



Protecting Ohio's Water Resources

Impact Statement 2020

Funding Sources

NSF; CDC; USDA/NIFA; USEPA; USFWS; USGS; Hatch; McIntire-Stennis; Great Lakes Protection Fund; Great Lakes Restoration Initiative; The Nature Conservancy; Ohio Corn, Wheat & Small Grain Grower Associations; Ohio Soybean Council; Ohio Department of Natural Resources; Ohio Water Development Authority; Franklin County Metroparks; Franklin County SWCD; Ohio Water Resource Center; Ohio Sea Grant

Collaborators/Partners

Appalachia Ohio Alliance; Buckeye Lake Historical Society; Fondriest Environmental; National Aquatic Nuisance Species Task Force; National Ground Water Association; National Wildlife Federation; ODA; ODNR; OEPA; ODH; Ohio Sea Grant; The Great Lakes Commission; The Nature Conservancy; The Wilderness Center; USDA-ARS; Resources for the Future; Western Reserve Land Conservancy; Black Environmental Leaders

INVESTIGATORS

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SUMMARY

Losses in biological, chemical, and physical water quality threaten the environment, as well as human health and well-being. To address this challenge, our team of professionals – spanning the natural and social sciences, education, and outreach – work across Ohio to improve water quality including reducing nutrient loads, restoring aquatic ecosystems, and protecting biodiversity.

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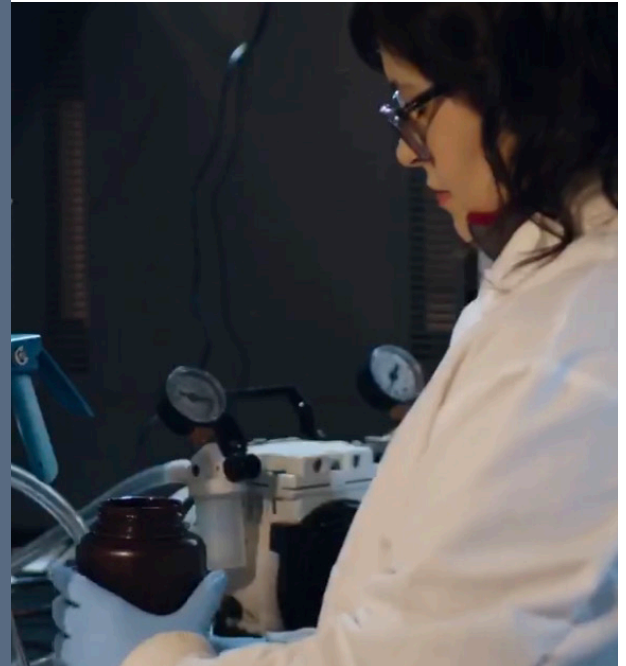
SITUATION

Ohio's water resources provide a wide range of important services, including drinking water and irrigation, power, fisheries, scenic value and recreation, and ecosystem functions. Changes in population, land use, and climate have compromised water quality, fragmented habitat, and contributed to loss of biodiversity in streams, rivers, and wetlands, often with serious effects on environmental condition and human health. For example, the frequency and severity of harmful algal blooms in both Lake Erie and the Ohio River have resulted in losses of water supply and continued impacts on fishing and recreation industries. Aging rural septic systems are an increasing source of groundwater contamination. New and emerging contaminants such as microplastics and pathogens also pose serious challenges to aquatic ecosystem integrity. These and other environmental stressors must be addressed to sustaining and improve the water quality that is vital to Ohio's quality of life, economy, and environment.

RESPONSE

In 2020, SENR used our multidisciplinary expertise (aquatic and soil sciences, sociology, decision science) and engaged in integrated applied research, extension and outreach activities through the Ohio Certified Volunteer Naturalist Program, Aquatic Ecosystems Extension Program, and at the Schiermeier Olen-tangy River Wetland Research Park (ORWRP) to advance three goals:

1. Reduce Nutrient Loads: We used surveys and instrumented fields to understand farmer conservation decisions and their impact on water quality and used this knowledge to develop decision-support tools.
2. Restore Impaired Ecosystems: We monitored urban streams for the impacts of invasive species, artificial lighting, and contaminants on aquatic biodiversity and water quality, and documented the effects of restoration efforts on coastal wetlands.
3. Protect Biodiversity: We raised and conducted translocations of rare fish species to help restore extirpated/endangered populations in Ohio rivers and wetlands.



IMPACT

Our efforts in 2020 led to innovative solutions to water-quality challenges and directly shaped state and federal policy and management decisions. We finalized the revised Ohio Phosphorus Risk Index (On-Field Ohio!), an on-line tool that was incorporated into new USDA standards to guide Ohio farmers to reduce erosion and phosphorus losses. Our farmer conservation behavior research was used by the governor's office to design efficient strategies to reduce runoff into Lake Erie, and contributed to a major workshop on nitrogen held by the National Academies of Science. We also coordinated Ohio's aquatic invasive species committee, and represented the state on the NC Algal Bloom Action Team. We conducted new research and modeling to extend that work to the Ohio River watershed. We continued to provide expertise related to the local and national impacts of changes to the Clean Water Act. Our work also increased the knowledge and skills of students, managers, scientists, and stakeholders engaged in water protection. The ORWRP hosted or participated in 41 activities in 2020, engaging 1,300 Ohio State students, staff, and community members in classes, trainings, service projects, and retreats. We expanded our online outreach work, holding weekly zoom clinics for pond owners, and our Well Water Interpretation Tool was visited more than 11,000 times in 2020. Our educational programs about aquatic invasive species reached over 11,000 individuals.

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