



Scholarship Fund Keeps School Field Trips Alive

In light of school budget cuts, small transportation grants from the BFEC allow kids to continue to visit the center and make connections with nature that may last a lifetime.

by Heather Doherty

In 2011, as stories of high rates of unemployment and home foreclosures filled the news, we reported our own casualty of the “great recession.” State government cuts to school budgets were limiting their ability to make field trips to the Brown Family Environmental Center (BFEC).

Since 1996, over 14,000 Knox County school children had visited the BFEC for this purpose, but we suddenly faced a situation where schools could no longer afford the transportation, even though it usually amounted to just \$1-\$2 per child.

Like other, similar programs across the state, we saw a decline in attendance. But rather than throw in the towel, we established a scholarship fund to make small grants available to schools for field trip transportation. Donors have included individuals, the local conservation group Pheasants Forever, and the Youth

Philanthropy Initiative of the Mount Vernon and Knox County Community Foundation. Two years later, we’re happy to report that the fund is in high demand.

Why Time Out-of-Doors Matters

As we wrote in our Summer 2011 issue, children and nature are a perfect match. Children have boundless energy and curiosity, and the out-of-doors provides them with an unscripted landscape to explore.

Lacking the walls and right angles of the built environment, children’s imaginations may take them in countless directions, and there are always new mysteries and treasures to uncover.

Not only is this interaction fun, it’s the antidote to what ails a large proportion of children *and* adults. Both populations are incurring higher rates of depression and obesity, and a

growing body of research indicates that these maladies decline when people spend time outside being active.

Children also learn more, are more cooperative and creative, and are less likely to exhibit attention-deficit-and-hyperactivity disorder.

The response appears to be so powerful that it has prompted scientists and authors like Richard Louv, author of *The Nature Principle*, to explore the idea that humans are biophilic, or innately attracted to nature.

The concept makes sense considering that until very recently, humans spent nearly all of their time outside interacting with nature. The sudden absence of nature could be at the root of some of our populations’ chronic, ballooning illnesses.

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While we don't claim that 2-hour school field trips will turn this tide, it's a fine place to start. Field trips can leave lasting impressions, a fact demonstrated by the young adults who seek us out to recount their memories of BFEC field trips taken a decade earlier.

Most kids get pretty excited by a chance to break out of the routine, but part of what makes the experience powerful is the Kenyon College students and community volunteers who guide students on their trips. Not only do kids get outside, they have adult role models sharing their fascination and excitement.

And, as we often attest in support of our mission, children won't protect what they don't know. Opportunities to create positive experiences outside are vital to forming future generations who will care for our world.

Making Learning "Sticky"

While we do encourage children to get their hands dirty during field trips, the term "sticky" learning refers to what we hope sticks in their minds. Although creating a conservation ethic is important, we also understand the value of the classroom time we ask teachers to give up.

To take full advantage of it, we've designed field trip curricula to correlate with academic content standards that teachers work so diligently to expound in the classroom. And the hands-on, sensory element helps makes the information real.

In early elementary years, students learn about adaptations of plants and animals that allow them to survive in their habitats. But to actually feel a tadpole's soft skin, which can absorb oxygen during its months of hibernation submerged in mud, or witness the chiseling work of a woodpecker's extraordinary beak firsthand helps cement the concept firmly in children's minds. As one child put



Not only is being in nature fun and full of "sticky" learning, it may be the antidote to what ails a large proportion of children and adults.

it, "I had so much fun, I forgot that I was at school!"

Learning Through Doing

The children who attend field trips are not the only beneficiaries of the program. The nearly 50 Kenyon students, in addition to community members, who volunteer to help lead field trips every season also reap rewards.

Just like adults and children, Kenyon students can be squeezed for time, stuck behind screens, and under pressure, and leading a field trip can be the perfect remedy.

For high-performing students who keep a rigorous schedule, leading field trips is a "legitimate" reason to get outside and take a break. As one student put it, "You can't be worrying about tests and homework when you're outside running around with five year-olds."

Plus, leaders get a chance to engage with the landscape through the ecstatic lens of a children. The children's enthusiasm, as they barely refrain from running from one activi-

ty to the next and proclaiming "wow, cool!" to new discoveries, has a way of rubbing off. Everyone comes away with a new appreciation and awareness of the life around us.

Students also tell us that being away from the "Kenyon bubble" and spending time with a different age group for a few hours is refreshing. We're proud at the BFEC to bring together two groups of people who can benefit from each other so much.

Growing Demand

Though the BFEC was pleased to receive a grant from the Youth Philanthropy Initiative of the Mount Vernon and Knox County Community Foundation last year, demand for the scholarship fund is on the rise. The BFEC received a total of eight applications requesting \$1,200 last year; of the 1,050 students who visited for field trips, half of them did so with assistance from the BFEC.

If you'd like to contribute, please send donations to BFEC, P.O.Box 508, Gambier, OH 43022, and include a note indicating the scholarship fund as the destination.

Creature Feature
by David Heithaus



Flying Squirrels

At a Glance...

NAME The species' scientific name, *Glaucomys volans*, translates to "blue-grey mouse-like flying creature."

SIZE Adults are generally 8-10 inches long including a 3-4 inch tail. They weigh only 2-4 ounces.

LIFE SPAN Up to 13 years in captivity but probably only 5-6 years in the wild.

DIET Diverse! Insects, nestlings, eggs, nuts, seeds, fruit, bark, fungi, lichens, sap, mice and even carrion.

PREDATORS Owls, raccoons, snakes, domestic dogs and cats.

ACTIVITY Nocturnal

RANGE All of Ohio, year-round residents

REPRODUCTION Mate April-May and August-September with 2-6 young born about 40 days later.

FUN FACT As cute and cuddly as they may appear, flying squirrels are considered more blood thirsty than other squirrels with other critters forming a larger percentage of their diets. Not unlike the Donner Party, carrion gets popular during winter months.

ALIASES Southern flying squirrels carry a number of local handles throughout their extensive range. Depending on who you ask (and in what language) they are called the Eastern flying squirrel, white-furred flying squirrel, fairy diddle, fairy glider, petite polatouche, assapanick, or ardilla voladora de sur.

If someone were to ask you what the most common squirrel in Ohio was, you'd probably conjure a vision of something big and grey and bushy-tailed. Fair enough; it's hard to walk fifty steps in Gambier without being accosted by a Gray Squirrel with a Snickers wrapper. In reality though, our most plentiful squirrels may be ones you've never seen before: southern flying squirrels. Really. We are just lousy with southern flying squirrels.

But how can that be, you may wonder. Are they microscopic? Do they live under water? Are they transdimensional like Bigfoot ('Ohio Grassman', scientific name still debated)? Not at all, they are simply... nocturnal.

Like the chupacabra. Or maybe more like Batman with the gliding and all.

While there are over 30 species of flying squirrel world-wide, only two inhabit North America: the Southern flying squirrel (*Glaucomys volans*) and its slightly larger cousin the Northern flying squirrel (*Glaucomys sabrinus*). Only the Southern Flying

Squirrel can be found in Ohio.

Southern flying squirrels are small and lightly built. Seldom do they exceed 10 inches in overall length or 4 ounces in weight. More often they are 8 ½ to 9 ½ inches long and only 2 to 3 ounces. They range in color from reddish brown to gray with a cream-colored belly. Their gliding membrane, or patagium, runs along their sides between their fore- and hindlimbs and is fringed with black fur. Flying squirrels have large eyes to serve their nocturnal lifestyle and a flattened tail that acts as a stabilizer during 'flight'.

They are "Southern" only relative to their cousins who prefer arboreal forests and range as far north as central Alaska. They are common throughout the Eastern United States from Maine to Florida and even extend in isolated pockets down into Central America.

Like gray squirrels, Southern flying squirrels prefer to make their homes in hardwood or mixed hardwood-coniferous forests. Middle-aged to mature forests are prime digs providing better nesting sites, sources of food and base-

jumping platforms than younger stands.

Home ranges vary widely in size and overlap between individuals is common. Males tend to have slightly larger home ranges in areas where food is more plentiful while females favor smaller areas with ample nesting sites.

Not overly ambitious, flying squirrels are secondary cavity nesters meaning they use cavities in trees created by other animals or natural processes (woodpecker, fallen limb, heart rot, etc...). Squirrels line these cavities with a number of different materials based on the nest's intended use and the materials available in their particular area. Leaves, grasses, bark, twigs, moss, lichens, fur, feathers and man-made materials can all be on the list when a squirrel sets out to deck out their den.

There are three basic nest/den types. A refugia is a small den that is used only overnight during a foraging trip or as young squirrels leave their natal den to find their own home range (kind of like a buddy's couch). A natal nest is a larger one in which

squirrels are born and raised. An aggregate nest is the largest den type and is shared by a number of individuals. Aggregate nests are unique to flying squirrels and almost always occur in a large tree cavity over winter.

While cavities are the norm, Flying squirrels also employ a number of different types of shelter throughout their lives and to varying degrees throughout their range. During summer months, leaf and twig nests called dreys are built between tree branches. Despite having higher maintenance requirements than your typical cavity, these dens can be used for several years at a time.

There's an old adage that has fallen on deaf ears with our gliding friends. My editor would prefer I paraphrase: *don't x where you y*. Unlike many other types of squirrels, Southern Flying Squirrels are not particularly hygienic when it comes to what goes down in the den. Especially in shorter term haunts, they have the habit of taking food to bed and not really bothering to get up to use the toilet. And like some dormitory spaces on Sunday, dens sometimes require a deep cleaning... or abandonment.

Flight?

Flying Squirrels do not actually fly. They are self-conscious so they self-aggrandize. They actually glide by extending their limbs, thereby stretching their patagium into a sort of wing. With their relatively long limbs, the patagium creates enough surface area for the squirrels to glide for considerable distances. While flights from tree to tree average sixty feet or so, some Northern flying squirrels have been recorded traveling over ninety meters on a rare glide.

Flight mechanics: Before hurling themselves into the night sky on a pseudo-wing and a high-pitched prayer, Southern flying squirrels tend to peek out over their launch pad and size up their target and surroundings. After this quick bit of

what is most likely triangulation, it's Red Bull time. Once airborne, flying squirrels are fairly nimble little gliders. Muscles and specialized cartilage on the fore-limbs allow the squirrel to adjust the area of the leading edge and the overall area of the "wing". They can make turns as sharp as ninety degrees to avoid obstacles.

While minor adjustments in the wrists and ankles govern trajectory it is the tail that allows for gutsy landings. By lifting their large, flat tail, the squirrel alters its trajectory, quickly pivoting upwards and using its patagium like a parachute to decelerate and reduce the shock of landing. Once they've touched down, the squirrel always scampers to the far side of the target tree to avoid potential pursuers. That neat trick aside, the squirrel's wing-loading is about 1 pound per square foot, 2-3 times that of most bats. Higher wing loading does not allow the squirrels

the acceleration, turning or climbing ability of their fellow acrobats of the night- even at the same speed and trajectory. The comparison is actually a bit of hang-glider versus jet fighter as bats can create lift and thrust... call it a point of interest for the pilots and physicists out there.

Let's have... whatever for dinner

When the dinner bell rings, there's not a lot of nose-wrinkling; the diet of the Southern flying squirrel is broad and varied. Nuts and seeds of all types of course as well as flowers, buds, fruits, berries, fungi, lichens, sap, soft bark, insects, spiders, eggs, nestlings and even carrion.

They typically forage as much as possible amongst the trees but are not unwilling to make trips to ground for specialty items. They are somewhat clumsy off the wing though and always stay within "safe scamper distance" of a protective tree. Like some

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Who could hurt something so darn cute?

Well... people generally top this list but there are some other critters out there that aren't impressed by the flying squirrels antics either. Or maybe the antics are just less impressive than the flavor; cute often equals delicious after all! Owls, snakes, coyote, weasels, martens, bobcats, lynx and domestic cats all have a taste for flying squirrel meat... but the squirrels are no pushovers.

Aware of how delectable they are, flying squirrels are always sensitive to their surroundings and on constant watch for predators. The most dangerous times for flying squirrels are the 'teen' weeks when locomotion is still being honed and surroundings still being absorbed. If they make it to adulthood, they have a number of ways of staying out of a stool sample.

Camouflage: The squirrel's coat is designed to blend into its surroundings. Much like the Predator (first movie except no dreadlocks or shoulder laser), they can be very hard to spot if they remain still. Since most of their predators use movement (at least in part) to hone in on prey this is generally the



squirrel's first line of defense.

Knowledge: Adult squirrels know their territories inside and out and are constantly aware of the closest available tree cavity.

Agility: When push comes to shove, squirrels can run, leap, glide and dart faster than most predators. Few pursuers can move from tree to tree as efficiently.

Training: On the behavioral ecological level. So inbred is the fear of owls, after a flight, flying squirrels always move to the far side of a tree after landing.



An Eye to the Future: Restoration Projects Get Underway

This fall we aim to improve habitat quality and reduce maintenance effort on several spaces. The BFEC and Kenyon College Grounds staff spends hundreds of hours and gallons of fuel mowing all of our trails, fields and landscaped areas. Next year we're taking a bite out of that by expanding the swamp white oak planting between the river and Kokosing Gap Trail. A good portion of the area that is currently mowed will be planted with seedlings grown from local seed and monitored for invasive plant encroachment until it has become established. Up at the Observatory, we're plating over an acre of warm season grass and forb prairie that will provide both food and shelter for a number of wildlife species.

Finally, on the leased agricultural field off of Laymon Road, we'll be undertaking our most ambitious restoration project of the year. Another three acres of prairie and an oak grove boasting seventeen tree species will be installed this fall! Over the next three years we will work to reclaim the rest of the field with scientific and habitat plots that will showcase a number of Ohio and regional forest types; one more venue for recreation and research at the BFEC! Look for more on this project in our next newsletter.



More swamp white oak trees will join those planting in the late 90's between the BFEC river trail and the Kokosing Gap Trail.



Oak trees tend to hold their leaves longer than other species, baring rusty purple hues into November. The southern red oak pictured here, however, turns blazing red - look for it on our river trail.

Leaves of Change

Nothing is as constant as change itself. Whether you welcome it or not, summer changing to fall offers Ohioans a feast for the eyes. We all know that leaves change brilliant colors and fall from trees, but *why*?

The green that dominates summer forests is provided by chlorophyll, the pigment that allows plants to make food from the sun's energy (via photosynthesis). But lurking in smaller quantities behind chlorophyll are other pigments.

When shortening days cue trees to stop producing chlorophyll, green fades and the yellow hues of carotene pigments shine forth. Meanwhile, the declining intensity of sunlight causes leaf stalk veins to slowly close off, trapping sugars in the leaf. This revs up the production of another pigment, anthocyanin, which create the red hues of red maple, sumac, and oaks. Leaves fall from limbs once the veins are completely closed.

Why do fall colors vary from year to year?

While declining sunlight yields the largest influence on changing colors, other factors like temperature, moisture, and cloud cover play accompanying roles that interact to produce an infinite variety of color displays.

The pigment responsible for red colors, anthocyanin, is most active with sunny skies. When warm, sunny days are combined with crisp (but not freezing) colors, the reds really dazzle. Warmth pumps up sugar production in the leaf and anthocyanin pigments, while cool nights prevent the sugars from exiting the leaf through the closing leaf stalk. A wet spring and at least adequate moisture through the growing season also helps bring out the most brilliant colors.

Calendar of Events

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

Family Adventure Days - First Saturdays, 1-4pm. Join us for a different adventure on the first Saturday of every month! Check out a display, chat with a naturalist, go on a scavenger hunt, or try a craft. Visitors are also free to explore the center, visit our live animals, peruse our library or borrow nets and binoculars.

Oct. 5 **Book it! Trees & Leaves**

Before the leaves fall, follow a scavenger hunt to find their different shapes and sizes, and take a memory of the forest home by authoring your own book of leaf rubbings. Inspire your little artists by admiring artists books related to trees created by Kenyon Professor of Art Ellen Sheffield.

Nov. 2 **Hungry Critters, What's to Eat?**

Join us at 2pm to check out our collections of animals skulls and furs as we discuss how animals survive in winter. Then try out your "foraging skills" on a walk to explore for seeds and nuts. What does a wild turkey eat? Find out, and create a wild turkey craft from natural materials.

Dec. 7 **Buds & Bark**

What stories to trees tell now that their leaves are gone? At 2pm take a walk to explore for bark texture and collect twigs to bring back to the center for holiday art.

Fall Sky Astronomy - Friday, Oct. 18th, 8:00pm

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, Oct. 19, 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.

Bird Walk - Saturday, November 2, 10am

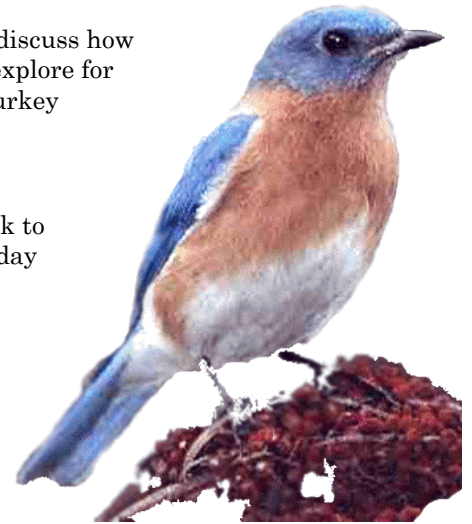
Join us for a casual bird hike with expert birder, Howard Gratz. Spot birds that summered here and have yet to fly south, plus others that will be arriving from the arctic to winter in balmy Ohio. Binoculars provided.

Glacial Geology of Knox Count

Sunday, Nov. 17, 2pm. Learn about the origins of our low-profile landscapes, lakebed soils, and gravel deposits from Kenyon Professor of Physics, Eric Holdener. Hear tales of rivers that reversed direction or flow and view glacial artifacts.

Christmas Bird Count - Sunday, December 15th

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. Participants count birds at home feeders, or in the field along roads and trails. Lunch provided for all participants at noon. Please call to register.



Calling All Photographers!

Knox County Nature Photography Contest

Join this community contest in celebration of our beautiful Knox County!

Prizes awarded in children's (ages 15 & below) and adult divisions. Winners will be selected by a panel of judges, and Harvest Festival event-goers are welcome to vote for "people's choice" awards.

Submission deadline is October 14; contest show will take place during the October 19 Harvest Festival.

Visit <http://bfec.kenyon.edu> or email dohertyh@kenyon.edu for guidelines.

Thank You to...

Our Members July - September

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Our Donors

Ohio Nature Education

Our Volunteers

In the office, classroom, gardens and on the trails: Brian Miller, Sarah Goslee Reed, Veronica Depascula

Nature's Keepers Outdoor Adventure Camp, Friends & Counselors: Lee & Audra Cubie, Gabby Carver, Rowen Croswell, Alex Foster, Sarah Fowler, Colter Hoar, Jenni Rogan, Zak Welker

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of their cousins, flying squirrels are scatter-hoarders; when winter looms, they collect vast amounts of non-perishable food items and store them in a number of shallow holes or larger "larder cavities" in trees.

Live together, glide together

Flying Squirrels are active throughout the year though they may take a week or so off during spells of severe winter weather. At this point, groups of squirrels will often find a large cavity to form an aggregate nest. In groups of 10 to as many as 50, the squirrels are able to conserve collective body heat by huddling together through extended rough patches.

Perhaps the most social of all squirrels in *and* out of the nest, Southern flying squirrels have been seen flying and foraging in groups and have a clear system of communicating with one another. They vocalize with bird-like, chirping noises- often combining these with tail bounces and other physical cues to indicate danger.

Like gray squirrels, flying squirrels mate twice per year with the exact timing depending on geographic distribution. In Ohio, mating takes place between April and May and again between August and September. The young are born hairless, blind and without generally without purpose beyond nursing. By the end of their first week, ears have opened and fur has begun to grow; by the end of the first month their eyes have opened and they will begin to take notice of solid foods. After two months, the pups have been weaned and are capable of almost-independent living... the teen days. Short lived. By four months, almost all pups will be fully independent and capable of taking to the skies in short, controlled bursts of gliding action.



Are YOU a member?

Now is the time to join!

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

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

Amount enclosed: _____

My check, payable to Kenyon College, is enclosed

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

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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) non-profit organization.



Brown Family Environmental Center at Kenyon College

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



Our Mission

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

Facility Manager

David Heithaus

Program Manager

Heather Doherty

Facility & Program Assistant

Jill Kerkhoff

Upcoming Events

Saturday	Oct. 5	Book It! Trees & Leaves <i>Family Adventure Day</i>
Friday	Oct. 18	Fall Sky Astronomy
Saturday	Oct. 19	Fall Harvest Festival
Saturday	Nov. 2	Bird Walk
Saturday	Nov. 2	Hungry Critters, What's to Eat? <i>Family Adventure Day</i>
Sunday	Nov. 17	Glacial Geology of Knox County
Saturday	Dec. 7	Buds & Bark <i>Family Adventure Day</i>
Sunday	Dec. 15	Christmas Bird Count

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

Fall Harvest Festival

Saturday, October 19, 2-5pm

music by the Clear Fork Valley String Band
wagon rides ~ photo contest show
pumpkin decorating ~ cider press
kids games at 3pm ~ bonfire
FREE!



DATE MAILED: October, 2013
CONTAINS DATED MATERIAL

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



