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Protecting Ohio's Water Resources

Impact Statement 2018

INVESTIGATORS
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SUMMARY
Losses in biological, chemical, and physical water quality threaten environmental integrity, and human health and well-being across Ohio. To address this challenge, we have assembled a team of professionals with expertise in the natural and social sciences, education, and outreach. This work continues to **lead to improvements in water quality in many ways including reducing nutrient loads, restoring aquatic ecosystems, and protecting biodiversity.**

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 exerted increasing stress on water quality, often with serious effects on environmental condition and human health. For example, the frequency and **severity of harmful algal blooms (HABs) in both Lake Erie and the Ohio River have resulted in losses of water supply, and continue to impact the fishery and recreation industries.** A legacy of dam construction and urban runoff, the spread of invasive species, and degradation of riparian areas have impacted the health of streams, rivers and wetlands. Aging rural septic systems are an increasing source of groundwater contamination. Sustaining and improving water quality is vital to Ohio's quality of life, economy, and environment.

THE OHIO STATE UNIVERSITY
COLLEGE OF FOOD, AGRICULTURAL, AND ENVIRONMENTAL SCIENCES

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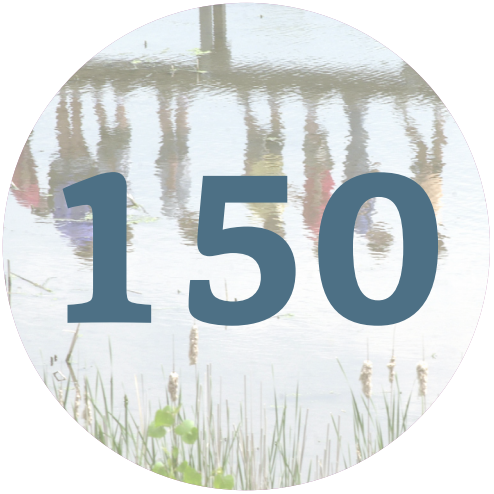
RESPONSE

SENR has uses multidisciplinary expertise (aquatic and soil sciences, sociology, decision science) and applied research to advance three goals:

Reduce Nutrient Loads: We used surveys and instrumented fields to develop farmer decision-support tools to guide land management decisions and inform water-quality policy.
Restore Impaired Ecosystems: We monitored water quality before and after dam removals, conducted an extensive inventory of the location, hydrology, chemistry and ecology of Ohio's peat bogs, and compared water quality and biodiversity in coastal wetlands to understand the effects of restoration efforts.
Protect Biodiversity: We raised rare and threatened fishes in captivity to help restore extirpated/endangered populations.

Our research is combined with teaching, extension, and outreach efforts through the Ohio Watershed Network (OWN), Aquatic Ecosystems Extension Program, and integrated activities at the Schiermeier Olentangy River Wetland Research Park (ORWRP).

percent target reduction in phosphorus loading into the Western Lake Erie basin.



activities hosted by ORWRP

individuals reached through aquatic invasive species programs

IMPACT

Our efforts have led to innovative solutions to water-quality challenges and directly shape policy and management decisions. **Results from our Lake Erie research helped identify efficient strategies to achieve the 40% target reduction in phosphorus loading into the Western Lake Erie basin**. New research focuses on understanding and mitigating harmful algal blooms in the Ohio River basin. The revised Ohio Phosphorus Risk Index (On-Field Ohio!) will provide farmers with local data to make management decisions. Our Well Water Interpretation Tool was provided to Ohio Farm Bureau members who tested their well water for nitrate to help them understand their results. Our work **helped managers prioritize programs to manage Ohio's remaining peat bogs, and secured funding to restore a rare peat-forming wetland.** We have propagated and released rare juvenile fish into central Ohio waterways in coordination with USFWS and Columbus Metroparks. Our work also i**ncreased the knowledge and skills of students, managers, scientists, and stakeholders engaged in water protection.** The ORWRP hosted 150 activities in 2018, engaging 2,460 Ohio State students and staff as well as participants from outside Ohio State in trainings, service projects, and retreats, including water-quality programming for underrepresented groups in STEM. Our educational programs about aquatic invasive species reached over 11,000 individuals, and two important policy measures were vetted through the Ohio Aquatic Invasive Species Committee.

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