

Brown Family Environmental Center

FIELD NOTES



One Year's Death is Another Year's Life

BY AVA-ROSE BEECH '21,
BFEC POST-BACCALAUREATE FELLOW

Every fall brings with it the excitement of a landscape transformed into a mosaic of vibrant red, purple, yellow and orange hues. As temperatures begin to drop and days become shorter, deciduous trees (those that drop their leaves in the winter) start preparing for winter. In order to conserve energy and survive cold winters, deciduous trees go into a dormant state. They stop producing energy from sunlight, and the chlorophyll that turns leaves the bright, neon greens of spring and summer begins to break down. The turning of fall leaves is integral to trees surviving the frigid winter months, but equally important is what happens to those leaves once they fall to the ground.

Trees drop their leaves as a way to conserve water and energy in the winter. The resulting leaf litter (dead leaves on the forest floor) plays a vital role in cycling nutrients through forest ecosystems and returning nutrients back to trees. Fallen leaves are especially important to nutrient cycling in forests and can contribute to more than 70 percent of decaying material on forest floors.

As fall progresses, decomposers begin to break down all the leaf and plant material on forest floors through the process of decomposition. Decomposition is vital to all life on Earth — it is nature's way of taking dead organisms and giving them new life. Many nutrients that plants and animals (including humans) need to survive — such as carbon dioxide, nitrogen, phosphorus and calcium — are not readily available in soil. We therefore rely on our trusty decomposers to break down decaying plant and animal matter and restore those nutrients to the land.

Hiking through the forest along the BFEC trails, you might not notice much going on under those piles of fallen leaves, but there is a whole world of biological activity

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Photo: Ryan Hodnett, https://commons.wikimedia.org/wiki/File:Fungi_-_Kitchener,_Ontario_05.jpg. Licensed under Creative Commons.



Fungi on the forest floor are a sign that fallen leaves are being turned into the fuel that will keep the forest growing.

and connection taking place right under our feet. The journey of decomposition begins when one of the many vibrant fall leaves hits the ground. At this point, a class of decomposers called invertebrates begins to eat decaying material like leaf litter. Invertebrates break the leaf litter into smaller pieces as they consume portions of it, through the process of fragmentation. After the fallen leaf has been through the fragmentation stage of decomposition, rain water further breaks down the leaf, taking with it some of the chemicals and nutrients in the leaf. This is called leaching. As invertebrates move through the soil, they disturb and combine decaying fragments of matter, during the mixing stage of decomposition.

After invertebrates start the process of decomposition, it is time for a smaller (but equally mighty) class of decomposers to step in: microorganisms. The majority of activity taking place on the forest floor is actually

driven by organisms that are too small for us to see with the naked eye. These microbes may be small, but they are powerful in their ability to further break down organic matter and cycle nutrients through ecosystems. Microorganisms have the incredible (and vital) role of breaking down dead plant and animal material into chemicals and minerals that are then available in the soil for plants and trees to absorb. At this stage, the leaf that fell to the forest floor becomes fully integrated into the soil, no longer recognizable as a leaf at all.

One type of organism you might spot when walking around the BFEC is fungus. Fungi are different from plants, as they are not able to make energy from sunlight. Rather, they release enzymes that break down decaying matter. They get energy from dead plants and animals, and, in return, our ecosystems get all the nutrients they need to function. We may see fungi scattered along the forest floor, but the bulk of the decomposition is taking place below the fruiting body of a fungi that grows above the ground. Mycelium are the vegetative, branching network of fungi, connected to the fruiting body. These incredible networks spread out expansively and are incredibly important to the breakdown of nutrients in our ecosystems, and they form symbiotic relationships that benefit many other organisms. In fact, the largest living organism in the world is a fungi and its mycelium, covering an astounding ten square kilometers in the Blue Mountains of Oregon.

It may be sad to see the bright colors of fall drop from the trees, but we can rest assured that those leaves are being put to good use. The decomposition of leaf litter continues the cycling of nutrients through forest ecosystems and ensures that our soils are healthy and filled with nutrients. It is because of the decomposition of this year's leaves that we can enjoy beautiful fall foliage in the years to come.

Can we fill our bird feeders yet?

BY NOELLE JORDAN, BFEC MANAGER

In May of this year, wildlife professionals started receiving reports of fledglings that were found dead or dying with a mysterious illness. Crusty or swollen eyes, blindness, seizures and paralysis were the predominant symptoms. With the first reports coming from the mid-Atlantic states, the unknown disease was quickly documented in 11 states and Washington, D.C. At the time of this writing, scientists still have not identified the cause of the symptoms.

In July, the Smithsonian Magazine reported, "symptoms are similar to *Mycoplasma gallisepticum*, a bacterial infection that sickened house

finches with crusty and swollen eyes in the 1990s." But that disease did not include neurological problems like tremors and paralysis.

The symptoms were reported in Washington, D.C., Maryland, West Virginia, Virginia, Delaware, New Jersey, Ohio, Tennessee, Florida, Indiana, Pennsylvania and Kentucky. Species affected mostly included blue jays, robins, and grackles, but some reports included northern cardinals, house finches, house sparrows, eastern bluebirds, red-bellied woodpeckers and Carolina wrens.

The Southeastern Cooperative Wildlife Disease Study and the U.S.

Geological Survey's National Wildlife Health Center teamed up with several state agencies to try to identify the illness. According to the Smithsonian Magazine, they were able to rule out such diseases as salmonella, chlamydia, avian influenza, West Nile virus and various herpes viruses. But the list of possible causes is long and includes fungal diseases and toxins.

The Cornell Wildlife Health Lab has been monitoring the situation. This lab was created about a decade ago to develop a wildlife disease surveillance program. The lab compiles information from many local, state, and national agencies, as well as citizen

The Harmless Harvestmen

BY EMMA RENEE COFFMAN '22, BFEC STUDENT MANAGER

If you take a fall-time walk in the woods, it's likely you'll encounter a rather curious creepy-crawly with no shortage of limbs. Its eight unmistakably long legs look almost too thin to support its round body, yet it scurries with ease across tree bark or leaf litter on the ground. What do you call this creature you've found?

While these animals are colloquially known as harvestmen, there are many other right answers: daddy long legs, harvesters, or (to get technical) Opiliones. Call them whatever you like, but don't call them spiders. It's a common misconception that harvestmen are a type of spider, but they are in a different taxonomic order. Both are in class Arachnida, but harvestmen are in the order Opiliones, and spiders are in the order Araneae.

While harvestmen are related to spiders, they have several noticeable differences that place them in these different taxonomic orders. Harvestmen only have one body segment, while spiders have two; they have only two eyes, while spiders can have six or eight; and they produce no venom and no silk, while spiders do.

A common myth about harvestmen is that they produce extremely potent venom but their mouths are too small to bite humans. This is not true. Their mouths are very small, but they don't produce venom at all. Some species of harvestmen are scavengers, and others are omnivores that eat a wide variety of foods, from insects to plant matter to pollen. Luckily for us, that list includes many of the bugs we consider pests, like mites and aphids. So, rather than being dangerously venomous, harvestmen are actually quite helpful.

While they are harmless to us, we certainly are not harmless to them. If you are brave enough to handle one, it is best to use great care. Otherwise, you may discover one of their most impressive self-defense strategies – their legs can easily detach from their body. Once detached, the leg will continue to twitch to distract the attacker so the harvestman can make its escape. This is why it's common to find them with fewer than eight legs.

Another defense tactic will become obvious if you hold one in your hand. When disturbed, harvestmen will secrete a chemical with a very strong odor. If all goes according to plan for the harvestman, the smell and taste of that chemical will be enough to deter a predator. For humans, though, it may have the opposite effect. Many people say they smell like cherries.

As the name suggests, the harvest season — late summer to early fall — is a great time to spot harvestmen. When you head out to the trails this fall, see if you can spot these long-legged creatures walking on the forest floor. Harvestmen — or whatever you may call them — certainly don't need webs to impress like their spider relatives. They're fascinating and wonderful to watch, and with legs like theirs, they are hard to miss.

The harvestmen (or daddy long legs, or harvester, or Opilione) is a common fall-time find.



Photo: Fauchaux sur Mélisse, <https://commons.wikimedia.org/wiki/File:Opilion.jpg>. Licensed under Creative Commons.

science sources. In mid-July, the Cornell Wildlife Health Lab received reports that the number of cases were declining, with no apparent reason.

One current working theory is that the disease is related to the emergence of the "Brood X" 17-year cicadas this year. The timing of the illness coincides with the cicada emergence which occurred roughly May; about one week after the cicadas emerged in many of these states, reports of the bird illness were documented. In addition, the bird illness appears to have been reported only in the states that experienced the cicada emergence.

In late July, Elizabeth Bunting, senior

extension associate at the Cornell Wildlife Health Lab, noted, "the distribution of states where this spontaneously popped up was an exact match for the cicada emergence map, and it is a very strange distribution of states for this kind of outbreak." Bunton said.

If the cicadas are the source of the illness, it is unclear whether they carried a fungus that produced toxins when ingested by the birds, or whether they had been sprayed with pesticides that affected the neurological functions in the birds.

In Ohio, the majority of infected birds were documented in Brown, Butler, Clark, Clermont, Delaware, Franklin,

Greene, Hamilton, Montgomery, and Warren counties.

As of August 20, the Ohio Department of Natural Resources (ODNR) maintains their recommendation to not feed the birds. "We are still receiving reports of finches and a few other species with conjunctivitis symptoms throughout the state. We will continue to monitor reports and provide an update at the beginning of September."

For the most recent updates from ODNR, visit ohiodnr.gov/wps/portal/gov/odnr/home/additional-resources/division-of-wildlife/bird-disease-reporting.

What's Happening at the BFEC

BY NOELLE JORDAN, BFEC MANAGER

We had a great summer at the BFEC. It felt very normal with lots of people on the property, participating in programs. We were able to partner with SPI in Mount Vernon to offer six week-long summer camps for kids. We partnered with the Gund Gallery to offer several art and nature workshops for kids. Our new post-baccalaureate fellow, Ava-Rose Beech '21, designed and led some awesome family programs. There were two plein air painting programs (one for families and one for adults), two river programs, yoga for everyone and so much more. I confess, I sighed with relief the first time I heard children squealing with delight. It was music to my ears.

Now that the academic year is upon us, we are taking a more cautious approach with programming. Once again, the offerings will be greatly curtailed in order to keep both the Kenyon and Knox County communities safe.

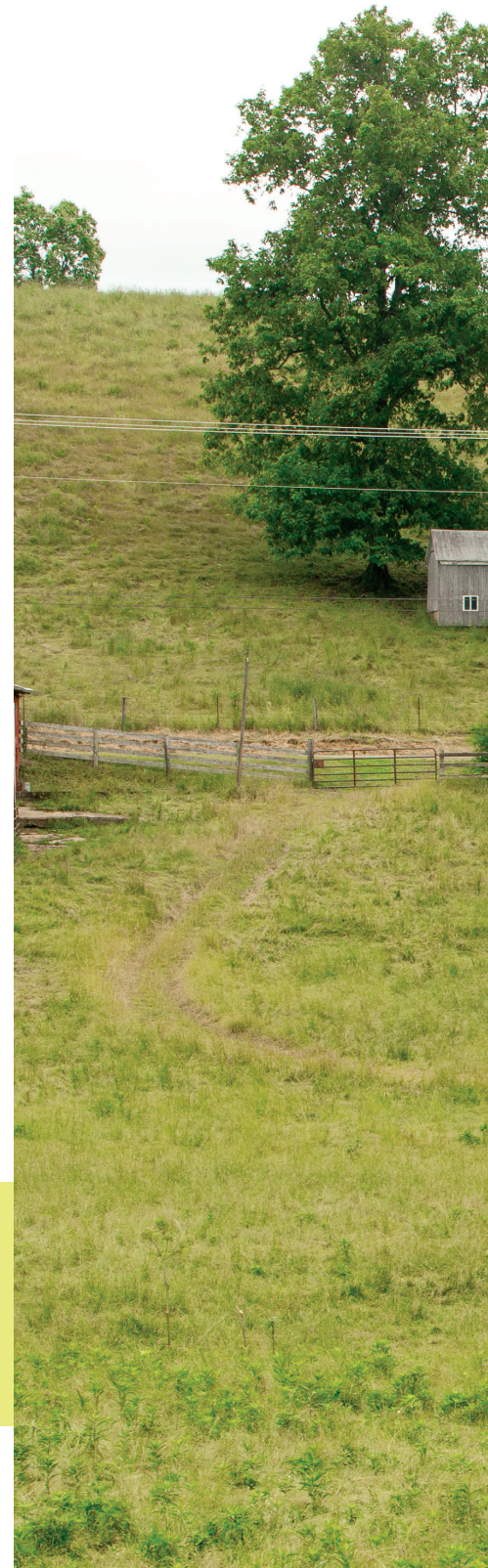
Out on the property, our summer crew completed a new nature play trail for local families. Complete with forts, a log scramble and a human-sized bird nest, this new area is located next to the parking lot for the Kokosing Gap Trail and is accessible from the bike path and from Laymon Road. It is open every day, dawn to dusk.

Our biggest news is that the BFEC has grown by 111 acres. The Hall Farm, on New Gambier Road, is now part of the BFEC property. This farm borders our existing property along a portion of the Bishop's Backbone Trail. From May through October, the Hall Farm will be leased to a livestock farmer who raises cattle. This operation is very sustainable, with low-density grazing and a horseback cattle round-up. From November through April, the property will be open for hikers and cross-country skiing. We will mow-in two loop trails — one south of New Gambier Road, and one on the north side. Both areas offer breathtaking views of our rural countryside. Trail users will need to open and close gates in order to cross New Gambier Road, and care should be taken when crossing this street.

Although we may not see you at a program this fall, come on out and enjoy the new nature play trail and the trails at Hall Farm.



New at the BFEC: A work crew (above, left) finished the new nature play trail, located near the parking area for the Kokosing Gap Trail. The BFEC hosted a full schedule of events, including the Just Paint series for families (above, right). And the BFEC grounds grew by 111 acres with the gift of the Hall Farm on New Gambier Road (right).





GREEN CORNER

The Kenyon Farm

LYNN BUTZLAFF '22, STUDENT FARM MANAGER

We've had a **productive summer** down at the Kenyon Farm, growing cherry tomatoes, eggplant, cantaloupe, watermelon, leaks, garlic, pepper, and carrots for donation to Hope in Knox. Additionally, student farmers designed and built an innovative, although somewhat crooked, compost shed with four different bays for turning compost. The compost will then be used on our fields to promote soil health. As the summer season comes to a close, cold season crops like kale, lettuce and radishes have been planted and will be harvested during the fall semester.

For the first time in years, the farm is raising meat chickens using a movable chicken tractor to give the birds fresh grass every day and fertilize the soil as they move. In response to the growing demand for eggs, 10 new layer hens are being raised and will be integrated into the flock later this year.

As we face another year of uncertainty due to the ongoing pandemic, the farm remains a place for students to engage with the Earth and learn about growing food for the local community and each other.

Posing in the Kenyon Farm's newly constructed compost bin are (left to right) Molly Orr '24, Chloe Shane '23, Ian Prescott '23 and Lynn Butzlaff '22.





Jennifer Grimm

VOLUNTEERS AND DONORS

SUMMER 2021

Thanks to these generous donors, we were able to provide free summer programs for youth, families, and the general public, and we were able to continue our work to conserve biological diversity on the property.

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Jay and Sonia Corrigan
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Knox County Foundation
George B. Storer Fund at
the Miami Foundation

IN-KIND DONATIONS

BeWise: supplies to build
bat houses

Leaves for Wildlife:
various tree saplings

Jane and Perry Lentz:
bird skins and feathers

Many thanks to our dedicated volunteers! This summer, the following folks donated over 210 hours of their time to monitor trails, count bluebird fledglings, remove invasive plants, build our nature play trail, and so much more.

Laura Keith, East Knox High School student
Miah Rodriguez-Hedeen, Mount Vernon
High School student
Griffin Liu, Kenyon student
Joseph Bernard, community member
John Noonan, community member
Ashley Butler, community member
Ella Hankinson, high school student
Bethany Hankinson, community member
Brian Miller, community member
Bev Morse, community member
Sarah Goslee-Reed, community member
Miriam Dean-Otting, community member
Terri Hieronimus, community member
Drew Kerkhoff, Kenyon faculty member

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OUR MISSION

The Brown Family Environmental Center exists to support the academic goals of Kenyon College, to provide opportunities for education and research, to engage Central Ohioans of all ages with nature, and to conserve the natural diversity of the Kokosing River valley.

OUR STAFF

Ava-Rose Beech '21, *Post Baccalaureate Fellow*
Jill Kerkhoff, *Facilities Coordinator and Office Administrator*
Shane McGuire, *Land Manager Naturalist*
Noelle Jordan, *Manager*

Help Us Grow

TO MAKE A GIFT, PLEASE FILL OUT THE INFORMATION BELOW, DETACH THE SHEET AND SEE MAILING INSTRUCTIONS.

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 workshops, a hard copy of our newsletters, and a discount on bird seed. **Use the form below to send your contribution today.**

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

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