of 2020, I have led this team of researchers, staff, and students from six Ohio universities to develop a novel statewide wetland monitoring program. Our mission is to independently assess the ability of the various and diverse wetland restoration projects that are being implemented by the ODNR to improve water quality by reducing nutrients that fuel harmful algal blooms in rivers and lakes across Ohio. The information gained from this program will not only allow Ohio to demonstrate whether widespread wetland restoration efforts are a sound investment but will also improve the design and management of wetland projects.

The ODNR has made it a priority to restore wetlands using the best available information, however there are still gaps in our scientific understanding. Wetland ecosystems have been called "the kidneys of the landscape" because of their ability to filter pollutants and improve water quality. Based on this, the H2Ohio Initiative has invested in the restoration and creation of 141 wetlands throughout the state. But, no two wetlands are identical in size, shape, water source, location, and soil type, and newly restored and constructed wetlands are especially variable. Therefore, although wetlands are often effective water filters, their ability to prevent excess nutrients from moving downstream varies. To maximize the effectiveness of coordinated restoration efforts, the ODNR needs ways of predicting which restoration techniques will be effective and how specific kinds of wetland projects in certain places will process nutrients that are more reliable than what has been done in the past. Well-established wetland monitoring approaches assess the quality of wetland habitat for plants and animals, but don't adequately evaluate the as-built ability of restored wetlands to conduct the mostly invisible nutrient removal processes that prevent harmful algal blooms downstream.

The process of building this Monitoring Program has included creating a framework that was reviewed, edited, and codified by both a scientific and a management advisory committee made up of experts from across the country, as well as implementing the initial stages of monitoring at all completed restoration sites to date. Since the Monitoring Program was established in 2020, our teams have collected over 1700 water samples and over 600 soil samples to characterize baseline conditions in at least 45 of the ODNR H2Ohio wetland projects. We've developed a centralized management and quality control system to ensure the credibility and accessibility of our data. We've cultivated partnerships with landowners, state agencies, non-profits, and other conservation partners implementing and managing wetland projects, and we've engaged with interested community members and stakeholders as we collect data to better understand the wetlands being built in their backyards. In addition, we've leveraged the state's investment in

wetland monitoring by obtaining a \$3 million federal award from the US EPA's Great Lakes Restoration Initiative to expand our capacity to collect and synthesize data to assess H2Ohio wetland projects.

Some of the most influential and early wetland restoration science came out of the state of Ohio, and through the H2Ohio Initiative wetland restoration and Monitoring Programs, Ohio continues to be a leader in wetland science and practice. Our coordinated Monitoring Program studies dozens of diverse and unique wetland projects under a single, unified framework. To our knowledge, no other program like this exists. We also know that wetlands provide many other valuable ecosystem services including carbon storage, flood control, and biodiversity support and while our Monitoring Program focuses solely wetland nutrient processing, we lay a foundation and opportunity for partnership with other groups to evaluate the diverse benefits of restoration projects being implemented.

The only constant in nature is change. Centuries of observations and decades of research have shown that ecosystems are dynamic—no single point in time or single year will demonstrate the full function of an ecosystem or predict how that system will behave in the future. But early data can indicate the direction an ecosystem restoration is heading. And after multiple years of data are collected, certainty in our assessments of wetland performance will improve. Additionally, we will gain insight into how to manage systems so that particular wetlands remain effective nutrient traps. Multiple years of surveillance is needed to ensure our ability to assess the nutrient retention of these wetlands through time. Thus, allowing adjustments in management decisions and anticipation of future maintenance investments.

In closing, LEARN anticipates that continued, long-term funding of the H2Ohio Wetland Monitoring Program will support the ODNR commitment to clean and accessible water across the entire state of Ohio.

Chairman Schaffer and Senate Ag & Natural Resources Committee, thank you again for the opportunity to testify about the important work the H2Ohio Wetland Monitoring Program is conducting. I am happy to answer any questions you may have.