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Time to test the water



Graduate student Xiodan Ruan collects water samples to determine if the Charles River is safe for swimmers. Photo by Lauren McFalls.

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Every afternoon, Northeastern University graduate student Xiodan Ruan rides her bike along the Charles River, collecting water samples at five potential swimming areas.

Through a partnership with the Charles River Conservancy, Ruan is repeating that routine each day for two months. The goal is to determine where — and when — it is safe to swim in Boston's most storied river.

"I always wanted to have a role in helping the environment, especially in a city I am living in, and this project has really allowed me to put my skills to work in a way that can positively affect the community," said Ruan, who moved to the United States from China to pursue a PhD in environmental engineering. She hopes to publish the results of her study in a scientific journal.

Water is deemed safe for swimming when the presence of *Escherichia coli* (E. coli), an intestinal bacterium that is used as an indicator of fecal pollution, falls below a certain level.

Thus far, Ruan's data shows that levels of E. coli are highest after a rainstorm, which causes contamination from a combination of sewer overflow and storm water runoff. However, on many other days, the levels have been at or below the standards set by the U.S. Environmental Protection Agency as safe for swimming.

The results of the monitoring project will be used by the Charles River Water Quality Commission to explore the feasibility of returning public-access swimming to the Charles River.

Ruan is working under the direction of Ferdi Hellweger, an associate professor of civil and environmental engineering at Northeastern.

"Being able to collaborate with the Charles River Conservancy is critical to the success of this project," said Hellweger, who hopes that his ongoing research on water quality will help make the Charles River swimmable once again.

Karen Peterson Greene, coordinator for the Swimmable Charles at the Conservancy, lauded the efforts of Ruan and said she looks forward to working with Hellweger and others at Northeastern on future research projects.

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