

Ghosts

Of the Ohio River

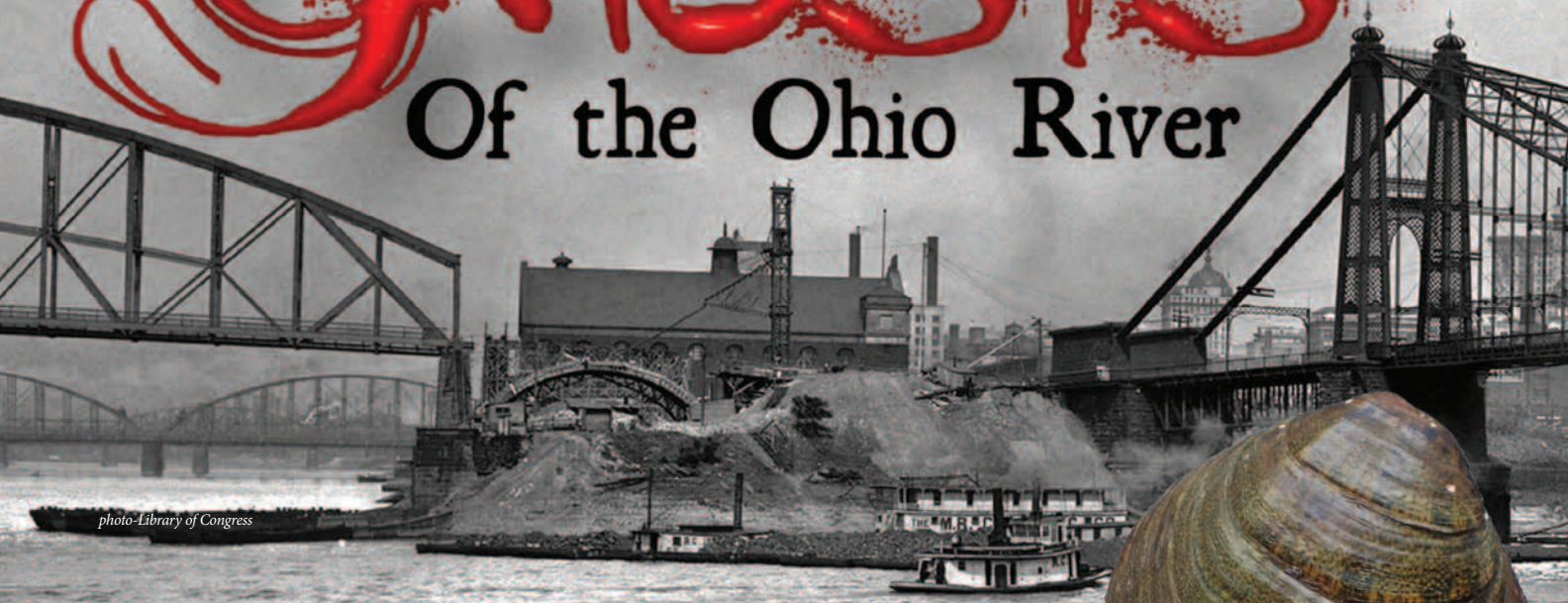


photo-Library of Congress

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Imagine floating down the Ohio River, slipping through expansive riffles, fast runs and shallow pools with no locks or dams to slow you down. Fourteen miles downriver from Pittsburgh, you gently nose your kayak onto Deadman's Island, hop out and drag your boat onto a shoreline littered with hundreds of colorful, intricately-patterned mussel shells. You ready your rod and cast your line. After an exhausting battle, you land your first fish of the day—a 90-pound Blue Catfish. To recover, you take a seat on the riverbank and sort through the shells that came from the same river as your trophy catch—all relics of an ancient and amazing partnership between freshwater mussels, fishes and the river that supported them.

No locks or dams? Mussels with names like Purple Wartyback, Pistolgrip, Butterfly and Fanshell? Huge Blue Catfish? Were you dreaming? Or, did Ghosts of the Ohio River Past haunt you? Aquatic life once thrived in this river affectionately known to the Seneca Nation of the Iroquois League as O'-y-o, meaning "beautiful river." O'-y-o was later modified by French explorers who travelled the river with the Iroquois to the more familiar O-hi-o.

The earliest accounts described the Ohio River as teeming with aquatic life. In 1803, at the beginning of his expedition with William Clark, Captain Meriwether Lewis noted that

the river near the Pennsylvania border was "so low and clear that we could see a great number of fish of different kinds, the sturgeon, bass, catfish, pike, etc." In 1818, Constantine Rafinesque—a renowned naturalist—observed man-sized Lake Sturgeons, Paddlefish and a great variety of other fishes in the Pittsburgh area in addition to numerous freshwater mussels further downstream. Growth and industrialization of the Pittsburgh region, however, would soon make ghosts of these Ohio River mussels, fishes and the river they knew well.

Mussel habitats

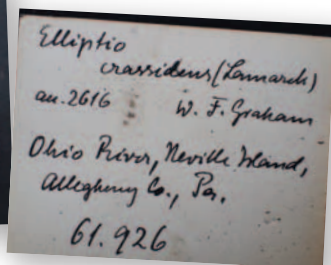
Millions of freshwater mussels once burrowed themselves into the shallow waters of the Ohio River forming vast mussel "beds" that paved the river bottom. These mussels filtered billions of gallons of water as they thrived, tucked away in and amongst habitats that consisted of clean-swept glacial sand, gravel, cobbles, boulders and sunken trees that were characteristic of the river's many riffles, runs and pools.

Ohio River fishes needed these riverine habitats, too, and the mussels needed fish. Believe it or not, fish gills and fins were important "habitat" necessary for survival of the mussel beds. Mussel larvae are briefly parasitic on fishes



Fanshell

photo-courtesy of Carnegie Museum of Natural History



Elephant Ear

and require certain fish species to serve as “hosts” in order to complete their life cycle. Larval Hickorynut mussels, for example, would attach themselves to the gills and fins of passing sturgeons in order to transform into baby mussels. The diversity of fishes and their unique habitat requirements contributed to the river’s mussel diversity. Unfortunately, those fish hosts were often associated with the islands, shoals and sand bars that created treacherous navigational hazards such as the infamous Horsetail Ripples, Woolery’s Trap, Logstown Bar and the Beaver Shoals.

Habitat destruction

As the Pittsburgh region grew, industries spread rapidly through the river valleys and demand for better river navigation increased. As a result, the Ohio River habitats that supported mussels and their fish hosts began to change. At first, large boulders and “ripples”—navigational hazards—were dynamited and tree snags dragged from the river. These river “improvement” efforts were initially small, local undertakings. Later, the state government (1820s) and eventually the federal government funded larger efforts.

River cobble was the first habitat feature to be commercially exploited—thousands were gathered to pave city streets and wharves. Historian Sarepta Kussart noted that by the 1850s, Pittsburgh-area sources of cobblestones were depleted and stones had to be imported from elsewhere. Sand was next, consumed by the burgeoning glass industry, particularly during the 1820s. River gravel was not valued until the 1860s, when demand skyrocketed along with the Pittsburgh region’s steel industry. Gravel was needed for the concrete that would support industrial-scale development and large infrastructure projects. Millions of tons of sand and gravel were systematically removed from Pittsburgh’s

riverbeds by barge dredges with names like *Hippopotamus*, *Progress* and *Monarch*.

As mussels and fish habitats were being removed from the river, pollution in the form of industrial wastes, sewage, brines and acid mine drainage poured into the Ohio River from the surrounding countryside. The first dam ever across the Ohio River—Davis Island Lock and Dam (Lock and Dam (L&D) No. 1)—and subsequent dams authorized by the Federal Rivers and Harbors Acts concentrated these pollutants creating “cesspools” of warm, stagnant and contaminated waters.

The race against time

In 1899, the naturalist Samuel Rhoads warned that the Ohio River mussel fauna was disappearing “owing to the steady extermination of the molluscan life of the Ohio river...due to the pollution and damming of the waters of that river.” Aware of the extinction event upon them, Pittsburgh-area collectors—preeminently Dr. Arnold Ortmann—moved quickly to document Pennsylvania’s disappearing mussels. William Holland, director of the Carnegie Museum, later described this effort as having occurred “at the eleventh hour” and at the “very nick of time.” Ortmann’s Ohio River mussel collections took place between 1904 and 1909 just as five dams (L&D Nos. 2, 3, 4, 5 and 6) were constructed and placed into operation.

Death of the river

By 1909, Dr. Ortmann’s hope for the persistence of Ohio River mussels was fading. In one paper, he described a Round Hickorynut mussel found in 1906 as “the last living (mussel) found in the Ohio in Allegheny County.” In another 1909 paper, Ortmann noted that the mussels in the free-flowing stretch of river below L&D 6 were “already suffering” evidenced by massive die-offs of mussel beds near Industry and Shippingport. By 1914, what was left of these mussel beds and the last bit of the free-flowing Ohio River in Pennsylvania were dammed by L&D 7.

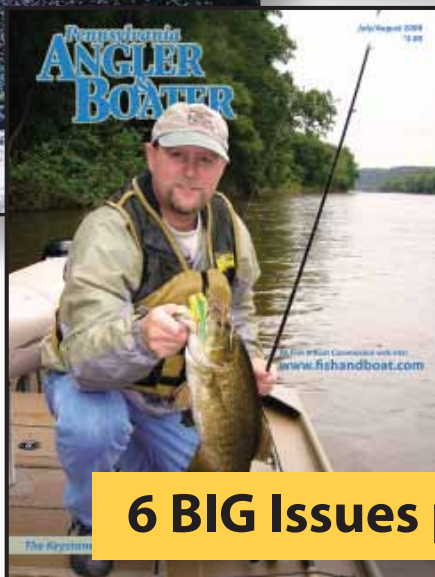
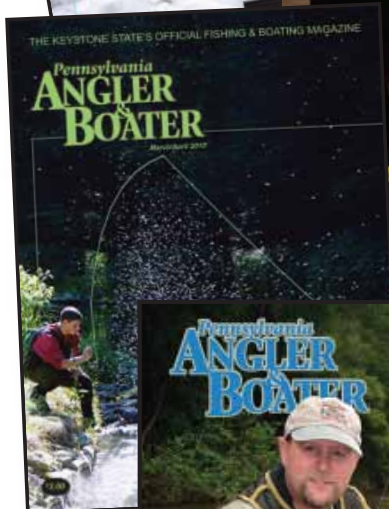
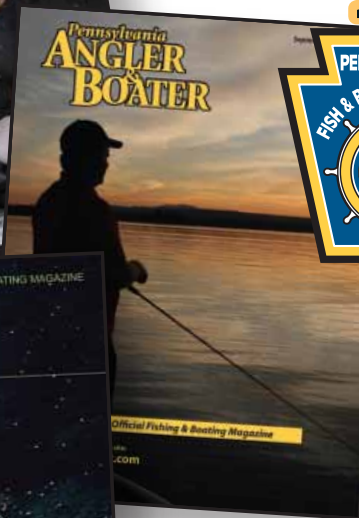
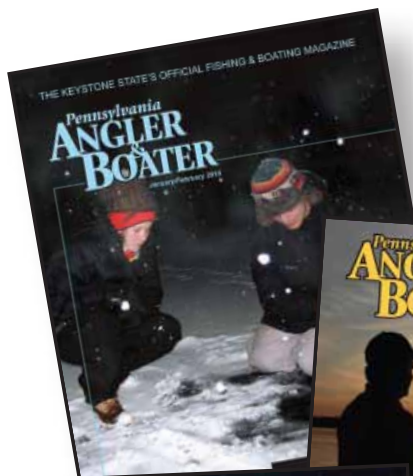
Recovery and progress

After many decades of destruction, water quality has improved as a result of the Clean Streams Law (1939), Federal Water Pollution Control Act of 1948 and Clean Water Act (1972). These improvements have allowed the slow recovery of fishes and mussels. Contemporary surveys have documented 18 of the original 39 mussel species recorded by Ortmann and 78 of 99 native fishes. Unfortunately, 12 mussel species observed at the beginning of the 1900s are now gone, or extinct, from Pennsylvania. Slackwater species, such as the Flat Floater and Pink Papershell, have quietly emerged to take the place of the original riffle-loving species.

Although the Ohio River will never be fully restored to its historical condition, the ghosts of these mussels, their fish hosts and their habitats continue to motivate and inspire efforts to protect, conserve and retain the natural beauty of this mighty river. □



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