The railroad tracks that snake along the Mahoning River are a reminder of 200 years of discovery and devastation. Draining just over 1,000 square miles of northeastern Ohio, the Mahoning River quietly flows its final 12 river miles through Pennsylvania to its confluence with the Shenango River, where these rivers form the Beaver River. The story of the Mahoning River is one of transformation—from being one of the most diverse streams in Ohio and Pennsylvania to one of the most industrialized and contaminated rivers in the United States.

Kirtland, Ortmann and the forgotten fauna

Two preeminent naturalists of the day—Jared P. Kirtland and Arnold Ortmann—were among the first to explore the fauna of the Mahoning River. Between 1830 and 1850 Kirtland, an Ohioan and naturalist, was the first to recognize and describe several species new to science. These “new” fish and freshwater mussels were most likely collected from the Mahoning River’s “Loveland Ripple” located near Kirtland’s home in Poland, Ohio. The species he described ranged from the vibrantly-colored Spotted and Variegate darters and Redside Dace to the industrious pebble-nest building Hornyhead Chub, *Noemis biguttatus*, and the hardy Central Mudminnow, *Umbra limi*. Kirtland also described the elegant state and federally endangered Northern Riffleshell, *Epioblasma rangiana*, mussel. In total, Kirtland is credited with describing eight fishes new to science, and he collected or observed at least 41 of 73 fish species known from the Mahoning River including American Eel, *Anguilla rostrata*, and the state endangered Lake Sturgeon, *Acipenser fulvescens*.

Sixty years later, Dr. Arnold Ortmann, a curator from the Carnegie Museum of Natural History in Pittsburgh, began his own exploration of western Pennsylvania’s rivers and streams. Ortmann stopped along the Mahoning River railroad tracks at towns such as Hillsville, Coverts, Edinburg and Mahoningtown, documenting 23 of the 32 mussel species known from the river. His observations included the Pimpleback, *Cyclonaias pustulosa*, and the Purple Wartyback, *C. tuberculata*—two species that have not been collected alive in Pennsylvania since that time. The stunning mussel diversity of Pennsylvania’s 12 miles of the Mahoning River would have rivaled the Allegheny River’s French Creek fauna (28 species) and harbored more endangered and threatened species (8),
making it one of the crown jewels of diversity within the Ohio River Basin.

Both Kirtland's and Ortmann's early observations also detailed changes in the river itself. As early as the mid-1800s, Kirtland attributed a decline in the abundance of Walleye and other fishes to the construction of dams along the Beaver River. Ortmann, too, noticed that ominous changes had come to the Mahoning River valley. In 1909 he wrote that “[a]t Hillsville, where the Mahoning enters our state, it is in poor condition, yet there is some life. Then comes a dam at Edinburg, and below this dam conditions are much better... the fauna is rich and continues to be so till the river joins the Shenango.” The fishes that Kirtland observed and described in the mid-1800s and the mussels that Ortmann documented at the turn of the century are known then and today for the preference of clean streams with “rapid and clear” water. Despite their pioneering efforts along the Mahoning River, Kirtland’s and Ortmann’s observations of the fauna and the river’s near-pristine condition would be among the very last.

The Steel Valley
Not too long after Ortmann’s surveys, the valley was transformed into a working river known to the world as “the Steel Valley” with a skyline of smokestacks immortalized later by Bruce Springsteen as “reaching into a beautiful sky of soot and clay” in the song, “Youngstown.” These symbols of the valley’s industrial might loomed large over the river’s inhabitants from 1920 to 1970.

During this 50 year period, the Mahoning River was lined with massive steel mills and industrial plants associated with steel production. This era was defined by a lack of pollution controls, and the river was devastated by millions of gallons of raw domestic sewage. These waters were in turn used for cooling and processing steel, resulting in super-heated thermal discharges and incredibly foul air. According to the United States Army Corps of Engineers (USACE), water temperatures in the Mahoning River exceeded 95 degrees F for more than 25 percent of the year in 1964 and reached a maximum of 108 degrees F at Lowellville, near the Pennsylvania border. The USACE estimated that industrial uses consumed 1.5 million gallons of river water daily—or four to five times the Mahoning River’s normal discharge—and then dumped these waters back into the river, turning the Mahoning River into a steaming cesspool of sewage, heavy metals (chromium, iron, zinc and lead) and other industrial byproducts (arsenic, cadmium, copper, nickel, pesticides, polychlorinated biphenyls and polycyclic aromatic hydrocarbons compounds). These “working river” waters transformed the river, its banks and the aquatic life it once supported as it oozed from Ohio downstream into Pennsylvania.

Destruction of the fauna
Milton Trautman, a fish biologist from Ohio State and author of the 1957 and 1981 editions of the book, “The Fishes of Ohio,” conducted fish surveys from 1925 to 1981—roughly the heyday of the steel industry along the Mahoning River. He recalled Kirtland’s Loveland Ripple and lamented that “[s]ince 1925 this section of the Mahoning has been bordered by steel mills which when working have heated and polluted the stream beyond the point where waters were inhabitable to fish life.” Trautman also noted that the Mahoning River was “polluted with soil and industrial pollution,” that its “sandy gravel bars and riffles were covered with industrial wastes,” and the river dammed and “devoid of fish life because of steel mill and other pollution.” As one of the most contaminated rivers in the United States, it is not surprising that fishes surviving in the Mahoning River during this era were noted for deformities. The impacts to mussels were also profound and despite recent efforts, no living mussels have been detected in the Mahoning River since the days of Kirtland and Ortmann.

Current conditions and hope for the future
The industrial legacy of the Steel Valley remains along the river banks and in the river itself, but despite its dramatic pollution history, the Mahoning River is resilient, much like the people who live along its banks. Water quality is returning, evidence that an excellent Smallmouth Bass fishery exists, and canoe trips from the well-maintained, Lawrence County accesses reveal little indication of the river valley’s former industrial might. With relic mussel shells still scattered about Ortmann’s collection site at Edinburg, it is not difficult to imagine the river as Kirtland and Ortmann may have seen it—clear, rapid waters teeming with all kinds of life. Hope exists for the Mahoning River; for barely downstream of the Mahoning River’s confluence with the Shenango River, living freshwater mussels can be found in the Beaver River. The Mahoning River that our early explorers once knew is gone, but its legacy has not been forgotten.