

Projects That Will Address Agricultural Water Management and Phosphorus Pollution in Wisconsin

The Freshwater Collaborative of Wisconsin is funding collaborative research to address Wisconsin's 10 Grand Water Challenges, including Agricultural Waste Management. Many projects are addressing phosphorus pollution, which causes toxic algal blooms in our lakes, river, and streams. If you would like to participate in a Phosphorus working group, please email us at freshwater-collab@uwm.edu.

Continuation and Expansion of the Red Cedar Watershed Monitoring Project

Institutions: UW-Stout, UW-Eau Claire, UW Oshkosh, UW-River Falls

Principal Investigators: Keith Gilland, Nicole Hayes, Julia Chapman, Amanda Little (UW-Stout)

Collaborators: Sarah Vitale, UW-Eau Claire; Jill Coleman-Wasik, UW-River Falls; Greg Kleinheinz, UW Oshkosh; Chase Cummings, Dunn County Land and Water Conservation District

The Red Cedar Watershed experiences frequent blue-green algae blooms due to phosphorus pollution. Numerous projects have been implemented to reduce runoff and restore stream channels and buffer areas. This project continues to examine the effectiveness of those projects while expanding research efforts to include whole-ecosystem and watershed processes to determine the root causes of the toxic algal blooms regularly seen in lakes in the region. Students from UW-Stout, UW-River Falls, UW-Eau Claire, and UW Oshkosh will work during the summer to survey streams, riparian corridors, and wetlands while also monitoring Lakes Tainter and Menomin to help guide management decisions regarding the Red Cedar Watershed to serve as a model for other similarly impacted watersheds throughout the region.

Mitigating Eutrophication Events: Understanding Controls on Phosphorus Contamination in Surface Water and Groundwater in Western Wisconsin

Institutions: UW-Eau Claire, UW-River Falls

Principal Investigators: Sarah Vitale, UW-Eau Claire; Holly Dolliver, UW-River Falls

Phosphorus loading in Wisconsin is responsible for significant lake eutrophication, causing a loss of recreational tourism, reducing commercial fisheries, and decreasing biodiversity. UW faculty and undergraduate students are collaborating with the USGS Upper Midwest Water Science Center to investigate phosphorus migration in the hydrologic system and the potential impact of nutrient-loading through groundwater discharge on lake eutrophication. Findings may better inform sustainable management of lakes. Interested stakeholders include regulatory agencies, scientific organizations, environmental groups, the agricultural and silica sand mining industries, and communities across the state of Wisconsin and the upper Midwest impacted by phosphorus-driven eutrophication.

Quantifying the Impact of Spatial and Temporal Variation in Hyporheic Zone Fluxes on Phosphorus Transport and Release in Wisconsin Streams and Rivers

Institutions: UW-Green Bay, UW-Madison

Principal Investigators: Erin Berns-Herrboldt, UW-Green Bay; Christopher Zahasky, UW-Madison



Riverbed sediments can be an important source of phosphorus to Wisconsin waterways, driving eutrophication and negatively impacting aquatic health, human health, and local economies. There is limited understanding of how groundwater–surface water exchange impacts river sediment phosphorus storage. Students will characterize phosphorus and subsurface hydrology in stream sediments at two sites in central Wisconsin and conduct batch and column experiments on sediment samples to evaluate which biogeochemical conditions promote storage and release of phosphorus. Project findings are anticipated to inform land, nutrient, and water management decisions.