



Patience. Fortitude. Grace. Wisdom. Selflessness. While all are characteristics worth admiring one by one, gathered together in one place they speak of life drawn from the sweetest water, richest earth and freshest air.

And while most of us can think of at least one person who embodies these lofty principles, few would consider that they pass by many every day.

Across the Midwest and the whole of the country, humble paragons sit stoically day and night watching over hill and valley, down mountainsides and beyond our vast stretches of forest, river, desert, lake and ocean. They display their virtues only to the watchful eye and offer their wisdom only when asked most shrewdly. They are silent except when the wind blows.

Most have seen more than the luckiest person could dream in several lifetimes, having watched the world for hundreds of years, perhaps thousands. What you have read or heard passed down from the oldest among us, events that shaped our world and experience, they experienced as time unfolded.

Of course what I write of is one of our dearest natural features: our trees, and especially *their* eldest. Here at the BFEC, we are fortunate to have several trees whose experience spans two or more centuries. We felt it was time to give them their due...

## SENTINEL OF WOLF RUN

Of over 600 species of oaks found around the world, the White Oak (*Quercus alba*) is one of eastern North America's most abundant and well-known trees. Even so, its remarkable life history and ecology present a dizzying array of relationships and avenues of inquiry - many of which have yet to be fully explored.



Of the White Oaks commonly found in the mixed mesophytic forests that define much of the Kokosing River Valley, one in particular is worth paying attention to on your next hike. Standing sentinel just uphill from the Wolf Run wetland in an area soon to be dedicated with a boardwalk and interpretive trail (see 'News of the Brown' p.5) is one of the most picturesque trees anywhere on the preserve.

This White Oak, over 100 feet in both height and breadth, showcases the rounded crown and broad sweeping branches typical of its species when allowed to grow in the open. An appropriate coincidence based on its location, this form is known as a "wolf tree". While its neighbor-

ing trees were felled for lumber or to open pasturage, this one has been left to grow- likely to provide shade for the cattle that traditionally grazed the area. Now its shade shelters seedlings, deer and a host of other wildlife. Further up in its branches, life is even busier.

## THE ECOSYSTEM OF A TREE

While the towering trees of tropical rainforests are fa-

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## Respect an Elder

by David Heithaus

*The White Oak that towers over the Wolf Run wetland is approximately 100' tall, 100' wide and 15' in circumference. While estimating its age is difficult without a core sample, based on size and growing conditions this tree could be 150 years old- old enough to have seen the muster of Union troops for the Civil War!*

mous for harboring a rich diversity of smaller plants and animals, our own temperate trees are often seen as little more than really big plants, firewood or furniture. In fact, trees that seem pedestrian to most North Americans actually give their flashy tropical cousins a run for their money. They just do so with a touch of mature reserve- fitting considering a 100-foot White Oak is likely many years older than its sweaty southern counterpart.

Far from boring old trees, White Oaks are virtual island ecosystems hosting myriad life forms ranging from the everyday to the otherworldly.

White Oaks provide food and shelter for countless plants, fungi, lichens, insects, birds and mammals (see photos on this page for some examples). Many of these animals sustain themselves on either leaves or acorns but some avail themselves of their provider in more creative ways.



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With its sweet, nutrient rich acorns, the White Oak brings in more than its share of ground browsers. White-tailed deer, squirrels, turkeys, grouse, woodpeckers, raccoons, bears (not at the BFEC mind you), blue jays and quail all forage regularly. Several types of moth larvae and weevil also take advantage of fallen nuts, sometimes getting a feed of their own or adding to the protein content of something taking bigger bites.

Growing around this fallen bounty, a number of plants and fungus intertwine their fates with that of their mother-tree. False foxglove, several Cortinari mushrooms

*Photos clockwise from top right: tiny caterpillar crosses damage from even smaller leaf miner insect; saddleback caterpillar; Wolf Run White Oak tree in winter (courtesy of Ray Heithaus); blue-grey gnatcatcher on nest camouflaged with lichen (courtesy of Pat Hemlepp).*



## WHITE OAK AT A GLANCE

**Range:** Maine to Minnesota, south to northeastern Texas and northern Florida.

**Soils:** Tolerant of many soil types, but prefers deep, slightly acidic, well-drained soils.

**Bark:** The tree's namesake; light grey with shallow fissures.

**Leaves:** Vary in size with regular, rounded lobes. Bright bluish-green with a lighter, whitish underside. Brownish-red to purple in fall. Brown leaves persist through winter.

**Flowers:** Two types: 2-4 inch, yellow-green, pollen-producing catkins followed by stubby, reddish pistillate blooms. Both precede leaves in spring.

**Acorns:** Oil-rich, sweet kernels in grey-green cups. Vary widely in size and feed a wide variety of animals.

**Timber:** Very durable, used as flooring, barrel wood, furniture and interior woodwork.

**Patience:** A White Oak can wait in the shade of the forest understory for up to 90 years, biding its time until a nearby tree dies and allows enough light through to stimulate further growth.

**Fortitude:** White Oaks can be mowed to the ground as seedlings, cut as young trees or sawed as adults and still re-sprout from tenacious, well-developed roots. While uncommon, a White Oak can live up to 800 years.

**Grace:** The rounded crown of a White Oak in the open is the inspiration for many a clichéd "tree in field" still-life. Its towing leader and long, low reaching branches demand attention. In the fall, it adds its voice to the chorus of colors that draw people from around the country to tour the Midwest.

**Wisdom:** Older trees contain valuable records of environmental and weather conditions. By analyzing core samples and growth rings, scientists can estimate a number of variables that help understand how trees respond to conditions and events such as fires, droughts and direct physical damage.

**Selflessness:** Hundreds of species of insects, birds, mammals, plants, fungi and lichens depend on White Oaks for food or shelter.

and a number of cup fungi all thrive in the litter beneath great oaks. When the trees begin to fade, shelf and bracket fungus can often be seen creeping up their broad trunks.

Moving above the forest floor to bark and branches, one can spot plants and lichens such as mistletoe, Old Man's Beard and even a species of blue-green algae that brightens following a good rain. These lichens and algae make the White Oak a favorite for Ruby-Throated Hummingbirds and Blue-Gray Gnatcatchers, two species of bird that are able to find no shortage of well-camouflaged nesting spots amongst the tree's twisting branches.

Out amongst the leaves is where the real action may be. Over 250 species of insect feed on White Oak leaves and over 400 types of gall-forming insects spend some portion of their life cycle in either leaves or flowers.

The leaf-eaters range from tiny microlepidoptera "leaf miners" whose larvae fit between the top and bottom layers of an individual leaf, to the fat caterpillars of

large moths and butterflies. Some of the most notable of the latter are the Red-Spotted Purple, Northern Hair-streak and Juvenal Dusky-Wing (butterflies) and the Saddleback Moth and Banded Tussuck. Grasshoppers, crickets, beetles, larval wasps, aphids, lace bugs and phasmids are also well-known leaf-eaters. Leaves can be eaten from the inside one layer at a time, as mentioned above, or by cutting along the leaf edge.

The White Oak's relationship with gall forming insects is complex, extensive and sometimes poorly understood. A gall is an abnormal swelling of tissue generally caused by the feeding activity of an insect, mite, fungus, nematode worm or bacteria. Sometimes an insect will form one type of gall at one point in its life cycle and an entirely different one in a different part of the tree during another. What actually *causes* the gall is debated but most agree that it forms in response to either acids secreted by the feeding organism or a bacterial association with the feeding activity. Regardless of causal mechanism, these galls are generally not harmful to the tree. Insects that form galls on White Oaks are mostly either

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**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

Now is the time to become a member or renew your annual membership! There are many reasons to give, perhaps foremost for the satisfaction of knowing you're a part of critical environmental education and conservation programs. Your membership entitles you to be the first to know of our offerings, receive a hard copy of newsletters, a 10% discount on high quality bird seed, and preferential RSVP status on workshops. 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  
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My check, payable to Kenyon College, is enclosed

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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.

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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



Even if you are unaccustomed to getting within 10 feet of an insect, you may be able to admire the (distant) sparkle of fireflies at dusk, a seminal summer icon. They add ambiance to a time of reprieve, when people emerge from air-conditioned houses to languid evenings.

Fireflies, also known as lightning bugs, are insects in the Lampyridae family, literally meaning “shining fire.” Their light, however, is “cool.” No heat is produced as a wasted byproduct, which helps explain its astounding 100% efficiency. Compare that to the 10% efficiency of an incandescent light bulb, which is usually hot to the touch.

Like most insects, fireflies have six legs and two pairs of wings. They are not “flies,” however, but rather beetles, with hard upper wings that fold over lower flight wings while at rest.

## WORLDWIDE LIGHT

Every continent but Antarctica is inhabited by fireflies, which number about 2,000 species, although there may be twice as many yet to be discovered. They generally thrive in warm, humid environments near water, and are most numerous in tropical Asia and Central and South America.

Some species live in dry climates and become active after rains. About 140 species can be found in North America, but curiously, they are nearly absent in the U.S. west of Kansas.

## LUMINOUS IN LOVE

Even at the beginning of life as tiny eggs, fireflies can light up. The ability continues when they hatch into ground-dwelling larvae, sometimes

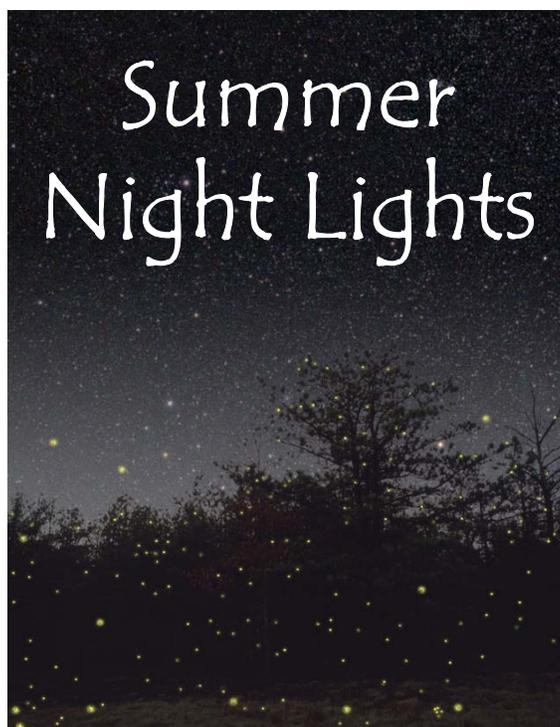


Photo courtesy of Matt BenDaniel - [www.starmatt.com](http://www.starmatt.com)

referred to as “glow worms.” But not all adult fireflies can bioluminesce, and some biologists believe that the ability first evolved as a larval defense mechanism to warn off predators. As the theory goes, these flashes have since become a way for adults to find mates, making fireflies rare among insects in using sight instead of smell for sexual selection.

In the Midwest, firefly larvae can usually be found in tall grass or the decaying leaves of the forest floor. They also prefer to be near some form of water, or even ditches with moist soil.

Larva are carnivorous, sometimes eating prey (like earthworms) that are many times larger than themselves. After pupating in underground mud chambers, the adults emerge and live for only a week or two; some will not eat, rather spending all of their time and energy looking for a mate.

Adult females typically remain on the ground or perched on vegetation,

and in some species are wingless. Males fly above and emit a series of flashes, looking for females of their own species to return the signal. Among species, light patterns vary in color, duration, intensity, pattern, and distance travelled between flashes.

Some tropical fireflies, particularly in Southeast Asia, truly light up the night by flashing in unison. In Malaysia they once lit the way for fishermen (though they may no longer, see below). There are also locations in the U.S. where this happens, notably near Elkmont, Tennessee (in the Great Smoky Mountains) and Congaree National Park in South Carolina.

## FEMME FATALE

Though the eating habits of many adult fireflies are unknown, and some are thought to not eat at all, those of the genus *Photuris* are based on mimicry.

Female *Photuris* fireflies mimic the flash patterns of females in the genus *Photinus*, thus luring *Photinus* males close, and then eating them. But the female *Photuris* does not get the last laugh; males of her own species mimic male *Photinus*, her prey. As the male *Photuris* approaches, she thinks she is catching a meal, but *he* is catching a mate. Catch all that?

## TO SAVE A FIREFLY

Though not a great deal of data exists, firefly populations may be on the decline. Some evidence is anecdotal but convincing: tourist sites in southeast Asia have been deserted because the synchronous firefly show is all but gone.

The reasons for the decline are unclear, though there are several possibilities. The first is widespread use

## NEWS from the BROWN

### TREE'S GOT A LOTTA' GALL



White Oak trees, while certainly not alone in having relationships thrust on them, do seem to invite more than their share of hangers on (see p.1). Of the many organisms that live among their branches, some cause tissue abnormalities, or galls, to grow, and insects are the most common culprits.

Saw flies are amongst the most pervasive of these. Many species cause galls to form on leaves, ranging from long-stemmed, to warty, to brightly-colored and nipple shaped. One species even causes a flat, scale-like gall during one generation that alternates with a woody root gall during the next.

Gall wasps form galls that range in size from the microscopic to the massive. The familiar spotted oak apple, a spherical gall that hangs from the undersides of leaves (pictured here) can grow to about an inch in diameter, while other wasp galls are nothing more than single-cells that develop inside leaf tissue.

Not all galls serve only their makers. In a twist, some actually allow the tree to selflessly provide an ecological support-service as they are consumed by visiting animals. Twig galls provide winter nutrition to finches and sparrows, squirrels and mice feast on colonial hedgehog galls, and even young oak apples are eaten by several species throughout the year. Covered in insects and sores and still gracious? Now that's turning a frown upside down.

### SONGS OF SUMMER

Every year the spring explosion of singing birds and frogs slowly ebbs with the heat of summer, but is soon followed by the growing volume of insect songs. Among our local noise makers are crickets, katydids, grasshoppers, and cicadas. Katydids (pictured here) are sometimes called "long-horned grasshoppers" due to their similarity in shape and long antennae. Like crickets, they sing by rubbing their wings against each other. Grasshoppers, on the other hand, rub their wings against their hind legs, while cicadas sing with a completely different organ located on their abdomens.



Katydids are often found in grassy meadows and sing when it's warm and sunny. Not as melodic as crickets, their songs are soft, "reminiscent of the rhythmic sounds made by a shaker of rice or sand." This is according to Wil Hersberger, author of an astounding new book, "The Songs of Insects." Stop by our office to take a look at its beautiful photography and listen to a CD of the insect sounds of summer.

### GIVEN'S GROVE TAKES ROOT

If you've walked along the wetland run trail, you've probably noticed a certain White Oak that may or may not be explored in some detail in this issue (see p.1). Soon, this ancient of the preserve will be joined by a number of youngsters and a few new tidbits for visitors to the BFEC trail system. In recognition of a long time friend of the center, the area is being developed as an interpretive restoration area to honor Douglas Givens, recently retired chief operating officer of the Philander Chase Corporation. Last spring, the increasingly moist lowland west of the old White Oak was planted with an experimental bald cypress grove and a number of spicebush and silky dogwoods, favorite wet-soil species for a number of local animals. On the dryer hillside, American beech, black walnut, swamp white oak, black oak, shagbark hickory, buckeye and sycamore trees were planted as part of the final phase of our 8-acre habitat restoration partnership with the US Fish and Wildlife Service. This fall, a number of older swamp white oak trees will lead hikers across a boardwalk to a short loop trail that will afford an elevated view of the wetland and habitat restoration area. While we're already informally calling the area by its new name, Given's Grove will be officially dedicated in the fall of 2011.

# Calendar of Events

*All events 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>*

**Kokosing River Walk – Tuesday, July 13, 6:30pm.** At the height of summer heat, cool off at the river. Hike 1/2 mile to an excellent spot to wade in and look for river critters. All ages welcome, old sneakers recommended for getting wet.

**Nature’s Keepers Outdoor Adventure Camp - August 4-7.** Nature’s Keepers is an outdoor day camp for kids entering 4th - 6th grade that focuses on having fun while connecting with and learning about nature. Contact us for registration information, due July 16th.

**Dog Days Trail Running Festival - August 7, 8:00am - 1:00pm.** If you like to run or you just need to tire out the kids, this is for you! The BFEC and KenyonFit will host a series of races to challenge everyone from the most hyperactive toddler to accomplished runners. A picnic and awards ceremony will follow. For a registration form, stop by the BFEC, contact Emily Heithaus at [heithause@kenyon.edu](mailto:heithause@kenyon.edu), or visit <http://bfec.kenyon.edu>

**Butterflies in the Garden - Sunday, August 15, 2:00pm.** Experience the BFEC’s Wildlife Garden in brilliant peak bloom and the many butterflies attracted by its native flowers. Learn wildlife gardening tips and how to incorporate these features at home. Free ODNR butterfly guides to all participants!

**Kenyon’s Gentle Giants – Thursday, September 2, 11:00am.** Meet in front of the [Kenyon Bookstore](#) at 106 Gaskin Avenue, Gambier. Wander Kenyon’s Middle Path to admire the towering trees that lend the campus some of its charming beauty. This is a great opportunity for beginners to learn common species that grace the “Buckeye” landscape.

**Wild Mushrooms - Wednesday, September 29, 6:30pm.** Fall is the time for an abundance of mushrooms in the forest. Expert mycologist Richard Grimm will present a slideshow on the basics of identifying mushrooms and common species, including those to avoid. If you have a mysterious mushroom on your property – bring it in!

## Knox County Nature Photography Contest

Submission Deadline: Monday, October 18



*Photographs of our natural world remind us of the beauty to be found when we take the time to look.  
All community members are invited to enter this contest in celebration of our scenic Knox County.*

**People’s Choice Voting** Saturday, Oct. 23rd, 2-4pm, during the BFEC **Fall Harvest Festival**.  
Winners will be announced at 4:45pm before the Festival concludes.

**Prizes Awarded** Children’s (ages 5-15) & Adult Divisions: \$50 - 1st place, \$40 - 2nd place, \$30 - 3rd place

### Contest Rules

- Photos must be delivered by October 18 to the BFEC Resource Center at 9781 Laymon Road, Gambier. Entry forms will be available and photos may be dropped-off anytime in the building breeze-way. Participants may also request forms and mail submissions.
- A \$5 entry fee is required for each participant.
- Please restrict entries to those depicting Knox County nature. Photos may include rural landscapes as long as natural elements are focal points. Participants need not be Knox County residents.
- Photos must be matted or mounted on mat board or foam core. No framed entries will be accepted.
- There is no minimum photo size, although 8x10” is suggested. Maximum photo size is 14” in any dimension, and 16” for mats.
- No more than 3 photos per entry. No composite digital photos, please.

# Thank You to...

## Our Members (April - June 2010)

### FRIEND

Meryl Brott  
Andrew & Janet Katz  
Maureen McLeod  
Megan McLeod  
Bruce & Lisa Rickard  
Rebecca Reimbold & Bryon Thomas  
Henry Woolsey

### FAMILY

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## Our Donors

### Earth Day Challenge Marathon Sponsors:

2 Toms, American Health Network, Robert Atwell, DPM, Fredericktown Veterinary Clinic, Hammer

Nutrition, Hillside Veterinary Clinic, Kokosing Gap Trail, Lanning's Foods, Mortellaro McDonald's, The Peoples Bank, Printing Arts Press, RoadID, Signline

Graphics & Lettering, Village Market, Wiford Rental & Sales.

## Our Volunteers

### In the office, classroom, gardens and on the trails:

James Gyenes  
**Bluebird Monitors:** Keith Kitchen, Jan Ellis, Sarah Goslee-Reed, Susie Fish

### Earth Day Health Expo & Earth Day Challenge Marathon:

Our sincere thanks to the 250+ volunteers whose contributions were invaluable, including: Boy Scout Troop Troop 344 of Howard Ohio, Kenyon Student Athletes & Football

Team, MVHS Environmental Club, Mt. Vernon & Mansfield Amateur Radio Clubs, Mount Vernon Nazarene University, Theta Delta Phi of Kenyon, Kenyon Football, and many, many more.

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of pesticides, to which lightning bugs are vulnerable because they spend much of their time on the ground, and because they are predatory and accumulate toxins from their prey.

Another likely cause is light pollution - lightning bugs need darkness to see a potential mate's light signals. Lastly, loss of natural habitat where fireflies live may be to blame. Luckily, there are ways to support this insect while inviting their light show to your yard:



Firefly, courtesy of Firefly.org

- ◆ Let part of your yard "go wild" by leaving grass unmowed or planting trees and allowing natural leaf litter to accumulate below.
- ◆ Cut down on use of lawn chemicals.
- ◆ Reduce extra lighting on your property that may interfere with firefly signals.

Visit [www.firefly.org](http://www.firefly.org) to learn more about fireflies, or sign up to help monitor fireflies in your own backyard at [www.mos.org/fireflywatch](http://www.mos.org/fireflywatch).

Continued from page 3:

wasps or flies. Galls are commonly found on leaves or flowers but can also occur on twigs, bark and even buried roots. They vary widely in size, structure and color and are often the topic of debate amongst entomologists struggling to positively identify their architects - see 'News of the Brown' on page 5 for more.

Throughout human experience, oaks have made their mark on history, culture, technology and religion. Patience. Fortitude. Grace. Wisdom. Selflessness. People around the globe have perceived these human achievements in oaks and held the trees in great regard. While

not as ancient or as grand as some of its cousins, the White Oak above the Wolf Run wetland is slowly, quietly taking its place amongst its revered ancestors.

To some, the oak was known as the 'tree of doors', a gateway between worlds. What this suggests on a metaphysical level, I would not presume to say. But take the time to walk out to that tree, or one like it. Peel back and duck under its protective curtain of leaves and acorns. Pull yourself up into its low-hanging branches and look closely. You may find another world right there in your own backyard.

# 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

## Upcoming Events

*Details inside, or at*  
<http://bfec.kenyon.edu>

July 13	Kokosing River Walk
August 4-7	Nature's Keepers Outdoor Adventure Camp
August 7	Dog Days Trail Running Festival
August 15	Butterflies in the Garden
September 2	Kenyon's Gentle Giants
September 29	Wild Mushrooms
October 18	Deadline - Knox County Nature Photography Contest

DATE MAILED: July, 2010  
CONTAINS DATED MATERIAL

**Brown Family Environmental Center**  
**at Kenyon College**  
P.O. Box 508, Gambier, Ohio 43022



