

The Kokosing River...

... sustains outstanding wildlife diversity, including fish, mink, beaver, river otter, and bald eagle. Its calming beauty also sustains people. Use this guide to explore the BFEC river trail and learn how you can help the river continue to be a community treasure. Enjoy your visit!

By the Numbers

Watershed size: 485 square miles
River length: 57 miles
Fish species: 78
Threatened or endangered species: 4

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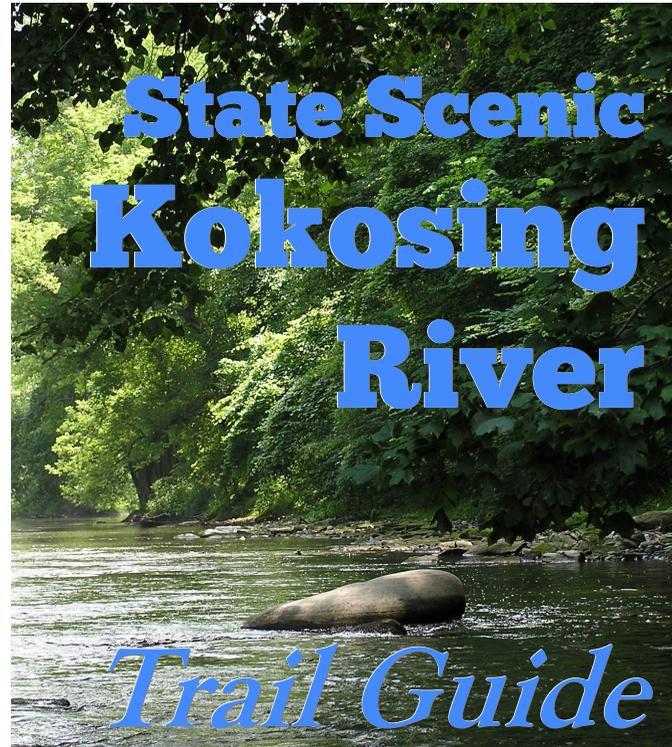
Brown Family Environmental Center
at Kenyon College

The Brown Family Environmental Center is a 480-acre preserve that serves Kenyon College and the surrounding community through conserving natural diversity and engaging people of all ages with nature. Visit our Resource Center (see map) to learn more and find a calendar of public events, or visit us online at ...

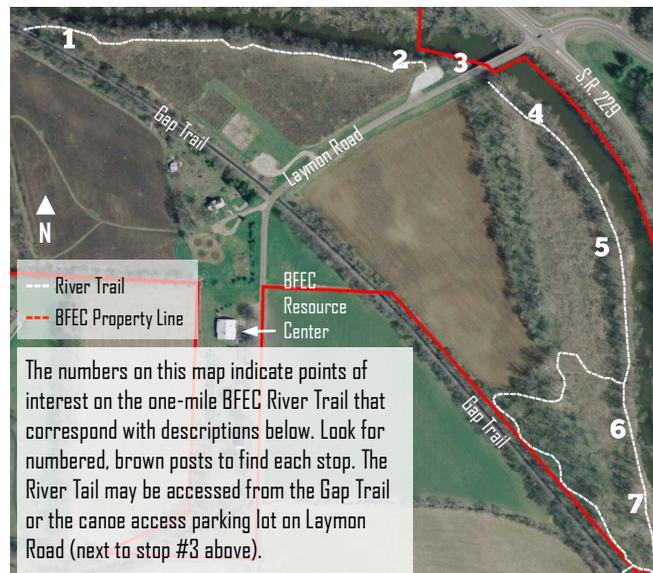
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Welcome to one of Ohio's finest rivers!
Follow the numbered stops on the next page for a self-guided tour of the Brown Family Environmental Center's River Trail.



1) Beech Tree

This tree is distinguished by its smooth grey bark and tendency to retain a few leaves through winter. In the fall, look for its three-part seed pods.



Keep an eye out for the **mink**, a small mammal that lives along waterways. Its long, slender shape makes it a great swimmer and agile predator.



2) Swamp White Oak

The many species of oak that line the river trail all have one thing in common: acorns. Native Americans and pioneers ate these nuts after soaking them to remove bitter tannins.

The swamp white oak thrives in the wet soils of river bottoms. Its leaves have rounded tips, which is typical of trees in the white oak family. Can you also find an oak leaf with pointy tips, common to trees in the red oak family? Many of the oaks and other trees here were planted by the BFEC to expand this river-side forest.



3) Laymon Road River Access

As you follow the foot path under the bridge, can you find tracks of deer, raccoon, or ducks, or a **tiger swallowtail** butterfly drinking from wet soil?



You may also see small fish on the water's edge, many of which eat bugs that live in the river bottom. Biologists measure river health by surveying these creatures, and there's great news for the Kokosing - it's full of species that are only found in clean water!

Can you find bugs in the river? During low water, wade in, pick up a medium-to-large rock, and turn it over to find these species clinging to the bottom. They all indicate a healthy river, and will become adult insects that live on land.

Mayfly Nymph - (top) flattened shape with a three part "tail."

Water Penny - flat and round, it is the larvae of a land-dwelling beetle; eats algae.

Caddisfly Larvae - larvae creates its own tube "house" of tiny rocks (bottom) stuck to a larger rock; filter feeds from inside.



A creature living here that you are *unlikely* to see is the **hellbender** salamander. An endangered species, it is highly sensitive to pollution and found in just a few other streams in Ohio.

One caught recently in the Kokosing was 80-year old! Hellbenders may grow 27 inches long, hiding under boulders by day and dining on crayfish by night. They are harmless to people.

4) Stormwater Outfall

During wet weather, you may be able to hear water falling from a pipe on the opposite river bank. Pipes like these deliver water collected from lawns, ditches, and storm drains to rivers. They unfortunately can also carry pollutants like car fluids, fertilizer, and animal waste. See the reverse side for tips on preventing runoff pollution.



5) Riffle



This fish is not tropical; it's found in this fast-moving section of the river known as a "riffle." During low water, rocks break the water's surface and help keep oxygen levels high. Riffles are favored by bugs (see #3) as well as fish that eat them, like this **rainbow darter**. Darters hunt by

propping themselves on the stream bottom with specialized pectoral fins. The Kokosing is home to many darter species, including two that are threatened or endangered.

6) Wood Duck Nesting Box

The wood duck is a common, ornately patterned duck that prefers wooded rivers, small ponds, and marshes. Comfortable on land, it is uniquely able to fly through forests, perch on branches, and nest in tree cavities up to a mile from water and 60 feet high. To leave the nest, ducklings jump from these heights without apparent harm.



7) Sycamore Tree



Nicknamed the “ghost tree,” sycamore trees are stately bottom-land trees that are set apart by their white upper bark. Their mottled lower bark resembles hunters’ camouflage. Sycamore trees are the largest tree species in Ohio, growing up to 15 feet in diameter and 50 feet around. *Can you find a sycamore leaf* like the one pictured below?

If you look down, you’ll notice that the ground here is sandy. **That’s because you are standing on a floodplain** that is often underwater when the river is high. Water reached the large lower branch of this tree in a 2010 flood (pictured right).



Flooding is a natural part of river ecosystems. Preserving floodplains like this one helps keep the river healthy by giving floodwater room to spread out, slow down, and drop extra sediment on land. Without floodplains, mud remains trapped in the river bed, where it can be considered a pollutant as it smothers fish and bug habitat.

Floodplains also protect people by acting as “safety valves” that relieve pressure from flood-swollen rivers. Floodwater otherwise continues downstream to pose even greater risks of flooding and bank erosion.



One of Ohio’s Finest

The Kokosing River is one of the finest in the state of Ohio. It’s one of a handful of select “State Scenic” rivers designated by the Ohio Department of Natural Resources, sustaining outstanding wildlife and opportunities for fishing, boating, and swimming.

Why is the river in such great shape? Its health is connected to the land around it. Much of the Kokosing’s banks are covered in forests, which shade the water (keeping it cool and high in oxygen), prevent bank erosion, filter pollutants, and provide floodplains (see #7).

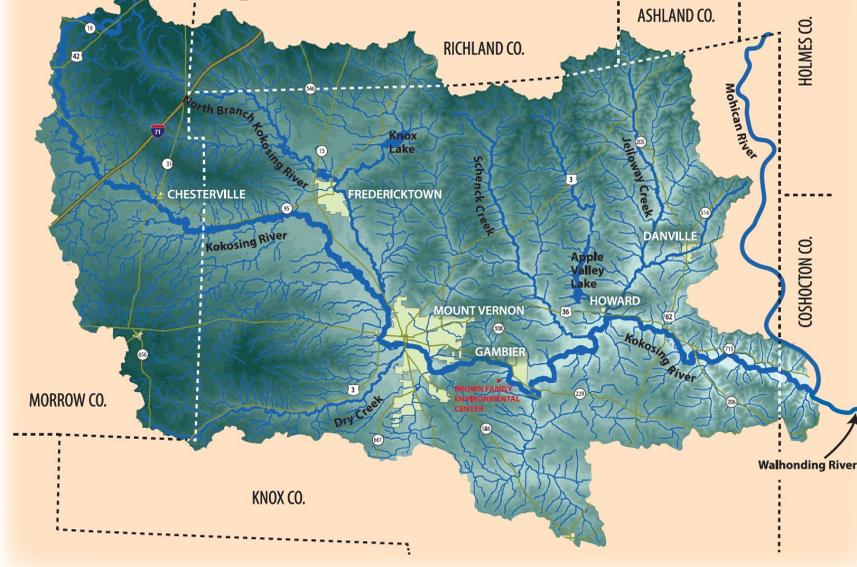
But to fully understand the river, we must look beyond its banks to its **watershed, or the land area that drains to a specific body of water.** When it rains in this watershed, some of the water seeps into the ground, and some flows

to ditches and ever larger streams that feed the river.

The Kokosing River watershed is largely rural, which means that precipitation has a good chance of seeping into the ground. As cities expand, the land becomes less able to absorb precipitation. Rain quickly runs-off of parking lots to streams, where increased volume causes bank erosion and more frequent flooding. Runoff also carries pollutants like animal waste, car fluids, fertilizer, and extra dirt from farm fields or construction sites.



The Kokosing River Watershed



(P²) Tips for preventing pollution

- **Pick up after your pet.** Pet (and livestock) waste can run-off into creeks and threaten public health.
- **Apply lawn and garden chemicals sparingly,** and gently water them into your lawn. Heavy rain can wash excess chemicals into local streams.
- **Dispose of chemicals properly.** Oil, anti-freeze, paints, and other household chemicals should never be dumped into storm drains, which flow directly to rivers. Email recycle@co.knox.oh.us for household hazardous waste collection dates.
- **Have your septic system inspected and pumped** at least every 3-5 years so it operates properly.
- **How low can your phosphorous go?** Purchase household detergents and cleaners that are low in phosphorous to reduce the amount of nutrients that reach waterways.
- **Let it flow naturally.** If you have a creek on your property, leave natural vegetation along its banks, which provides habitat, prevents bank erosion, and filters pollutants.

This type of diffuse, “non-point source” pollution (which doesn’t come from a specific point, like a factory pipe) is the largest threat to rivers nationwide. While the Kokosing River is in good shape, runoff pollution could pose a larger threat as the watershed’s population grows. You can help keep it beautiful by following the tips below.

At the Brown Family Environmental Center, we are proud to steward almost three miles of river bank and several tributary streams within our preserve. We have restored wetlands along the Corridor Trail and continue to restore forests and remove invasive species along stream banks. We invite you to explore the river with us during our next public river program; visit us online for an event calendar.

For assistance, contact the Knox Soil & Water Conservation District at (740) 393-6724.

- **Think low-maintenance.** Choose native landscaping plants for your yard, which are generally drought tolerant and do not require use of chemicals. Visit the BFEC wildlife garden for ideas!
- **Control soil erosion** on your property by planting ground cover and stabilizing erosion-prone areas.
- **Have a poorly drained area in your yard?** Instead of installing a culvert, consider planting a rain garden, which will improve water infiltration and prevent extra water from running off of your property.
- **Soften up!** For your next driveway or patio expansion, consider using pervious material (like gravel or pavers) that will allow water to seep into the ground.
- **Let your voice be heard.** Support efforts to protect streams and wetlands and natural areas around them. Talk to local officials about how your community can use best practices to prevent stream pollution.