

Darby Creek

A stream of surprises

By Mac Albin, Metro Parks Aquatic Ecologist

In our earliest memories of the gushing faucet or the garden hose spewing water onto the curb, flowing water can cast a spell. In its movement, this non-living material becomes life-like. At some point in our young lives, we visit a real stream and are captivated by water and rock. By some magic, water and rock create living things that sometimes can be seen from above or sometimes must be captured.

Henry D. Thoreau remarked on the pickerel of Walden Pond and how it made his life more rich and eventful. “It is surprising that these fishes are caught here. They are as foreign as Arabia to our Concord life...Handsome as

flowers they have yet rarer colors, like precious stones.”

While we may not all be moved to write in such an intense and passionate way, we can share much of his sense of amazement in our local streams and rivers.

Throughout the seasons and over many years, I have contemplated, studied and viewed many miles of different waterways and find myself agreeing with Thoreau. Darby Creek has been a constant stream of surprises. Many are shared with all Central Ohio streams, some with only a few. Some of these streams have surprises of their own, such as the river chub, the slenderhead darter or the sand darter. While I recount some of my explorations of Darby Creek here, one of my aims is



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The federally endangered riffleshell mussels of Big Darby Creek spend most of their lives embedded in streams and impoundments and are excellent indicators of water and habitat quality.

Metro Parks protects the Darby Watershed

Since the acquisition of its first parcel of land in the Darby Watershed in 1950, Metro Parks has been working to protect and enhance the quality of Big and Little Darby creeks and the surrounding area for the benefit of wildlife and the enjoyment of all people.

The Darby Creek Watershed is one of the healthiest and most biologically rich stream systems in the Midwest. It is one of the top five warm freshwater habitats in the nation, and is home to 100 species of fish and 41 species of mollusks, 13 of which are on the Ohio endangered species list. The Big Darby is Central Ohio’s only National and State Scenic River.

Today, the park system maintains two parks (Battelle Darby Creek and Prairie Oaks) stretching for more than 20 miles along the stream corridor, comprising more than 8,000 acres of land. This amount of protected land is helping to improve water quality in the creek, according to Metro Parks aquatic ecologist Mac Albin. Several species of fish have increased populations, ranges and spread through park waters. The state endangered spotted darter can now be found in its fast riffle cobble environment. The big eye chubs, having disappeared for decades, are now back in its fast gravel runs. Some mussel beds in the park are now showing increases in reproduction with many juveniles appearing.

Over the years, the park system has done much to enhance the quality of the land and water in the Darby Watershed. In 1976, Metro Parks began an extensive prairie restoration program. Using seeds native to the Darby Plains, more than 500 acres of prairies have been planted and provide beautiful vistas in late summer. Annually, about 150 acres of these prairies are burned to control invasive shrubs and maintain plant diversity as part of Metro Parks’ resource management plan.

In 1990, Metro Parks breached a concrete dam that for 35 years had separated Big and Little Darby creeks. Removal of the dam allowed fish to migrate freely between the creeks, resulting in a greater diversity of fishes and mussels that “hitchhike” on the fish during their larva stages.

Further protection of the Darby Watershed occurred with the transformation of 160 acres of once quarried land at Prairie Oaks Metro Park and the removal of a 2,000-foot levee along Big Darby. Today, the Darby Bend Lakes Area is a recreational destination for anglers and other outdoor enthusiasts.

Because of the park system’s resource management efforts, visitors to Prairie Oaks and Battelle Darby Creek can glimpse wildlife and wildflowers along 14 miles of trails, enjoy a family picnic amid scenic backdrops, fish or float down the streams or explore the outdoors with a park naturalist without spending a dime.

—Peg Hanley, Metro Parks Public Information Manager

to encourage you to look more closely at your own nearby streams.

The seasons bring great changes to the land and to the water. Following these scenic changes along and in a river is pleasurable, though at times challenging. As the water temperature goes down its structure changes and at 32 degrees F, it freezes. Hoar frost settles on a sapling silver maple and in a moment it has gained a white crystal foliage. If winter rain is followed by an arctic front, other ice forms appear. The water sloshes as it recedes, creating ice bells or even bizarre shapes like ice palms. Ice octagons may appear and freeze together in a series of plates. Giant tree trunks may be frozen to other trees 10 feet in the air. If rain comes after the river has been frozen for a long winter cold spell, the phenomenon of ice-out and ice jams occur. Giant ice sheets, a foot thick and the size of a small garage, are cut loose and sent down the river where they may slide over one another creating a jam.

I have been standing on bridge abutments as the ice sheets hit and shake the bridge. Faint echoes of the power of ice sheets as they moved south thousands of years ago creep into the mind. After the ice melts, the river may freeze again and receive a coat of snow. Where only weeks before the waters raged, delicate tracks of fox, deer, mink, muskrat and deer mouse are found as if nothing had happened. But the evidence of the power of these floods remains as whole trees and huge trunks are twisted and moved downstream. Leaves stacked in branches 10-feet high indicate previous water levels. These are warnings to those who build in flood plains—it is a risky business prone to great damage.

It’s surprising that anything survives this show of force. Sometimes in spring, I find gar skulls or shells that did not survive, swept onto sand bars. But the next spring, suckers are on the riffles, bass are on their nests and turtles climb new flood logs to bask in the sun.

Life in the riffles

Fresh water sponges can be found under the flat rocks at the heads of riffles, the shallower, faster moving sections of a stream. Invertebrates, or animals without backbones, such as the water penny beetle larvae and small gastropods called limpets, also live in riffles. The algae or moss on rocks in Darby Creek is related to seaweed found in the sea. The full exploration of a stream can be a great zoological journey through the animal world.

Enduring mussels

Freshwater mussels, which range from 1 to 4 inches, are usually buried in the stream’s sand





Canoeists float down the stream at Battelle Darby Creek Metro Park. Explore the wonders of the Darby Creeks by participating in a free nature program at Prairie Oaks or Battelle Darby Creek Metro Park. Check out the program guide on page 19.

and gravel beds. Some mussels, like the pistol grip, are as large as an adult's hand, while others like the washboard can even approach the size of a dinner plate. Like clams in the ocean, they are filter feeders—pumping water containing organic particles through their gills to obtain food. Where a streambed seems to be devoid of life, several dozen species of mussels can exist buried in the sand and gravel. They seem to defy ecological law. How can different species all eat the same type of food? This is just one of many mysteries still associated with these little known mollusks.

The northern riffle shell and the club shell mussels are federally endangered and numerous agencies, including ODNR, the Columbus Zoo and Aquaria, Ohio State, the U.S. Fish and Wildlife Service and Metro Parks are re-introducing the riffle shell into their former habitat. The weathered shells of many of these mussels, including the rare ones, can be found throughout the streams of the upper Scioto watershed. But a search of their sand and gravel habitats will not reveal live ones. Intense urbanization, with its massive storm water flows, is thought to have changed the water quality, the habitat and the hydrology to the point of eliminating most species.

The mussels of the Darby have also have declined in over 3/4 of the sites studied. Changes in agriculture over the last four or

five decades, with the intensification of row crop farming, increased runoff, sedimentation and chemical usage have stressed their fragile life cycle and ecology. Additionally, urbanization is now at the doorstep of the Darby watershed and in some places past it.

Errant eel

There is a sycamore, across from the stream-side classroom, where an angler caught an American eel. This strange, slippery fish had traveled a thousand or more miles from deep within the Sargasso Sea. The adults mated somewhere in the deep and the young larval eels drifted and traveled to the Caribbean, where this female moved into the Mississippi, up the Ohio, to the Scioto, up Darby Creek to the sycamore where he met her fate at the hands of this fisherman. This underwater journey is as stunning and as far as many of our favorite neo-tropical bird migrants. Not as far as Arabia, but . . .

Darby rocks

Canoeing during low water, you can see it — darter rock I call it. It is cobble, 3 to 8 inches in diameter—limestones, granites, gneiss, tillites brought south by the glaciers. In some places the exposed bars are composed of smaller cobble; some of sand or gravel. In many places, including some riffles, there are

large boulders. Some of the rock is flat on one or both sides.

The pink, pale green and dark green rocks themselves tell intriguing stories. Many come from the vast Canadian Shield. There are occasional schists, like sparkling chunks of black coal. The limestones come in pale white, grey or a rich dark brown. Among them are limestone fossils of ancient tropical reefs—extinct corals, bryozoans and brachiopods, a type of clam.

The rocks were originally buried in the blanket of glacial till covering the Darby Plains. The waters flowing out of the melting glaciers (the young Darby Creek) ripped open this till layer and out poured this darter rock into the creek bed. This process continues today as the sand, gravel, cobble and boulders weather out of the till and into the creek and its tributaries.

The magic of making life from water and rock has a long complicated history covering immense spans of evolutionary time and favorable ecological conditions.

For our story of Darby Creek, I will simplify. First, we have the substrates—the creek bed, a rich array of sizes and types of rock. I will add two more. Slope or fall, known as gradient, from the headwaters to the mouth at the Scioto River. In a landscape as generally flat as the Darby Plains, there is a surprising

speed of current as the water moves downstream. In northwest Ohio or places in southern Ohio the water moves slowly. The second factor is the size of the stream—it drains a large enough area to have significant volume: with this the size and range of habitats increases. Small headwater streams do not have this amount of habitat.

While Central Ohio was a frozen land of ice, a diverse fauna was residing in the network of streams of the Ohio River in Kentucky, Tennessee and elsewhere. After the glacier melted the Scioto River provided a pipeline for the fishes and other life to move north from the aquatic fauna of the eastern Highlands.

In our streamlined story of Darby Creek we have focused on three ecological factors—rocks (or substrate), the gradient, and the size of the creek. Also, we needed a supply of fishes after the glacial ice melted—the Scioto River provided that.

Many of the streams of the Upper Scioto River watershed share this history and these factors. From historical records, we know much of the aquatic life was shared among the Olentangy, Big Walnut, Blacklick and Big Darby creeks. It is my contention that in Big Darby these raw materials of aquatic biodiversity combined in just the right proportion. As the parade of fishes arrived, each species found its particular habitat in abundance. Nature, the master of ecological design, has in Darby Creek created the finest of ecological wines.

Wildflowers in the watershed

The wildflowers of a spring forest provide great enjoyment and contrast to our dreary winters. Frozen only weeks before, the forest floor comes alive. The sequence of blooms is a pleasure to follow and commands an interest. When the bluebells are out, the gallery forest along the creek becomes blue and is joined by fawn lilies, spring beauties, Dutchman's breeches, sessile trillium, false rue-anemone, toothwort, violets and other wildflowers.

Determined darters

Only a few feet away, in water less than a foot deep, another spring is gushing forth, an aquatic spring. The wildflowers of the river have different names: variegate, rainbow, greenside, banded, tippicanoe, bluebreast and spotted. They are the darters. Small fish, some with blue, orange, red, green, yellow, black. The darters are small perches, adapted to living on the stream bottom, most without the swim bladder that keeps fishes like the sunfishes afloat. They live amongst the rocks, cobble and gravel of the streambed, where the



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Darby Creek's river redhorse prefers fast-flowing waters. It feeds on a wide variety of foods, including mollusks, using specially adapted teeth to crush the shells.

currents are swift. They have a characteristic sequence of spawning when their colors intensify. But they move to particular habitats to lay their eggs. The greenside turns emerald green, moves to the fast riffles with the large cobble covered with green algae. Tiny amber-colored eggs are laid in the algae where they stick like glue. The banded, also green, spawns slightly later in shallower water. The variegate goes to fast chutes, with areas of loose gravel and sand where the female buries her eggs. The Tippicanoe, a tiny 1-1/2 inch fish, move into shallow rapid flowing water amongst cobbles.

Here these golden yellow fish have laid their eggs in the spaces between the cobbles.

Catfish, sunfish, minnows, silversides, topminnows, pikes and gars are among the 100 species of fish that live in Darby Creek. Like the darters, they find their preferred places, feeding on their particular types of prey, breeding and carrying out their life cycles. This fish fauna is a remarkable collection ranging from the smallest darter to 50-pound flathead catfish.

Ohio EPA classifies Big Darby as "outstanding state waters" and "exceptional warm water habitat." In 1984, Darby was adopted as a State Scenic River, and in 1994 much of its course became a National Scenic River.

A unique conservation effort, the Big Darby Accord, has emerged "to preserve, protect, and improve when possible, the Big Darby Creek watershed's unique ecosystem." It is an attempt to bring together many jurisdictions—Columbus suburbs, townships, county—to operate to accomplish this task in western Franklin County. Rarely have political jurisdictions cooperated for such a high-level stream conservation planning. Included in the conservation tool kit will be limits on the addition of certain chemicals to the water, like phosphates and nitrates, more effective stormwater practices, restrictions on development in floodplains/streamside areas, conservation development requiring open space and new park lands. ■



Andrew Boose

Resource management staff Matt Blanton (left) and Mac Albin prepare to sail on Big Darby Creek with their stun equipment to monitor fish diversity and abundance.