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Mussel mania comes to Fairmount Water Works

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AMERICAN MUSEUM OF NATURAL HISTORY

This humble freshwater mussel is actually a turbocharged river-cleaning machine, with a bizarre sex life. Fairmount Water Works pays homage with a new exhibit and mussel hatchery opening Feb. 17.

by **Stephan Salisbury**, culture writer [@spsalisbury](https://twitter.com/spsalisbury) (<http://twitter.com/@spsalisbury>) |

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Back in the day, a few centuries ago, rivers and streams in the Delaware River basin were so thick with beds of freshwater mussels that a traveler could hop over the water on the backs of shellfish with just a few crunches and nary a splash.

Even as recently as 1918, the naturalist A.E. Ortmann, who surveyed the mussel populations in the region, described the extreme abundance of the creatures in astonished terms.

No more.

Suffering from severe decline, freshwater mussels, which are not edible, are now the most imperiled of plants and animals in North America, “and for that reason alone, we should be restoring them because we’re losing them and that tells us something negative about the status of our waterways in this country,” said Danielle Kreeger, science director of the nonprofit Partnership for the Delaware Estuary.

Now, the partnership has hooked up with the Philadelphia Water Department, the Academy of Natural Sciences of Drexel University, and the Fairmount Water Works to create the Mussel Hatchery, a long-term demonstration project and installation that will both breed mussels for eventual reseeded of rivers and streams in the region and educate people about why that is not a quixotic task.

The Mussel Hatchery, where the work of breeding freshwater mussels will take place, amid video animations on the mussel life cycle and the impact of mussels on the environment, opens Friday at the Water Works.

Artist Stacy Levy has created a large wall sculpture for the project, and there are interactive exhibits exploring aspects of the mussel world and the creatures that inhabit that world, plus role-playing games and mussel info galore.

In all, it amounts to a kind of mussel mania on the Schuylkill.

At the heart of the project, and fully available to talk to the public, will be scientists and technicians working water-filtration systems, monitoring tanks, and presiding over mussels, and, eventually, the herring needed for the rather baroque and somewhat alarming act of mussel reproduction. More on that later.

“Part of what we are hoping to do here is to show that they can be reintroduced into rivers and streams,” said Victoria Prizzia, founder of Habithèque, the planning and design firm behind much of the public-education face of the hatchery project. “People don’t know about mussels. They simply don’t know their importance. Mussels are ecosystem engineers. They create habitats for other species. They are critical for water filtration. They strengthen riverbeds.”

Prizzia, who wrote much of the material for the project, thinks of these nondescript, unassuming, grayish bivalves as “the mighty mussel.”

And why not? A single little mussel can filter 20 gallons of water a day. A hundred of them could filter a typical in-ground pool in a week. And they don’t stop. Year in and year out, for many, many years, water goes in dirty and comes out clean. Barring some catastrophic event, freshwater mussels can live for a century.

Kreeger, of the partnership, is the orchestrator of the project. She has been working with mussels and other shellfish for 35 years and is heading the partnership’s freshwater-mussel-recovery program, a watershed-wide restoration effort.

“We’re doing this because mussels filter buckets and buckets of water a day per animal,” Kreeger said. “So if we can restore healthy mussels to our streams and rivers, that will help us sustain and improve water quality. That’s the main reason.”

The Water Works hatchery, which is primarily educational, will eventually produce 50,000 to 100,000 mussels a year. That may be a lot of mussels, but it’s not nearly enough to make a real impact on the region’s waterways. For that reason, the partnership is ultimately looking to establish a commercial mussel hatchery in the area capable of turning out a million baby mussels per season. The nearest such facility is in Virginia, and it doesn’t have any mussels to spare.

Because of centuries of dam building, which has inhibited the movement of fish; heavy chemical pollution; and a host of other negative factors, the freshwater mussel population in North America has undergone a drastic decline, particularly in the decades after World War II. Storm-water runoff is the major threat to the creatures, frequently disrupting their riverbed habitats and threatening to wash them into oblivion.

Still, the little mussels struggle to survive.

They do move around a bit, by the way, and have a more complex breeding behavior than you might imagine. Kreeger calls it “a very sexy life-history strategy.”

For one thing, freshwater mussels require another species -- a fish -- to spawn. And not just any fish. Each species of mussel needs its own species of fish. The hatchery will start out using alewife floater mussels (*Anodonta implicata*). In late February and March, already fertilized mussels will be plucked from rivers and ponds and plopped into constantly cool water tanks at the Water Works.

A couple of months later, at spawning time, alewife fish will be introduced. The mussels, when they sense the presence of their fish, will spew out their teeny larvae, called glochidia, which rise up and bite into the gills, feasting on alewife blood.

After several days, these larvae will metamorphose into baby mussels and drop off the gills. They’ll be collected, and after a period of further growth, they’ll be removed to local ponds to live for about a year.

After their pond sojourns, the mussels will be ready for reseeded in rivers and streams.

The whole process is timed and controlled to mimic reproduction in the natural world. In the wild, each mussel releases its larvae about the time its favored fish is moving upriver to spawn. It is an ingenious tactic for a blind, sedentary creature to hitch a ride upstream, away from saltwater threats.

“The mussels will sense that the fish are there,” said Kreeger. “We don’t understand how they do it, but they know the right fish are there.”

“We need environmental stewards for these aquatic creatures,” said Karen Young, executive director of the Water Works. “They can help restore our waterways for recreation, for wildlife, and for our drinking water, but their numbers have dwindled, and in some places they are nonexistent. Most people don’t know that

they exist, let alone that they are endangered.”

The Mussel Hatchery

Fairmount Water Works, 640 Water Works Drive

Hours: Tuesday-Saturday, 10 a.m.-5 p.m., Sunday, 1 p.m.-5 p.m.

Admission: Free to the public and to Philadelphia School District student groups. Free two-hour parking is available along Water Works Drive.

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