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Nature's Water Filters

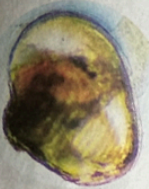
How freshwater mussels are cleaning America's rivers

BY CARL SHANE

Unassuming freshwater mussels are emerging as environmental heroes. These humble mollusks serve as the "livers of our rivers," filtering 10-20 gallons of water daily while removing harmful algae, nitrogen, phosphorus, E. coli, microplastics and even metals.

"They're really small little workhorses out there, filtering," says Jess Jones, a restoration biologist with the U.S. Fish and Wildlife Service and co-director of the Freshwater Mollusk Conservation Center at Virginia Polytechnic and State University. When native species of freshwater mussels are found in a river, it means the water is in good shape, according to Jones, who calls mussels "natural indicators of a river's health."

FROM TOP LEFT: Lance Butler, a senior scientist at the Philadelphia Water Department, deploys eastern pondmussels and alewife floaters into the Schuylkill River; a 5-day-old juvenile eastern pondmussel; a mussel; Delaware River mussels; a yellow lamp mussel displaying lure to draw host fish in



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alewife floater, eastern floater and eastern elliptio — throughout the watershed. The mussels arrive as half-inch juveniles from Virginia's Harrison Lake National Fish Hatchery and grow in floating cages until they're ready for release.

Results are already promising. This spring, scientists found a pregnant eastern pondmussel that had been propagated and tagged in 2020. "Even with all these decades and even centuries of negligence, we have mussels that are now reproducing," says Jorge Begueret-Morera, who runs the AWS mussel project. "We're still learning. There are a lot of question marks related to mussel biology and conservation."

Norby, the Potomac Riverkeeper, launched the 50 Million partnership with Na-



TOP: Philadelphia Water Department scientists deploy a mussel cage in the Schuylkill River.



TOP: Shannon Boyle monitors adult alewife floaters and eastern pondmussel in the Schuylkill River.

RIGHT: Kathryn McFarland, a Drexel University student, holds a tray of 1-year-old yellow lampmussels propagated by the Philadelphia Water Department's Office of Watersheds that have been submerged at The Discovery Center in Philadelphia.

As they filter and clean water, they support entire ecosystems both in the water and on land, creating healthier fish populations and economies that benefit from improved fishing and recreation.

Despite their ecological importance, these invertebrates face serious challenges. Of North America's 300-plus freshwater mussel species, 70 percent are already extinct. Just as their presence often signals healthy water, their absence indicates environmental degradation.

The science of harnessing mussels for ecosystem services is relatively young, when researchers began recognizing their water-purifying potential. Unlike their commercially valuable marine cousins, oysters, freshwater mussels received little scientific attention until recently.

"Imagine the positive effects thousands or even millions of

have on the water quality of a stream," says Nick Utrup, a fish and wildlife biologist at the Minnesota-Wisconsin Ecological Services Field Office.

In Washington, D.C., the Anacostia Watershed Society (AWS) is turning imagination into reality by propagating and restoring mussel populations specifically to clean the Anacostia River. After centuries of industrialization and pollution decimated local mussel populations,

regulations and infrastructure improvements. The stakes are high: The Anacostia meets the Potomac River before feeding into the Chesapeake Bay, the largest estuary in the U.S. A cleaner Anacostia means a healthier ecosystem that this vital watershed

