The Water Center is working to enhance freshwater research activities at the University of Michigan by fostering cross-disciplinary collaborations, encouraging new linkages to freshwater issues in research and courses, and providing more opportunities to study and learn about the Great Lakes and other large freshwater systems.

Through this funding effort, the Water Center is increasing U-M's capacity to contribute solutions to the protection and restoration of freshwater systems.

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PROJECT SUMMARY

Harmful algal blooms (HABs), caused by rapid growth of certain algal species, are a major economic and ecological problem in freshwater and marine ecosystems. In Lake Erie, these blooms have increased in recent years, driven primarily by climatic conditions and nutrient inputs. Much attention has been given to better understand these blooms but little effort has focused on why natural enemies (i.e., parasites and predators) do not restrict these rapid explosions in the populations of harmful algal species. The role of parasites in limiting algal blooms in the Great Lakes is particularly understudied, despite evidence that parasites, especially fungi, can play an important role in limiting algal population growth.

This project seeks to improve understanding of the influence of fungal parasites on harmful algal blooms in two ways. First, a field survey will be conducted using state-of-the-art molecular techniques to measure the diversity of fungal parasites of harmful algae and identify which species are most common and likely important. Second, a laboratory experiment with be conducted to examine how nutrients and temperature influence epidemics of parasites in algae, which should provide insight into how recent environmental changes in Lake Erie influenced these parasites.

The findings of this project will be useful in establishing the conditions under which parasites, a potentially important control on algal blooms, thrive and impact their host species. In addition, this work will greatly advance the research capacity at the University of Michigan to broadly examine the diversity and impact of algal pathogens in the Great Lakes. The project creates a freshwater collaboration on campus and enables a new, freshwater application of a faculty member’s expertise and that of a postdoctoral fellow.

INVESTIGATORS

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Photo courtesy of Tom Archer