

Brown Family Environmental Center

at Kenyon College

Field Notes



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October, November, December



River of the Little Owls

The State Scenic Kokosing River is known for its great natural diversity, but it also sustains people with recreation and relaxation. How do we keep it that way?

The second of a two-part series, by Heather Doherty

The Kokosing River runs through the heart of our community. In the last issue of *Field Notes*, we examined how it shaped our past, from the river's Native American origins ("Kokosing" translates loosely to "River of the Little Owls"), to the founding of Mount Vernon in 1805 and Kenyon College in 1824.

Like so many Midwestern regions, a river was central to the early settlement and economy of Knox County, but our relationship with it has evolved. Though it is no longer used for basic elements of survival and commerce, it remains one of our greatest natural assets. It is a source of local pride and increasingly attracts visitors with its clear waters.

This second article of our Kokosing River series explores the gifts that the river offers today and challenges we face in continuing to care for it.

One of Ohio's Finest

Our river is a special one. Under the auspices of Ray Heithuas, Professor Emeritus of the Kenyon Biology Department, and a committee of dedicated residents and officials, the Kokosing River joined the ranks of a select group of "State Scenic" rivers in 1998. Of the hundreds of rivers in Ohio, the Ohio Department of Natural Resources has recognized just 14 with this status.

Seventy-eight species of fish call the

Kokosing River home, and in case you aren't aware, that's *a lot*. The presence of diverse wildlife played a role in the Kokosing's Scenic River designation, and is a measurement used in general by biologists to determine a river's health.

While they could simply analyze water samples for pollutants, studying the presence of living creatures and their relative pollution tolerance is a much better barometer. (An oil spill may not be evident in a water sample six months later, but the loss of biota will tell the story for years.) Below are a few highlights of wildlife found in the Kokosing.

Bluebreast Darter – Darters are intriguing, small fish that live in riffles, where rocks break the surface of swiftly flowing water and create high oxygen levels. They are equipped with specialized pectoral fins to prop themselves on the river bottom, holding their ground against the current while waiting for tasty bugs to emerge from the stream bed.

Many darters are sensitive to pollution, and if their pebbly, rocky stream bottom is covered with silt, it's game over. Soil can be washed off of farm fields or construction sites by the tons and devastate rivers when riffles are buried.

In a Kokosing River study conducted by the Ohio EPA in 2007, biologists found an abundance of the state threatened bluebreast darter. This species was once quite rare in Ohio, but its population has slowly recovered as the quality of Ohio's rivers has improved over the last few decades.

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Bugs - Riffles are also great places to find darters' favorite food - aquatic bugs and insects. Pick up a rock in a riffle, turn it over, and you'll be surprised at the life clinging to its bottom. You'll find mayfly and beetle larvae, with flattened bodies to reduce the risk of washing away, and tiny rock tube houses built by cadidshly larvae that filter feed from within its safety.

These larvae will emerge from the water to become terrestrial, flying insects. Fish eat them, fly-fishermen emulate them, and biologists survey them (in addition to fish) as markers of stream health.

Hellbender - the physical appearance of this creature may fit its ominous name, but its habits are pretty tame. At up to twenty-four inches long, the hellbender is the largest salamander in North America and a state endangered species. It's found in just a few rivers in Ohio, and the Kokosing is one of them, though its numbers are very small.

At one time, anglers who accidentally caught them would throw them on the river bank, some fearing (erroneously) that they ate young sport fish. Just a few have been captured this way in recent years, though they were happily released.

Hellbenders are bottom-feeding omnivores that prefer crayfish. They are nocturnal, and require habitat with large boulders or slabs of bedrock to hide under during the day. Hiding is so important that they possess photo-receptive cells on their tails, which can detect daylight and let the creatures know if they are adequately tucked under a rock.

Mountain Brook Lamprey - This fish is an unusual, state endangered species and a recent discovery in the Kokosing River. It's found in just one other river drainage in Ohio, the Mahoning. While some species are parasitic (and attach themselves to other fish), this one is not.

Lampreys have long, eel-like bodies and a jawless mouth. As young, they

bury into soft river sediment and feed on organic particles and microscopic organisms. Several years later, the adults emerge in the fall and seek small, fast-flowing streams. They do not eat, and die soon after spawning in the spring at the head of gravel riffles. Many individuals gather at spawning beds, offering rare opportunities to be seen by people.

What Makes It Special

Why is the Kokosing the home to this cadre of sensitive species? 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 form the base of the food web. Knox County is lucky to have many organizations committed to conserving stream-side forests, including the BFEC, Kenyon's Philander Chase Corporation, Knox Soil & Water Conservation District, Knox County Park District, ODNR Scenic Rivers, and Owl Creek Conservancy.

Natural areas along rivers also provide floodplains. Flooding is a natural part of river ecosystems. Preserving floodplains helps keep the river healthy by giving floodwater room to

spread out, slow down, and drop extra sediment on land. Without them, extra mud remains trapped in the river bed, where it is considered a pollutant as it smothers fish and bug habitat. Floodplains also keep people safe by releasing flood pressure, reducing risks to downstream property and infrastructure.

Where the Water Sheds

While forested banks are very important, to fully understand the river, we must look beyond its banks to its watershed. A watershed, or drainage basin, is the land area that drains to a specific body of water. When it rains in the Kokosing River watershed, water flowing off of the land will make its way downhill to ditches and ever larger streams that feed this river.

The Kokosing River watershed encompasses 485 square miles, including about 75% of Knox County, plus smaller sections of Morrow, Richland and Ashland County. It is largely rural, which means that precipitation is likely to seep into the ground.

When cities grow, land becomes less able to absorb precipitation as "impervious" surfaces like rooftops and pavement expand. Runoff hits

Continued on page 4

Pictured clockwise from top left: mountain brook lamprey, bluebreast darter, hellbender salamander, water penny (a beetle larvae) and mayfly nymph. All are found in the Kokosing, and all but the insects are threatened or endangered in Ohio.



Creature Feature: The History of the White-tailed Deer in Ohio

....or, how Bambi wound up through my windshield with a belly full of mom's hostas.

by David Heithaus

Of all the creatures whose large four-chambered hearts pump warm blood in the Buckeye State, perhaps none is so often seen, consumed, reviled or fawned upon as the white-tailed deer (*Odocoileus virginianus*).

It is the state's official mammal (as a point of interest, tomato juice is our official state beverage) and has been featured in ceremony, stew pot and window decal since human kind first arrived here.

With the exception of a brief hiatus due to extirpation in the very early 1900's (Europeans *just* missed their deadline of 100 years to kill everything in the state), white-tailed deer have existed in Ohio since the end of the last ice age. As the final glaciers receded, deer spread across the state and provided an invaluable resource for Native American groups establishing themselves in the region.

Perhaps no other animal featured so prominently in the lives of Ohio's earliest residents. An essential food source, deer also provided hides and sinew for clothing and shelter. Antler and bone were commonly used in tools. People lived with deer in their bellies and deer on their backs. Beyond that odd statement, deer featured prominently in cultural expression. A number of artifacts incorporate bone or antler and carvings of shaman characters often feature antler headpieces.

For thousands of years, white-tailed deer thrived in Ohio- feasting on the state's woodland bounty. They were (mostly) kept in balanced natural harmony by early hunters, wolves and cougars. It was a time of awesome unknown since the really, really big animals stomped North American plains and mega-forests. Awesome can't exist without awful though and as "progress" arrived from the west, concepts like sustainable harvest and land/wildlife management lagged a bit behind.

As trappers and adventurers gave way to broader European expansion, dark clouds began to form over the golden age of the whitetail. Eventually, giddy excitement for all of the free land and meat led to an orgy of forest clearing and critter skinning that finally ended with a limp whimper just past the dawn of the 20th century. The party goers looked around at a state bereft of wolves, cougars, people who weren't white, trees, the Lorax and, believe it or not, deer. Let that sink in: you could not see a deer. In Ohio. You could see a good long way to the horizon at least.

After a couple of decades of kicking small stones and grumbling about missing all that free meat (no one really missed the other stuff), Ohioans decided that it was time something was done to bring back the good old days. In true Rooseveltian fashion, Ohio conservationists tight-



ened their belts and said "By golly, we can't shoot and skin a thing that ain't here". And right they were.

Deer were reintroduced from neighboring states beginning in the 1920's. These efforts, together with natural migration, saw herds in 28 counties by 1937 and in all 88 counties by 1956. The first modern regulated hunting season took place in 1943. 164 bucks were killed. Regulated hunting seasons have continued to this day with a marked and steady increase in the size of the state's herd. Thanks to the efforts of hunters and wildlife managers, Ohio is again considered one of the best of the fifty states for sportsmen and wildlife watchers alike; a statistic proportional to the number of managed landscape plantings state-wide.

Meet your deer neighbors: White tailed deer are active in Ohio year round. Traditionally they are crepuscular (word of the day #1), meaning they focus activity around dawn and dusk. Anyone who has spent 24 hours in Knox County will tell you this is a guideline rather than a rule. It is not unlikely to spot a deer at any time of day or night.

October marks the beginning of annual courtship or "rutting" behavior.

streams much more quickly and in much higher volumes, which destroys habitat with more frequent flooding and erosion. Runoff also carries pollutants like animal waste, car fluids, fertilizer, and extra dirt from farm fields or construction sites.

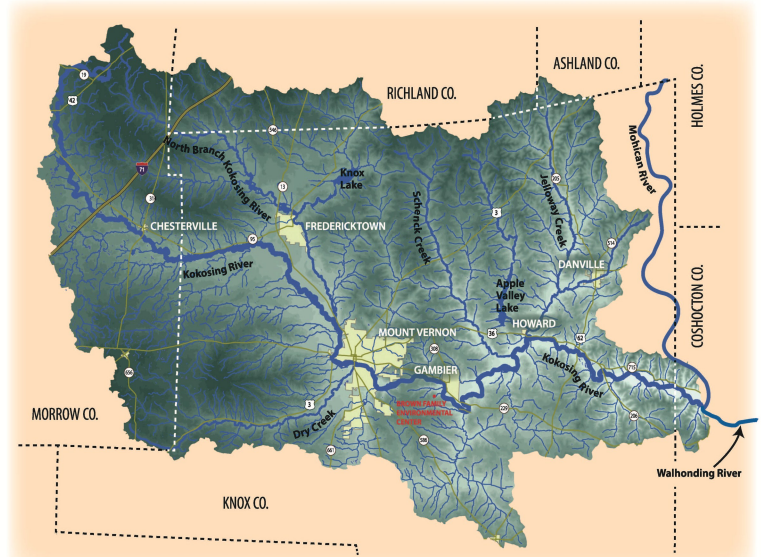
Prior to the 1970's the primary river pollution concern was factory or wastewater treatment effluent released into rivers at the end of a pipe, known as "point-source" pollution. Many of these sources have improved dramatically since then, now making the diffuse runoff pollution described above, dubbed "non-point source" pollution, the largest threat to rivers nationwide.

In addition to urban runoff, nonpoint source pollution can also originate from farms. The 2007 Ohio EPA river study found spots along the Kokosing and tributary streams where runoff from agriculture and livestock with direct access to creeks had negatively impacted the river.

Despite these challenges, the Kokosing River is still in good shape, though runoff pollution could pose a larger threat as the watershed's population grows. Municipalities can respond, as has the City of Mt. Vernon, by using new methods to reduce runoff. For instance, parking lot runoff can be directed towards "bioswales" that absorb water and

pollutants, rather than storm drains that direct runoff into rivers (see www.mountvernonohio.org/departments/engineering). Such practices are also popping up on the Kenyon campus.

Every resident of the watershed has a role to play in keep the river beautiful for generations to come - see tips on how you can help on page 7.



The Kokosing River watershed, or drainage basin, covers 485 square miles, shaded in a grey above. Do YOU live in the Kokosing River watershed?



Fun Facts: White-tailed Deer

Deer dress for the seasons too! During spring and summer, deer carry a lighter coat that ranges from tan to almost red. During winter months, they switch gears to something more practical: A coat of heavy blue-to-greyish tan guard hairs with a thick undercoat. If you see a deer with snow on its back you can tell how well that insulation is working!

Deer and your car: Thanks to the good people at State Farm, you can sleep better knowing that your chance of hitting a deer with your car is better this year than last! That's right: Ohio drivers now feature a 1 in 127 shot at striking their state animal between now and next August. That's Up 6% from 2013 and breaks a steady downward trend! The herd may be shrinking but our aim is improving...

Ohio's deer herd: Estimated at between 700,000 and 750,000. Down from 2013 with a harsh winter most often cited as the cause. The population has been slowly declining since 2008 but is still considered healthy. It peaked in 2006 around 800,000. Q: Now wait a minute... how do they know that? A: The Ohio Department of Natural Resources counts every single deer in the state. Not really. A combination of deer-vehicle accident statistics, hunting data and aerial forward-looking infrared surveys allows experts to create a "snapshot" of the herd.

...*"Deer"* continued from page 3

During this time, deer can be especially active and unpredictable. Not unlike senior week, bucks chase does around for a few days, mate, linger long enough to make sure no one else takes their prize and then go their merry way. Fawns are generally born between May and July and are weaned and ready to go after about three months. It is not uncommon for does to give birth to twins or even triplets.

White tailed deer are ruminants (word of the day #2): their stomachs feature four specialized chambers capable of digesting different types of food or storing food for later digestion. Diets are diverse and change throughout the year. A dynamic set of bacteria shift with the seasons and allow deer to digest different food items as they are available. Plants, shoots, grasses, clover, fruits, nuts, mushrooms and even poison ivy are on the menu. Oh- so is most of your garden and landscaping.



The great dragonfly migration

by Claire Brautigam '15

When autumn arrives in Ohio, no one is surprised to see huge flocks of birds beginning their southward trek. Birds, however, aren't the only ones who seek warmer climes during the winter months; many species of dragonflies also migrate each year. In fact, as many as 50 of the estimated 5,200 dragonfly species in the world migrate, following topographical features such as river and coastlines. Experts know little about dragonfly migration, but they are beginning to monitor patterns, noting that cold fronts usually trigger the migration process.

One species of migrating dragonfly, found right here at the BFEC, is the Common Green Darner. While not all Green Darners migrate annually, those that do make their journey south to Texas or Mexico beginning in late July to early October, using stopover sights about every three days to rest and eat for a day or two before moving on. Look for "flocks" of dragonflies flying and feeding (on other, smaller insects) over fields. The dragonflies that return north in the spring are not the ones that migrated in the fall; it's the next generation that makes the return flight.



A male green darner holds a female while she deposits eggs in a pond. Green darners are a common site at the BFEC ponds.

Sad that blooms are over? Look again.



A milbert's tortoiseshell butterfly (which flies during cooler weather than most butterflies) visits a witch hazel bloom.

As fall progresses with shorter days and the number of blooming plants dwindles, a surprise awaits on the edge of forests. It is a small multi-stemmed tree, or large shrub, depending on your point of view. Once bare of its beautiful, yellow fall leaves, its small yellow flowers become even more noticeable. The petals look like delicate ribbons, but are actually tough as nails when it comes to the cold. Last year, they survived into December.

The blooms of common witch hazel (*Hamamelis virginiana*) are a feast for the eyes after brilliant fall leaf color has passed and a long winter yawns in front of you. Look for it growing next to the front doors of the BFEC's Resource Center, and also along the Kokosing Gap Trail about one mile west of the BFEC (towards Mt. Vernon).

Its uses go beyond aesthetic - Native Americans used witch hazel extract to treat swelling, inflammation, and tumors, and early settlers followed suite. It is still used widely in the United States as an astringent, and is being investigated for anti-tumor properties.

Have you decided that you need this plant in your home garden yet? If so, look for it at well-stocked nurseries (such as Oakland

Nursery in Columbus). Nurseries also carry Asian varieties of witch hazel that bloom in very early spring, so if you want the native Ohio species, look for *Hamamelis virginiana*. This shrub will grow up to 15 feet tall, and prefers sun to partial-shade and well-drained soil with medium moisture.

Calendar of Events

All events are free, open to the public, and start from the BFEC Resource Center unless stated otherwise.
9781 Laymon Road, Gambier Ohio | 740-427-5050 | dohertyh@kenyon.edu | bfec.kenyon.edu

Blazing Prairie - Saturday, October 4th, 1pm

Though not many remain, prairies hold a definitive chapter in Ohio's history. Join us inside for a short presentation and video of our annual prairie burn, learn about new BFEC prairie projects, and enjoy a short walk to admire our towering prairie grasses at their autumnal finest.

Fall Sky Astronomy - Friday, October 17th, 8-9pm

Bring a blanket or chair and admire the season's constellations and mythology with Professor of Humanities Tim Shutt. Call the BFEC in the event of inclement weather for event status.

Harvest Festival - Saturday, October 18th, 2-5pm

Celebrate the season with this FREE family event. Activities include wagon rides, live music, kids harvest races, farm animals and produce, bonfire, cider press, pumpkin decorating with OSU Extension Master Gardeners, and the Knox County Nature Photography Contest show.



some kids just aren't cute.

Son of Mudman

Saturday & Sunday, October 25-26.

Ohio's most unusual trail racing series will challenge you with three races over two days: a nighttime time trial, a 5k steeplechase, and a 10k cross-country run. And if the mud doesn't get you, the hills will! Do just one race or all of them; entrants choosing all three will have the option to add a hill climb bonus run to earn time off of their series total and will receive a special prize. T-shirts, glow sticks, and plenty of food for all. Visit www.premierraces.com/ for information and registration.

Knox County Nature Photography Contest



All community members are invited to enter this photo contest in celebration of our scenic Knox County. Prizes awarded in children's (ages 15 and below), adult, and student divisions. The submission fee is \$5 per entrant, and the deadline is October 13th. A contest show will take place during our October 18th Harvest Festival. Contest rules at bfec.kenyon.edu or 427-5050. Pictured above: the winning 2013 entry, by Heather Laher.

Bird In the Hand - Saturday, November 1st, 1pm

Join Kenyon Professor of Biology Bob Mauck to see song birds up close as he demonstrates catching them in mist nets next to our feeders. This technique is an important one for researchers like Mauck studying birds and conducting bird banding programs.

Clay Print Nature Art Saturday, December 6th, 1pm

People of all ages are invited to try their hand at making simple clay prints with air dry clay. Use a collection of BFEC stamps - leaves, animal tracks, insects - to add to your nature collection at home, make holiday gifts, or create ornaments. Or bring your own imprinting objects and creativity! Pieces may be painted after they are dried at home.

Christmas Bird Count - Sunday, December 21st

For over 100 years the Audubon Society has organized the Christmas Bird Count to track long term trends in bird populations across the Americas with the help of volunteers. Help the BFEC monitor birds right here in Knox County, covering Mt. Vernon, Gambier, Apple Valley, and Fredericktown. Volunteers are needed to count birds at home feeders, or in the field along roads and trails. Lunch provided for all participants at noon. Please call 427-5050 to register.



Thank You to...

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Our Volunteers

In the office, classroom, gardens and on the trails: Nick Hamburger, Terri Heironimus, Toby SantaMaria, and Shirley Hughes.

Bluebird Monitors: James Bobick, Sarah Goslee-Reed, Keith Kitchen, Brian Miller, & Keith Robinson

Nature's Keepers Camp Counselors: Ethan Buehrer, Gabby Carver, Alex Foster, Colter Hoar, Casey Losego, Jeni Rogan, and Zak Welker

Help the Kokosing River at Home

with these pollution-prevention tips:

- **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.** Never dump oil, antifreeze, paints, or other household chemicals into storm drains, which flow directly to rivers. Email recycle@co.knox.oh.us for 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 detergents 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. For assistance, contact the Knox Soil & Water Conservation District at (740) 393-6724.
- **Think low-maintenance.** Chose native landscaping plants for your yard, which are generally drought tolerant and do not require use of chemicals. Visit the BFEC 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?** Consider planting a rain garden, which improves water infiltration and prevents runoff.
- **Soften up!** For a 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.

Are YOU
a member?

Now is the time to join!

There are many reasons to become a member of the BFEC, including the satisfaction of knowing you're a part of critical education and conservation programs. Receive preferred access to popular workshops, a hard copy of our newsletters, and 10% discount on bird seed. Thank you for your support!

Membership level: Student ___ \$20 Individual ___ \$35 Name _____

Family ___ \$50 Friend ___ \$100 Patron ___ \$250 Address _____

Benefactor ___ \$1000 + City _____

Amount enclosed: _____ State, Zip Code _____

My check, payable to Kenyon College, is enclosed Telephone _____

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Mail to: BFEC, P.O. Box 508, Gambier, Ohio 43022

Your donation is tax deductible as allowed by law. The Brown Family Environmental Center at Kenyon College is a 501c(3) non-profit organization.

Brown Family Environmental Center at Kenyon College

9781 Laymon Road, Gambier, Ohio 43022 ~ (740) 427-5050 ~ <http://bfec.kenyon.edu>



Our Mission

The BFEC at Kenyon College exists to engage Central Ohioans of all ages with nature, and to support the goals of Kenyon College by conserving the natural diversity of the Kokosing River valley and providing opportunities for education and research.

Director of Facilities

David Heithaus

Director of Programming

Heather Doherty

Facility & Program Assistant

Jill Kerkhoff

Upcoming Events

Saturday	Oct. 4	Blazing Prairie
Saturday	Oct. 17	Fall Sky Astronomy
Saturday	Oct. 18	Harvest Festival
Sat.-Sun.	Oct. 25-26	Son of Mudman
Saturday	Nov. 1	Bird in the Hand
Saturday	Dec. 6	Clay Print Nature Art
Sunday	Dec. 21	Christmas Bird Count

Events details inside and at bfec.kenyon.edu

Knox County Nature Photography Contest

Deadline: Monday, October 13th

- * Prizes awarded * Novices welcomed
- * Adult & children's divisions
- * Contest rules at

bfec.kenyon.edu



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P.O. Box 508, Gambier, Ohio 43022



