



Even as ice stubbornly clings to pond edges in late winter, optimists waiting for spring bend their ears hoping to hear frogs.

Incredulous but delighted, at the BFEC we sometimes hear spring peepers in late February. As the weather warms, these otherwise tiny, reclusive frogs gather by the hundreds to sing an undeniable pronouncement of spring.

True to their name, their call is a high-pitched "peep," created by males as they push air out of throat sacs. The faster and louder a male sings, the more likely he is to attract a mate.

Depending on the size of the congregation, spring peepers can be heard up to two miles away. Amazingly, the cacophony emanates from a frog that is "small enough to sit on a dime."¹

HEARD, NOT SEEN

Spring peepers are rarely seen. Even while loudly declaring themselves in the spring, it takes hard work to find one, often requiring a wet, night-time adventure with a flashlight and patience. Their tan color, with a darker x-shaped marking across the back, is perfect camouflage.

Some of our most familiar frogs, such as bullfrogs, have a habit of visibly basking along pond edges most of the year, and have helped create the misconception that other frog species do the same.

in low vegetation. They emerge at night to hunt spiders, beetles, and flies, though they are not picky; whichever small insects cross their paths are likely dinner.

FROZEN ALIVE

Spring peepers hibernate in shallow burrows among the fallen leaves of the forest floor. While this cover does provide some protection, it does not exactly insulate them from freezing temperatures. How do they manage?

Incredibly, they can create their own antifreeze, as can four other North American frogs species (including the wood frog and grey tree frog).

Their antifreeze takes the form of glucose, which they can concentrate in body fluids from 10-100 times

above normal levels.² (For the folks out there who love big words, the process is called "hepatic glycolysis").

Sugars are pumped into cells and organs, preventing water molecules from binding to each other to form destructive ice crystals. Spaces outside of cells and organs, or up to 50% of the frogs' body, do freeze, however, and can remain this way for up to three days.³



Spring Peepers are the first frogs to begin calling in early spring, sometimes with astonishing volume. Photo courtesy of Ray Heithaus.

This is not true for many smaller frogs such as spring peepers, which return to water only in the spring to breed. Though they may not travel more than 1,000 feet from breeding sites, they spend the rest of the year in marshy woodlands hiding under fallen leaves and logs.

As a kind of tree frog, spring peepers have large toe pads for climbing, but they usually remain on the ground or

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BFEC Celebrates Earth Day with Festival & Marathon

Sunday, April 17th

Kenyon Athletic Center, 221 Duff St., Gambier

At the BFEC, we're serious about celebrating Earth Day. Whether you're looking for fun and relaxation or a serious challenge, we've got you covered.

We're again working with Knox Community Hospital, Knox County Health Department, and Knox County Park District to host the 5th annual Earth Day Festival on April 17 from 11 am to 3 pm.

Under the banner "Healthy People, Healthy World," we strive to create a fun and entertaining family event

where people can connect with environmental and health-related resources, and learn how these two topics are connected.

One example is gardening and eating local foods, the focus of this year's event. Gardening is a great way to stay active, eating fresh foods is very healthy, and growing it yourself or buying it locally helps keep our air clean and supports the local economy. Participants can learn about all of these topics at the event.

The Earth Day Challenge Marathon & 1/2 Marathon, also in its fifth year, is expected to draw 450 runners

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Spring peepers remaining frozen for longer periods are less likely to survive, and almost none do after remaining frozen for a month.

While in this semi-frozen state, their metabolism essentially shuts down, with no heartbeat, breathing, or blood flow. Within a day, however, they thaw out and resume normal activity.

only during wet spring months, and lack many of the predators found in larger bodies of water.

Vernal wetlands do, however, present the challenge of drying up quickly in drier seasons. Spring peeper tadpoles usually take 90 or so days to mature into adults, but have been reported to do so as quickly as 55 days in dry conditions.

The feats of the spring peeper seem especially amazing when thinking of them in human terms. Humans hardly have the ability to speed up gestation to 5 months instead of 9, or withstand a 100-fold increase in blood sugar. (Diabetics know that we would perish long before then.)

There is one similarity: anyone who has been to a night club knows that a hundred men in one spot trying to attract women is *indeed* noisy, though we hope that the songs of spring peepers are slightly more charming.

Hear them yourselves this spring at the BFEC ponds, located next to the farm house, or along our wetlands run trail.

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SPRING PEEPERS AT A GLANCE

Scientific Name *Pseudacris crucifer*, meaning "false locust", for its insect-like call, and "cross", for the distinctive X-shaped marking on its back.

Size Adults are a little over one inch long, small enough to fit on a dime.

Call True to their name, their call is a high pitched "peep," made from March through June. When many males congregate at one site, they can be heard for up to two miles.

Habitat Small ponds with shallow edges or seasonal wetlands, both of which lack fish, are used for breeding. In other seasons, peepers live in woodlands.

Amazing Fact Peepers pump a sugary antifreeze into organs and can allow 50% of their bodies to freeze for several days.

SPRING FEVER

Once peepers thaw out, it's time to navigate to water! But not just any body of water will do. They prefer ponds with no fish or very shallow edges, since spring peepers (and their progeny) make easy prey. Brush or shrubs at the water's edge are highly sought-after sites, where males establish territories.

In addition to ponds, spring peepers and many other amphibians make use of vernal, or seasonal, wetlands for breeding. These wetlands contain standing water

On the Ground

by Facility Manager David Heithaus

If March rains are any indication of the April's 'showers' to come, we'll be pretty well buried in flowers by May.

Yes, old man winter is loosening his particularly icy grasp and crying his eyes out the entire time. Regardless of how much rain it has involved, things *have* finally thawed and it's ground-breaking time at the BFEC.

Last quarter, in a haze of winter and Dayquil, I promised great things from our collective drafting table. Now, sober and terrified, I realize that those proclamations must be fulfilled in a manner I was shocked to discover was described as "concussive". By me.

...I think we can manage that by the end of the growing season. Let's start in the mud:

GOT BRIDGES?

Thanks to some careful budgeting and an extremely generous member-base, we'll be planting more than trees this season. As anyone who frequents the trails can attest, there are two reasonable statements that could be made in the spring: 1: *The trails are muddy/underwater* and 2: *The trails need more and better bridges and walkways- especially that one on the Bishop's backbone. I mean... a plank? Really? I have to walk a plank?*

Not anymore! Even before floodwaters carried away most of the non-plank portion of this bridge, plans were under way to replace it with something that will maintain a nominal level of humility in the face of natural power while withstanding its tantrums with a touch more pluck. Less crumbling and all.

Broad creek bottoms and river valleys tell a story of water's whimsical, meandering nature and the necessity of planning ahead if you want anything to remain useful there for very

long. So that's what we're attempting this spring. Look for not one, not two, but three new bridges on our northern trail system. And because we understand that spring rains bring water to more than just the creeks, we're also moving ahead on a series of elevated walkways on the New Gambier Loop and Wetland Run. For anyone who's had to leave shoes outside after a March or April hike, we hope this will be welcome news.



The Kokosing River flooded in February to its highest level in 12 years, covering nearly 100 acres of BFEC floodplain.

Our final trail upgrade will also involve some construction. As the development of Given's Grove proceeds apace, we look forward to extending elevated walkways from the Wetland Run to the higher elevation portions of the Given's Grove Trail.

We're racing summer to see who can get dry feet to the base of the big white oak first. Whoever wins, visitors to the grove will have a much easier time getting around to check out how the swamp white oaks, spicebush, dogwoods and cypress are coming along. As you make your way

around the grove, don't forget to keep your eyes peeled for fox, deer and our resident red-tailed hawk.

FLOODPLAINS: SERVICE FREE OF CHARGE

Considering the amount of water working its way down the Kokosing this season, it seemed appropriate to touch on a level of conservation that we're quite fond of here in the valley: floodplain conservation.

Floods are a normal part of any watershed's annual cycle. They are inevitable and, through geologic time, have established a way to cooperate with the landscape. Free from meddling, naturally meandering rivers are generally surrounded by broad floodplains and the deep-rooted wetland plants that call them home. Very few vacation homes, no pavement, levies, dikes or channels, and almost no subdivisions to speak of.

Most years, spring rains melt snow, water flows down tributaries to the river, the river rises well above its normal level of flow and flood waters spread out over the floodplain. Slowly, it seeps back down through roots and wetland soil and back into the aquifer, leaving nutrients behind.

When major alterations are made to a floodplain, this well-established balance can be upset and the movement and absorption of water drastically affected. Unfortunately for us, upset or out-of-context natural phenomenon have a bad habit of becoming natural 'disasters.' More than one scientist has asserted 'unnatural disasters' might be a better label for such events in the wake of flood-related annoyance amongst humans who have built in floodplains.

When rivers and streams are channelized and wetlands are drained for development, those shiny new structures can make it easy to forget that flood waters will still come at some

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point, welcome or not. Sometimes adequate consideration is not given to where the waters of a large flood event will end up until it's flowing through someone's front door.

No longer able to fan out and slowly seep back to where it belongs, water becomes trapped on the surface or forced down narrow paths that it quickly overcomes. Additionally, the accumulated residue of humanity's watershed shenanigans, swept up by floodwaters, flows right along with them. Without wetland plants to act as filters, water that seeps back to the aquifer can take whatever it carried along back down towards your drinking water. I'm all about free

upgrades but... maybe not to my drinking water.

Obviously, the issue of humans interacting with their floodplain landscape is not a simple one and some uses are more responsible than others. Indeed, responsible agricultural use of natural floodplain allowed for some of history's greatest civilizations. The point is one of consideration and gravity. Literally. Things flow downhill.

As a community, it is important that we consider how and when that's likely to happen and whether any given action is worth the long term cost to ourselves, our neighbors and our children. Sometimes they will

be, sometimes... well, compromise is not always defeat. Strategy before tactics. I think most people can agree that dry feet and clean water are good parts of a successful life strategy.

One strategy that we've employed at the BFEC is to set aside floodplain to do its job, keeping the river healthy and people out of harms way. Though we were likely in the minority, we were excited to see nearly 100 acres of the preserve under water during the February floods.

Well, off the quarterly soap box and back to the ground. Hope to see everyone enjoying life at the BFEC this spring!



Adopt-a-Bench! Check the box below to have a bench placed at a BFEC trail location of your choice with a plaque honoring your special contribution.

Support the BFEC

Membership is based on the calendar year - now is the time to become a member or renew for 2011!

There are many reasons to give, including the satisfaction of knowing you're a part of critical environmental education and conservation programs. Receive preferred access to popular workshops, a hard copy of our newsletters, and 10% discount on bird seed. Please use the form below or payment envelope to send your contribution today, and thanks!

Membership level: Student ___ \$20 Individual ___ \$35
Family ___ \$50 Friend ___ \$100 Patron ___ \$250
Benefactor ___ \$1000 +

Amount enclosed: _____

My check, payable to Kenyon College, is enclosed

Please bill my ___ Visa or ___ MasterCard

Card number _____ Exp. date _____

Yes! I've enclosed a special gift of \$250 to have a bench placed along a BFEC trail of my choice, along with a plaque recognizing my contribution.

Name _____

Address _____

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State, zip code _____

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Email _____

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

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



NEWS from the BROWN

BELLWETHERS OF SPRING & ENVIRONMENTAL HEALTH



Of the many fascinating creatures at the BFEC, salamanders are among the most beautiful and elusive. Like all amphibians, salamanders tend to be shy; unlike their cousins the frogs and toads, salamanders are both shy *and* mute, preferring to spend most of their time in damp, contemplative silence. As many as eleven species of salamanders might be spotted on a good day (or night) in Knox County and with our diverse array of habitats, most of those could occur at the center. They range from the giant, aquatic and nocturnal hellbender to the tiny red-backs and colorful spotted (pictured) and northern red salamanders.

Most species found in our area hail from either the mole or lungless salamander families. The former have lungs to absorb oxygen, while the latter take oxygen in directly through their skin. Both agree that drinking is a bit of an effort and prefer to absorb liquid refreshment through the skin. As this trait makes them susceptible to water-borne toxins, the presence of salamanders in an area is considered a good sign of a clean aquatic environment. Look for salamanders congregating at seasonal wooded wetlands to breed in the spring.

12 YEARS & 500 BLUEBIRDS STRONG

The room was packed for the BFEC's annual bluebird workshop on March 6th. Among the 45 people attending were many families, which collectively built 25 bluebird nesting boxes. This year, volunteer Mel Bolt, of Wooster, Ohio, modified his traditional nesting box design to allow for easier assembly by children. The BFEC has been utilizing Mr. Bolt's traditionally designed nesting box on our bluebird trail for many years, given his thoughtful design of every detail. This includes ease of monitoring, which is important for the success of the nest and for human enjoyment. Our workshop would not be possible without the generosity of Mr. Bolt and co-conspirator Dale Glass, who both donating enormous amounts of time and skill.

Nesting boxes should be placed in open areas, which bluebirds need in order to hunt for insects on the ground. Can't put up a box of your own but still want to help? **Volunteers are needed to help monitor the 38 nesting boxes along our bluebird trail.** Over the last 12 years, these boxes have fledged over 500 bluebirds. Call 740-427-5051 to help continue the tradition.



OTTER POWER!



If there's anything to reincarnation and I *can't* come back as something care-free like a tapeworm, the fun-loving spirit and amphibious antics of the river otter seem appealing as a backup. Simply put: otters have more fun. The River Otter is one of six members of the carnivorous weasel (Mustelidae... 'weasel', cleverly, in Latin) family found in central Ohio. Its local relatives include the weasel, mink, and badger.

By the beginning of the 20th century, habitat loss and over-exploitation had all but eliminated otters from Ohio's rivers. Thanks in large part to the Ohio Division of Wildlife, today otters are back and thriving in many of Ohio's watersheds, including the Kokosing. These playful creatures live in

family groups of four to six and spend the majority of their time frolicking or feasting on a variety of prey including fish, snakes, frogs, muskrats and even the occasional duck. Their torpedo-like shape, and broad, webbed feet help make them agile both in and out of the water. Oil-secreting glands maintain healthy skin and fur and ensure a sleek appearance under all conditions.

Calendar of Events

All events are free, open to the public, and start from the BFEC Resource Center at 9781 Laymon Road unless stated otherwise. For additional information, contact us at 740-427-5050, dohertyh@kenyon.edu, or visit <http://bfec.kenyon.edu>

Birding by Ear – Thursday, April 7, 11:10am, Tomsich Hall 101

Admiring birds can be harder than you'd think when they elusively hide in tree branches. But they aren't very good at being quiet, especially in the spring as they migrate, seek mates and establish new territories. Professor of Biology Chris Gillen will present a colorful slideshow on Ohio birds and their songs, and then lead a short bird walk. Free ODNR bird guides to all participants! Binoculars will also be available. *Directions:* Park in Gambier (i.e. on Gaskin Ave.) and walk ¼ mile north on middle path to Tomsich Hall. Visit <http://www1.kenyon.edu/tour/> for a campus map.

Earth Day Festival & Earth Day Challenge Marathon

Sunday, April 17, 11am-3pm, Kenyon Athletic Center. The Festival is a FREE family event that focuses on keeping ourselves and our world healthy - two goals that go together! Features will include exhibitors and vendors of green and healthy products and resources, farmers market and petting zoo, door prizes, music, and hands-on activities for people of all ages. The marathon will start and conclude at the same location - help cheer on over 400 runners as they finish! **Marathon registration** available at bfec.kenyon.edu. *See article page 2.*

Migration Bird Walk – Saturday, April 23rd, 10am

Take a hike with Kenyon Professor of Biology Ray Heithaus to see the many birds returning home or migrating through Ohio in the spring. Catch some of our less common warblers before leaves return to the trees. Binoculars and field guides will be available.

Wildflower Walk – Sunday, May 8th, 2pm

Take a two mile hike to explore for spring treasures in the forest. Perfect for Mother's Day! *Pictured here: **spring beauties** carpet the forest floor and many lawns in spring before tree leaves emerge.*



Bishop's Backbone Trail Hike

Friday, May 27th, 3pm, Brooklyn St. Trailhead.

Choose to hike 1.5 or 4 miles on our northern trail system as summer emerges. See bluebird nesting in action and enjoy a stop at Wolf Run. Sturdy shoes recommended. *Directions:* From Mt. Vernon, follow Gambier St./S.R. 229 four miles east; turn left onto Wiggin St./ S.R. 308, and immediately left onto Brooklyn St. Trailhead is located on left; proceed uphill into Gambier for parking.

Breakfast with the Birds - Saturday, May 28th, 8am. Enjoy coffee and donuts before hitting the trails to see some of the 78 bird species that nest in the BFEC preserve. Field guides and binoculars will be available.

Wildlife Garden Tour – Sunday, July 17th, 2:00pm. Experience peak bloom of native flowers and the many butterflies that they attract. Learn gardening tips on establishing your own wildlife garden.

Miller Observatory Open House - last Fridays

Kenyon's Miller Observatory hosts an open house on last Fridays of the month with Paula Turner, Associate Professor of Physics. Open houses start at 9pm during the spring and summer, and will be canceled in cloudy conditions. The observatory is not heated, so please dress for the weather. Contact Paula with questions at turnerp@kenyon.edu. *Directions:* From Mt. Vernon, follow S.R. 229/Gambier St. east approximately four miles. About ¼ mile before reaching the S.R. 308 / Laymon Road junction, look for the observatory sign and turn left onto an asphalt access road. Follow the road to the top of the hill and park in front of observatory.

Thank You to...

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Our Volunteers

In the office, classroom, gardens and on the trails: Jane Cosby, Harper Kerkhoff, Willa Kerkhoff, & Cub Scout Pack 339.

Bluebird Workshop: Thank you to Mel Glass and Dale Bolt for donating many hours of labor to make the workshop happen, and to

volunteers Rodney Montgomery and Lou Toscano.

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from across the country. The race will start at 8am at the Kenyon Athletic Center. Top 1/2 marathon finishers will begin coming in at 9:30am, and top marathon finishers will start crossing the finish line by 10:30am.

Why a marathon? Because anything less would not fit the importance of the topic: living on earth.

Organizers, including the BFEC and KenyonFit, wanted to invite people to get outside and be healthy, as well as encourage those who felt that run-

ning a marathon was unattainable. Training programs have been set to provide tips and support newcomers to the event.

The Earth Day Challenge's growing



popularity is due in part to its flat terrain. The race starts at the Kenyon Athletic Center in Gambier and traverses a few hills before joining the very flat Kokosing Gap Trail.

This feature is especially attractive to runners hoping to qualify for larger races. The course is now certified as Boston Marathon qualifier.

Registration for the event is still open, though those hoping to participate should sign up soon before spots sell out (as they did last year for the 1/2 marathon). Visit premieraces.com/ for registration.

Spring Peeprs, continued from page 2

References

1) http://www.dnr.state.oh.us/Home/species_a_to_z/SpeciesGuideIndex

2) Storey JM; Storey KB. 1985. Adaptations of metabolism for freeze tolerance in the gray tree frog, *Hyla versicolor*. *Can. J. Zool.* 63: 49-54.

3) Shuker, KPN. 2001. *The Hidden Powers of Animals: Uncovering the Secrets of Nature*. London: Marshall Editions Ltd. 240.

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.

Co - Executive Directors

E. Raymond Heithaus, *Jordan Professor of Environmental Studies & Biology*
Siobhan Fennessy, *Associate Professor of Biology*

Facility Manager

David Heithaus

Program Manager

Heather Doherty

Facility & Program Assistant

Jill Kerkhoff

Earth Day Festival & Earth Day Challenge Marathon

Sunday, April 17th

Kenyon Athletic Center, 11am-3pm

Healthy people and a healthy planet go hand-in-hand!
A good example will be featured at the event: buying or growing fresh, local food. Enjoy gardening resources, live music, farmers market and live animals, kids activity zone, vendors & exhibitors, marathon finish line & more!

*A Fun, Free,
Family-Friendly
Event!*



Details inside & at <http://bfec.kenyon.edu>

DATE MAILED: April, 2011
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