

Researchers study what would it take to make the Delaware River swimmable

July 28 2020, by Katherine Unger Baillie



Though still a working river, trafficked by barges and bordered by industry, the Delaware has become a far cleaner place over the last few decades. A study led by the Water Center at Penn is investigating what it would take to move the river a step further: toward swimmable waters. Credit: Eric Sucar

From its source in New York's Catskill Mountains to its mouth in the

Delaware Bay, the Delaware River serves many roles. Fifteen million people from four states drink its water. Several major cities lie on its shores. It's a place for commerce, for wildlife, and, increasingly, even in its urban stretches, for fishing, kayaking, and other recreation.

A century ago, the idea of enjoying the Delaware's waters near the cities of Camden, Philadelphia, or Chester, wasn't so appealing. But concerted federal and local efforts to reduce wastewater and pollutant runoff have made a difference in [water quality](#) that can be seen—even smelled.

"It used to be that, depending on which way the wind was blowing, you could smell the odor of either the Schuylkill or the Delaware on the streets of Philadelphia," says Howard Neukrug, executive director of the Water Center at Penn and former commissioner and CEO of the Philadelphia Water Department.

This spring, the [environmental organization](#) American Rivers named the Delaware River its 2020 River of the Year, recognizing successes of recent decades. But the efforts to improve the Delaware are not finished. Momentum from the improving river quality has precipitated a new cadre of stakeholder groups—from boaters and anglers to environmental advocates and educators, to water utilities and regulators to recreation enthusiasts in Philadelphia, Camden, and elsewhere—to consider how to make the river even healthier and more appealing to those that live within its watershed, or near its banks.

That is the question driving a new project by the Water Center: the creation of a "roadmap" for swimming the Delaware. Funded by a grant from the William Penn Foundation, the 15-month project involves gathering and analyzing data about the river's current state and uses to envision what it would take to make the water safe for "primary contact;" in other words: swimming.

"This project is not about advocating for a change in the regulatory status of the Delaware," says Karl Russek, director of programs and applied research for the Water Center at Penn. "Our aim is to develop a roadmap for water quality improvements—grounded in science, grounded in the current state of the river."

Neukrug says the conclusions of the report have the potential to support continued improvements for a river that can be accessible to millions.

"In 1972 we saw the passage of the Clean Water Act, and improvements between 1970 and 2020 in terms of the quality of the river water and the [drinking water](#) that comes from it is miraculous," says Neukrug. "Over the last 20 years we've been looking at what else we can do by addressing new water quality concerns. This work is a way to plot out and begin prioritizing our next steps."

A river's transformation

In 1969, Ohio's Cuyahoga River caught fire, the result of intense industrial pollution. Though not a new problem, public awareness of the fire helped usher in the environmental movement of the 1970s, including the creation of the Environmental Protection Agency and passage of the Clean Water and Safe Drinking Water acts.

At that time, the cleanliness of the Delaware and quality of the drinking water that came from it was a major concern in Philadelphia. The Clean Water Act provided funds to construct new wastewater treatment facilities. "The construction grants program of the 1980s sent billions of dollars to our cities to build or upgrade water infrastructure," says Neukrug. "But that was the last significant federal funding for water systems we've seen."

Neukrug began working at Northeast Philadelphia's Baxter Water

Treatment Plant in 1978 as an engineer, charged with determining how to treat the water extracted from the Delaware River "to make it into better smelling, better tasting, better quality drinking water," he says.

As new infrastructure and new methods of eliminating contaminants and impurities in the water developed, both the river water and the resulting drinking water improved greatly. As dissolved oxygen levels have risen and pollutant levels had declined, wildlife such as Atlantic sturgeon and bald eagles have returned to the river.

By the time Neukrug took over as commissioner of Philadelphia Water in 2011, he was eyeing an additional approach to further those achievements, while making careful use of limited dollars. The 25-year Green Cities, Clean Waters plan, using green infrastructure like parks, green roofs, and rain gardens to limit stormwater runoff, was a major achievement of his tenure, with benefits that continue to accrue today.

As the river's condition improved, people began to notice and have been returning to the river. Today, one can see people not only picnicking along its shores, but also boating, kayaking, tubing, even water- and jet-skiing. While all of these activities are considered safe along most of the river's 330 mile length, the 27 miles that flow past Camden, Philadelphia, and Chester are considered safe for only secondary contact recreation—that is, incidental contact from boating or fishing, but not full "water immersion" as can occur during swimming.

The Water Center study is taking a "fiercely agnostic" approach about what "should" be done, Russek says. "The goal is for policymakers and NGOs [non-governmental organizations] and various stakeholder groups to be able to work from a common set of facts, costs, and benefits," he says. "This is a challenge that's at the intersection of public health, science, public policy, and commerce. It takes a lot of connecting people in various fields, both within the academic community as well as the

community at large in order to help develop a plan."



Today it's not uncommon to see people embracing the recreational opportunities the Delaware River's shores and waters provide. Yet the river water is considered safe only for "secondary contact," not for swimming. Credit: Eric Sucar

Inclusive effort

To do so, the Water Center will work with a multitude of interested partners, many of whom vehemently disagree on when and how to make the Delaware—a working river with dangerous currents and riptides, cargo ships and barge traffic, decaying piers, and flotsam and jetsam—a "swimmable resource." Other priorities, such as building climate change

resiliency, boosting drinking water source quality, reducing toxins like polychlorinated biphenyls and mercury in fish, and improving the dissolved [oxygen levels](#) for fish propagation are all vital yet competing interests for scarce local funds.

Andy Kricun, senior adviser to the Water Center and long-time colleague of Neukrug's from "across the river," recently left his role as executive director of the Camden County Municipal Utility Authority. During his tenure at the helm of the Camden utility, he made significant improvements to water quality, including eliminating dry weather sewer overflow events in the city by improving the combined sewer system, and reducing wet weather overflows with improvements to both green and gray infrastructure. In addition, establishing equity in river access was and remains a high priority for him, on both the Philadelphia and Camden shores of the Delaware. Alongside the roadmap project, he is working on a parallel initiative that engages community stakeholder groups interesting in environmental protection and recreation, the Return to the River Action Team.

"I'm serving as a liaison between the two groups," Kricun says. "The Water Center as a research institution is developing the facts and will put together a menu of options, while the Return to the River Action Team will be getting input from stakeholders in the community to hopefully help prioritize what actions they see as most important to take.

"A watchword for me is that your zip code should not determine whether you have safe drinking water or clean water ways or access to the waterfront," says Kricun. "People in economically distressed situations maybe can't afford to go to the Jersey Shore or take a vacation to Hawaii. They deserve access to the waterfront too."

Educational endeavor

Two students are working full-time this summer and part-time through the length of the project on data collection and analysis. Rupika Ketu, a student in the Master of Environmental Studies program, had intimate connections with the Delaware prior to taking up this work, doing on-water environmental programming, leading kayaking trips north of Philadelphia at Glen Ford on the Delaware.

Zach Villari, a student in the Master of Science in Applied Geosciences program, was likewise familiar, having grown up in Lansdale and tubing, swimming, and fishing on the northern portion of the river. "Closer to the urban areas, I saw it as an industrial river that probably wouldn't be safe to swim in," he says. "That's one reason I was drawn to this project."

Ketu is considering the regulatory context of cleaning up the Delaware, such as the allowable wastewater discharges, current water quality criteria, and what additional restrictions would need to be put in place to raise quality, while Villari is considering the recreating already happening at the Delaware, including who, how, and when that interaction is happening. Both hope to also do field testing, collecting water samples at various sites that might be most conducive for recreation access, though the COVID-19 pandemic has put those plans on hold for the time being.

"I never imagined that I'd be getting to work with people who have led water utilities," says Ketu. "It's really exciting to learn from them and work with them, and hopefully find a way to improve conditions in the future."

'Triple bottom line'

Russek notes that future decisions won't be based solely on the science, or on what stakeholders believe; funding will also drive policy choices. "Everyone agrees 'swimmable' is the long-term goal," he says. "Some

people want to prioritize the issue, others say that's not the wisest use of resources. There are so many competing priorities that society needs to spend money on."

And it's important that issues of equity in river access don't come at the cost of unaffordable water bills for Philadelphians who struggle to pay them.

"There's the triple bottom line perspective," says Kricun. "You want a project that is cost-effective, has an environmental benefit, and a social benefit. I'm hoping the Water Center, by doing this fact-finding analysis, will ease the path toward finding the right balance among those objectives."

Decision making that considers a host of perspectives and aims to achieve a number of benefits is never straightforward. But with the Water Center's roadmap, those with a stake in the river's future should be able to rely on a common understanding of the challenges to confidently chart out a way to get where they want to go.

"The tidal portion of the Delaware alongside these [major cities](#) is playing many roles, all of them critical," Neukrug says. "There are balances that occur between commerce, industry, recreation, drinking [water](#) supply. Our hope is to help this coalition of dischargers, utilities, academicians, environmental advocates, and policymakers decide what should be done next."

More information: A local decisionmaker's guide to navigating small drinking water and/or wastewater system technical assistance and financing options: watercenter.sas.upenn.edu/research/projects/

Provided by University of Pennsylvania

Citation: Researchers study what would it take to make the Delaware River swimmable (2020, July 28) retrieved 27 April 2024 from <https://phys.org/news/2020-07-delaware-river-swimmable.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.