



Time of Plenty



Early fall is the time of harvest, when we celebrate a wealth of fruits of the soil. Many corners of our natural world also find their fullness in fall, from the expected acorns and woolly bear caterpillars to unexpectedly goulash spiders.

by Heather Doherty

One of my neighbors spends her evenings softly cursing the natural abundance that rains down on her deck. Her children sled, literally, down a steep hill below on hickory nuts from an impressive tree in the backyard. Their abundance is worthy of ankle twisting in a wide perimeter around the house.

While this particular bounty is more appealing to wildlife, we humans take our harvest seriously too. In late summer, our stomachs burst with dinners of corn on the cob and a profusion of garden tomatoes. To a person who loves her fruits and vegetables, the volume and array of the selection is a short-lived dream. The dream is already slipping away as I write this article, but the largess is still underway outdoors.

Satisfaction

Many plants let loose their bounty in fall months before entering dormancy. Grasses in the BFEC prairie nod their heavy seed heads in the breeze, while

plumes of milkweed seed drift like feathery bubbles.

Maple trees send their helicopter seeds (known officially as “samaras”) whirling haphazardly downward, while black walnuts fall with a heavy thump to blacken the ground below. The sub-pea sized fruit of black cherry trees or the red seeds of dogwood that quickly fall or are consumed by birds are more easily overlooked.

Of tree species, the mast of oak trees – acorns – are surely the most well know, and are dearly sought by wildlife. In addition to squirrels, they are greedily devoured by deer, wild turkey, woodpeckers, blue jays, ducks, foxes, raccoons, and insects.

The wealth of acorns coating the ground under a mature oak tree can be astonishing. But annoyed homeowners likely revel in the fact that acorns do not rain upon them every year; most species produce a large crop of acorns every two or three years, and a truly

massive crop even less frequently. The cycle can be affected by factors like drought, a late spring frost that shrivels oak flowers, or the tree’s general health. Regardless of such complications, oak trees alternate heavy mast years with years of measly production.

Why the “go big” or not-at-all strategy? Producing an abundant crop of acorns consumes a large share of the tree’s energy that it simply can’t afford every year. And even though acorns are not considered “prey” in the usual sense, the theory of “predator satiation” may also apply here.

This theory suggests that rather than spitting forth offspring one a time to be gobbled by a throng of hungry creatures, a given species may wait to release all of its young at once, creating such an over-abundance that a few actually escape after predators have rolled away from the table.

You can see this theory in action on the shores of Lake Erie when millions of

mayflies, which have been living as larvae underwater, emerge en masse to coat every surface of nearby towns. With abundance so tremendous that cars skid on them like ice when they accumulate on the road, a few manage to evade the gorging bats, birds and fish to mate and lay eggs. (Tomatoes may operate under the same guise, when they fall to the ground after diligent gardeners grow weary of the daily tomato menu and heat and weeds.)

While heavy, alternating mast years is one form of self-preservation for oak trees, they do have another: tannins. These compounds are abundant in acorns and can disrupt an animal's ability to effectively digest proteins. While the bitter tannins can make cows or horses ill, plenty of birds and mammals eat them anyway. Animals such as white-tailed deer seek the lower-tannin species of the white oak family, while others have been observed caching acorns and consuming them at a more moderate rate.

People have been known to enjoy this and many other wild-nut bounties too. Native Americans consumed acorns after repeatedly soaking them to remove the tannins and then pounding them into flour.

Substantial Spiders

Non-nature enthusiasts may be alarmed by a big fall migration... not of birds heading to Central America, but of creatures seeking shelter in the warmth of our homes. Among the unwanted guests are spiders. If not indoors, fall is the time for near-spider experiences while walking around the yard or on trails.

Scores of tiny webs scattered in the grass and on the BFEC's split rail fence shine with dew in the morning autumnal sun. A less appealing version is finding yourself face-to-face with a giant spider, realizing that you were very, very close to walking through the web and wearing the spider as a new hair ornament.

Not a welcome surprise to most of us, though the spiders are spectacular. Why do these beauties appear in fall, just in time (coincidentally?) for the season of ghosts, jack-o-lanterns, and headless horseman?



the wealth of shagbark hickory

If you seek to take part in the wild bounty of edible nuts, consider the hickory tree. Hickories share the same genus, *Carya*, with the pecan tree (which is sadly native to only southern states). Though hickory nuts do not require the boiling that acorns do, finding this delicacy does require finding the right tree.

There are six species of hickory native to Ohio, and not all of them are worthy of searching out. Bitternut hickory, and as you can imagine, is not good. Pignut hickory, the tree that graces my friend's backyard (see page 1), is said to be fit only for pig consumption.

After my share of tasting and spitting out a few of these, I've come to enjoy the nuts of shagbark hickory because they are 1) delicious, 2) common, and 3) easily distinguished from the other non-tasty species. The tree's bark is exceptionally shaggy, with variable sized pieces peeling upward from the base. Like other hickories, it has a large, compound leaf, with five (sometimes seven) individual leaflets attached to one leaf stalk. Most other hickory species bare seven to nine leaflets.

When nuts fall from the tree in late August or early September, they are about the size of black walnuts (or bigger than a golf ball) and bright green. They differ from walnuts in that their husks are divided into four thick-walled sections. These will eventually brown, and peel easily from the nut inside.

Timing is important, since squirrels also love them and will scour every edible nut within a day or two of it hitting the ground. The meats are somewhat difficult to extract from the shell. Try them when you have time to do so leisurely, with your feet set up by the fire to enjoy a wealth that does, for once, grow on trees.

The lifecycle of some spiders follows the same schedule as the innocuous acorn. Way back in spring, tiny spiders hatched from eggs, perhaps just as subtle flowers dotted oak trees. The young spiders, like the tiny new acorns, were initially easy to miss. But by the end of the season, they make themselves known in all of their substantial glory.

This cycle applies to the sounds of the season too. It's not until mid to late summer that nights fill with the songs of crickets, grasshoppers, and katydids. While birds and frogs jubilantly sing the rites of spring, the young forms of these insects bide their time, eating leaves, growing and molting, and waiting for their moment. As the birds tire,

the insects reach their own maturity and begin to sing.

[FUN FACT: the rate of a cricket's chirps per minute correlates directly to temperature, which is why those chirps become v e r y s l o w as the season advances. Once the ambient rate of a species is known, it is possible to count its chirps and work backwards to determine temperature.]

Though not all spiders mature in late summer and fall, it is true of one of our most conspicuous species, the black and yellow garden spider (*Argiope aurantia*). It is a member of the orb-weaver family, named for their wheel-shaped webs. This species builds webs that are two to three feet wide, with a



Black and yellow garden spider. Photo by Sam Khan - commons.wikimedia.org

prominent zig-zag of silk in the middle.

Their preferred habitat is tall vegetation on the edge of fields and in gardens, and sometimes the eaves of adjacent buildings, making them common human neighbors. Unlike other nocturnal orb-weavers, this species is active during the day, and makes a habit of resting at the center of its web rather than in a hidden refuge. What's truly unmistakable, of course, is its 2^{1/2} inch leg span and bright black and yellow markings.

True to many spider species, the females are much larger than the males. Males build smaller webs nearby and attempt to ward off other suitors. They court females by plucking strands of her web; males die soon after mating (and yes, are sometimes consumed by the females). Females produce egg sacs that they suspend near the center of their webs to be guarded, but only for so long. Females will die near the time of the first hard frost, and spiderlings emerge in the spring, noticed at first by no one but their tiny prey.

The coincidence of spider splendor and Halloween seemed way too great during the BFEC Harvest Festival last fall when student intern Caitlin Redak spotted a real beauty – the marbled orb-weaver (*Araneus marmoreus*). The very round body of this spider,

about 3/4 inch in diameter, was bright orange with darker orange markings, a coloration that appears only as it matures in October. The spider looked decidedly like a Halloween jack-o-lantern.

Hungry, Hungry Caterpillar

This season is also the hour of the caterpillar. On warm days they seem to be everywhere, crossing paths in a very business-like hurry, seemingly unbothered by people pausing to exclaim over their colors and tufted, spiky hair. At this time of year, after spending months in treetops or shrubs consuming leaves, caterpillars are likely looking for a suitable place to over-winter.

Through the winter, they will exist in a state of diapause, or developmental stand-still. Diapause is triggered by environmental stimuli, in this case shortening day length.

Those caterpillars that are destined to become moths will look for shelter in a brush pile or leaf litter on the forest floor, or even dig a few inches in loose soil, and then form a pupae (similar to a butterfly's chrysalis). The shorter days had already signaled to the caterpillars that they should stay put through the cold weather.

I observed a tomato hornworm plucked from one of my tomato plants last September in this process. I put it in a container with several inches of soil, where it eventually dug down and formed its pupae. Had this occurred in the middle of summer, it would have spent about two weeks there and then emerged as an adult moth (with an impressive 3 inch wing span). Since it was late in the season, however, the

moth had been triggered before entering its pupae that diapause and a long wait underground was its course of action.

Now buried underground, insects like this one must also avoid freezing to death. Similar to amphibians that also spend the winter in leaf litter, some insects avoid freezing by secreting their own "antifreeze". Known as cryoprotectants, these molecules lower the freezing point of an insect's body. Some insects also develop an ability to limit freezing to certain tissues in which it causes less damage.

Though the tomato hornworm poses a rather intimidating horn on its rear end, it does not actually sting. But beware of other seemingly fuzzy caterpillars, for some of them, like the caterpillar of the gorgeous io moth, actually possess stinging spikes.

The adult io moth is adorned with two very prominent eyespots on its back wings (presumed to emulate owls and scare off birds), on a field of rosy pink or yellow. It's beauty is short lived, since it has no feeding mouth parts. All of the eating it will ever do takes place during its larval stage.

Unlike some other moths and butterflies, it is not picky about which plant species, or "host," it will choose to lay its eggs on to become food for the nibbling larvae. Its selection includes red maple, dogwood, beech, ash, oak and many others. I was surprised a few months ago to find a cluster of them feeding on cattail next to a pond. By now, they are likely already curled up for winter as pupae, bidding their time until spring.

io

Io moth, (*Automeris io*), photo by Patrick Coin. Io moth caterpillar, photo by Michael Halroyd. commons.wikimedia.org





Meet Shane McGuire, Land Manager Naturalist

I have always had a strong passion for wildlife and nature. As a kid growing up on the Knox County and Licking County line some of my earliest memories are floating down the Kokosing River, playing in the woods, and catching creatures in creeks and ponds. I was introduced to hunting and fishing at a young age and that made my passion even stronger. When I was 12 years old I knew I wanted to pursue a career in wildlife.

I attended Utica High School and played football, basketball, and baseball. When I didn't have a practice or game I was always outside hunting or fishing. High school flew by and once graduation became closer I started to look at colleges. Hocking College was high on my list because of their natural resources program. I wanted to play college football but no school offered a natural resources program and athletics. It was hard giving up sports because I loved the game so much but I decided to hang up my pads and focus on what I wanted to do in life.

I decided to attend Hocking College and major in wildlife management. After my first day of classes I knew I chose the right field. When my first year at Hocking came to an end I accepted a summer internship with The Dawes Arboretum in Newark Ohio. Dawes is the place where I started to gain interest in plants and land management. I learned a lot about invasive plants and how they can be harmful to our native ecosystems and most of my summer internship consisted of cutting and pulling invasive plants from our natural habitats.

In the fall of 2010 I graduated from Hocking College with an associate's degree in wildlife management. When spring finally came The Dawes Arboretum asked me if I was interested in a second summer internship with them. I accepted, and was given the responsibility of directing three other interns. I also was able to take part in field trips with our natural resources department to privately owned wetlands to look for

rare native plants. We collected seed to propagate at Dawes and later plant in our protected wetlands.

By August I was informed that they wanted to hire a full time Conservationist and they wanted me to apply for the new position. After I applied and interviewed they offered the position to me.

As the Dawes Arboretum conservationist I was in charge of organizing and running a control bow hunt to help control the deer population. I worked with local farmers who leased and farmed properties owned by the Arboretum, and taught elementary students about different habitats and how important they are for us humans. I helped plant prairies and also reforested an area that we planted over 3,000 native trees. I also helped and organized the harvesting over 300 trees in Dawes forests. I learned a variety of different things at Dawes and I believe having that opportunity made me a better naturalist.

A friend informed me that BFEC was looking to hire a Land Manager Naturalist. After looking at the job description I was very excited to apply. After I applied I visited BFEC for the first time. When I was walking the river trail and saw the beautiful scenery I was even more excited to have an opportunity to work here.

After a few job interviews and a visit to BFEC, David Heithaus informed me that they wanted to offer me the position. I was very happy to accept the position and after meeting the people I would be working with I knew I would be happy here. In the little time that I have been here I can see that everyone takes pride in being part of the Kenyon College community and I am happy to be a part of it. It excites me to bring everything I learned from Dawes and apply it here where I grew up. It's something I will be able to take pride in and I already love it here.



We were pleased to welcome Shane McGuire as the newest member of the BFEC team in late August. If you visit the center in the coming months, look for him on the tractor or wielding a chainsaws in the name of trail maintenance and habitat restoration. Shane will also join me in lending his naturalist skills to programs and school field trips. We are delighted to welcome his broad set of skills and perspectives.

Shane joins us after a fond fairwell to long-time facilities director, Dave Heithaus. Dave has not gone far however, in accepting the director of green initiatives position at Kenyon College.

While he will be tackling institution-wide issues like energy usage and recycling, and firmly connecting those strategies to curriculum, he is also retaining responsibilities of directing land conservation at a variety of Kenyon properties, including the BFEC. As such, he is also retaining his BFEC director of facilities title.

We look forward to his ongoing leadership in guiding the implementation of the BFEC land management plan, with projects that are at the heart of building the preserve's biodiversity and use as an outdoor classroom and space for connecting people with nature.

- Heather Doherty, Director



The BFEC celebrated its 20th anniversary on September 4th and 5th in grand style. The weekend began with a dinner in honor of the many former employees, board members, donors and volunteers who envisioned and built the center. On the following day, over 500 people joined us to tube on the Kokosing River, climb a massive sycamore tree on the river's banks (with Natural Fit Outdoor Adventures), watch students from three dance courses perform, listen to the music of the Handsome Devils, and last but not least, dine on Whits Frozen Custard.



The day could not have been a better representation of what makes the BFEC great: a welcoming, engaged community of students and residents connecting in unforgettable ways with the outdoors, a glorious river, supportive leadership, and an enchanting melding of nature and art. Special thanks to dance faculty Balinda Craig-Quijada, Julie Brodie, and Kora Radella for challenging their students to the task.



Clackwise from top left: President Sean Decatur addresses the crowd gathered for music, dance, and custard; Provost Joe Klesner welcomes guests at the celebratory dinner; Pat Heithaus, one of the founders of the BFEC, descends from her sycamore tree climb upside down; students tube the Kokosing; dance students conclude a performance near the BFEC ponds.

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*

Fall Night Sky - Friday, October 16, 8pm

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.

Fall Harvest Festival - Saturday, October 17, 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.

Son of Mud Man Trail Race Festival - Saturday & Sunday, Oct. 31 - Nov. 1

Ohio's most unusual trail racing series will challenge you with four races over two days, including a new **Zombie Evasion!** Plus a nighttime time trial (you bring the head lamp, we'll provide the glow sticks), a 5k steeplechase, and a 10k cross-country run. Do just one race or all four. T-shirts, glow sticks, and plenty of food for all. Information and registration at www.premierraces.com.

Winter Weeds - Saturday, November 7, 2pm

After summer blooms, the delicate stalks of many flowers remain standing in gardens and fields. Hike BFEC trails to explore their subtle, structural beauty and use as food for wildlife in winter. Enjoy the last of fall color and hunt for hungry caterpillars seeking winter refuge.

Orienteering Workshop & Race

Sunday, November 15, 2pm

Learn to find your way in the wilderness with map reading skills, direction finding, and compass reading skills. Suitable for ages 10 and up. This program is sponsored by the Kenyon Athletics Department. Space is limited; to register, email heithause@kenyon.edu. ...at the end of the workshop (at 4pm), you can participate in an informal ROGAINE-style orienteering race! You'll have 60 minutes to collect stamps from as many checkpoints as possible and make it back to the finish line. There's no course- you'll use your new map and compass skills to navigate. Bushwhacking is allowed, so wear sturdy shoes and pants. Winners will get small prizes!



The BFEC prairie is at its height in fall months.

Birding for Beginners - Saturday, December 5, 9am

Enjoy coffee and donuts while learning the basics of enjoying birds at backyard feeders and at the BFEC with Assistant Professor of Wildlife Conservation at Zane State College, Scott Albaugh. Start with a slideshow inside before a walk outdoors to see what we can find afield. Binoculars and field guides provided.

Christmas Bird Count - Sunday, December 20

For over 100 years the Audubon Society has organized the Christmas Bird Count to track long term trends in bird populations across the Americas. 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. Call 740-427-5052 or email dohertyh@kenyon.edu to register.

Owls of Ohio - Thursday, January 21, 6:30pm

Co-sponsored by the Knox County Park District. Join our night adventure to seek and call for two species of owls that can be seen and heard in the Kokosing valley. Former Metro Park Chief Naturalist Gary Moore will begin with images, legends and lore of the surprising variety of owls that inhabit Ohio. Then we'll hit the nocturnal trail for a 1/2 mile hike with stops to use recorded calls and entice owls to call or come our way.

Thank You to...

Our Members July-September

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David Marietta & Margo DeCamp
Sean Decatur & Rene Romano

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In Memory of Dorothy White - by her loving family.

In Memory of Thad Bowman - Martha McCartney
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Bench donors - Ian and Charlotte Watson, in
memory of their parents

Our Volunteers


In the office, on the trails and in the garden:
Owen Decatur, Duncan Hardy, Harper Kerkhoff,
Jack Pillow, and Shirley Hughes

Nature's Keepers Camp: Ethan Buehrer, Gabby
Carver, Amy Cramp, Colter Hoar, Casey Losego,

Jenni Rogan, Conrad Stein, Zak Welker and Noah
Zoldak.

20th Anniversary: Evi, Julian, and Juleon Brodie,
Nancy Chappell, Pamela Faust, Drew Kerkhoff,
Harper Kerkhoff, Jim Heironimus, Terry Heironi-

mus, Brodie and Michael Hufnagel, Austin Kasser-
man, Kimberlee Klesner, Dana Oakes, Bege Wieg-
man, Denny Wiegman, and Brian Zimmerman.



1,000 bluebirds raised
10,000 trees planted
16,000 school field trip visits

Do you need *more* reasons to give in honor
of the **BFEC's 20th Anniversary?**

Ok, here's the most important one: feel the
satisfaction of being a part of our critical
mission of conservation and connecting
people with nature. Plus, receive preferred
access to popular workshops, a hard copy of
our newsletters, and 10% discount on bird
seed. Mail the form below or **donate
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Mail to: BFEC, P.O. Box 508, Gambier, Ohio 43022

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Brown Family Environmental Center at Kenyon College

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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.

Our Staff

Heather Doherty, director
David Heithaus, director of facilities

Jill Kerkhoff, facilities & volunteer coordinator
Shane McGuire, land manager naturalist

Upcoming Events

Fridays	October 16	Fall Night Sky
Saturday	October 17	Fall Harvest Festival
Sat.-Sun.	Oct. 31-Nov. 1	Son of Mudman Trail Race Series with a new Zombie Evasion!
Saturday	November 7	Winter Weeds
Sunday	November 15	Orienteering Workshop
Saturday	December 5	Birding for Beginners
Sunday	December 20	Christmas Bird Count

Events details inside and at bfec.kenyon.edu

OCT 31-NOV 1, 2015
BROWN FAMILY
ENVIRONMENTAL CENTER
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4 TRAIL RACES TO CHOOSE
FROM:
-ZOMBIE EVASION
-5K NIGHT RUN
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THE SON OF MUDMAN IS BACK!
AND THIS TIME, HE WANTS FRESH BRAINS.

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