

# Litzsinger Road Ecology Center

## COMMUNITY NEWSLETTER

www.litzsinger.org

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*Students from Chesterfield Elementary framed by native grasses. Learn about their schoolyard on page 2. Photo by Eddie Jones.*

October 2014

## Toward a Sustainable Campus

*by Bob Coulter*

In one of my other lives I serve as a trustee of Antioch University New England. At our fall board meeting we were each given a copy of former faculty member Mitch Thomashow's new book *The Nine Elements of a Sustainable Campus*. While his book is aimed at helping colleges work toward sustainability, there are a number of places where there is an overlap with those of us serving a younger population. It might be an interesting exercise to work with your colleagues and kids to see which of these aspects of your campus that you can work toward making more sustainable:

- Energy
- Food
- Materials
- Governance
- Investment
- Wellness
- Curriculum
- Interpretation
- Aesthetics

Some of these are more obvious than others, but for most of them we have examples of schools that have been working toward sustainability in that area. Share your thoughts with Eddie, Leslie or me and we'll work with you to learn from others and move your campus forward. ✍





# Student Project Highlights: Chesterfield Elementary

by Deanna English

Part of what makes our work here so rewarding are the many opportunities to support our school partners in establishing a natural habitat in their schoolyards. The most successful projects are driven by student and teacher collaboration. When both the students and teachers work together to make these spaces, we have found that they are more likely to use and care for their habitat garden in the coming years.

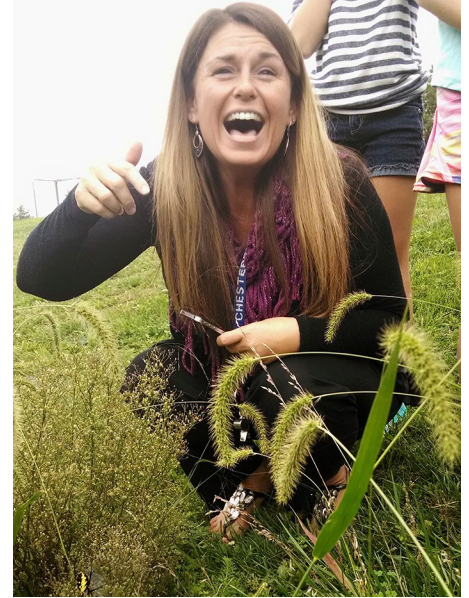
This month I'd like to introduce you to a student project happening at a partner school, Chesterfield Elementary. At Chesterfield Elementary, it is obvious every time we visit that the outdoor spaces at the school are used and appreciated in many ways.

In September, Eddie and I made a fall visit to explore the prairie space and help the fifth graders identify some invasive plants that they should remove. The fifth grade students at this school are very involved in creating and maintaining outdoor spaces and are solely responsible for the prairie space. This year's students are just as enthusiastic as the previous year's and were excited

to take on this responsibility along with other outdoor space plans. Each fifth grade student gets to select a group to work on that focuses on the outdoor spaces and allows them to use their personal skills and interests. The groups range from woodland and prairie committees to technology and art.

During this visit we helped the students learn how to identify Johnson grass and box elder seedlings, and then we went to work in the prairie. Along the way we discovered the many creatures that had taken up residence there, and we worked carefully to make sure we didn't impact their space too much.

It is easy to see that these students will take good care of this space. They are already in the process of designing and installing a path for people to enter into the prairie garden, and will be planting plants in spaces where we removed invasives. I can't wait to go visit again and see what new things these enthusiastic classes of fifth graders and their teachers accomplish this year. 🌱



Top: Teacher Mitzy Cruzen directs her students' attention to a large garden spider.  
Middle: A student waits for a monarch butterfly to alight.  
Bottom: Students handle an imperial moth caterpillar.  
Photos by Eddie Jones.

# HORTICULTURE & RESTORATION OFFERINGS FOR SCHOOL GROUPS

by Deanna English

Last month I wrote about specific school groups restoration projects we are implementing this year. We are beginning to have groups take advantage of those opportunities. Mulch has been spread, invasives removed, and the demonstration garden has been planted. Learn more in the [September newsletter](#).



Newly mulched and planted area.  
Photo by Deanna English

## OCTOBER HIGHLIGHTED OPPORTUNITY:

### Seed Collecting and Cleaning

Quite a few school partners now have native plant spaces. Some of these school spaces are just in the beginning phases and some are well established. Many of these partner schools collect seed when they are at LREC. Along with acquiring seed from different species, teachers and students also learn seed collecting techniques, knowledge they can take back to their own schoolyards.

## In Memoriam

We are deeply saddened by the loss of one of our wonderful Volunteer Educators.

**Rich Nolte** passed away in his sleep on Saturday, September 6, 2014.

Rich was a gentle soul, towering over the students he worked with and also many of the volunteers. He had a calm nature and was passionate about working with kids.

He was recovering from a broken hip, and we were looking forward to seeing him back at the Ecology Center. We will surely miss his company. 🍂

## ONGOING OCTOBER RESTORATION OPPORTUNITIES:

**Stream cleanup**—Cleanups available when the stream is at a safe level.

**Stream monitoring**—Stream monitoring kits are available and include dissolved oxygen, conductivity, pH, temperature (air and water), nitrates, turbidity, and chloride.

**Macro invertebrate monitoring**—This is an opportunity to count the numbers and types of macro invertebrates found in the Deer Creek to help determine stream health.

**Invasive plant removal**—We welcome opportunities to educate as students help us remove invasive plant species from the site.

**Plant monitoring**—Students learn how the plant monitoring grid is set up and practice their own monitoring skills.

**Tree monitoring (HS/MS)**—High school and middle school students develop tree identification skills and learn techniques used to inventory a large area of trees.

**Roots and plant structure demonstration**—This activity introduces students to the purpose and function of roots and plant structures.

**Collect seed**—Learn to identify one or two plants and go out and help us collect some seed.

**Clean seed**—Learn about different seed sizes and dispersement strategies. Clean and prepare for planting in the greenhouse or for sowing outside. 🍂

## OCTOBER

by Martha M. Schermann

Outstanding  
Children  
Talking  
Over  
Basic  
Ecological  
Rhetoric



# Glass House Quiz: Bats

by Danelle Haake and Deanna English

**H**alloween may be several weeks away, but we've already got bats on the brain. We don't often get to see these flying mammals at Litzsinger Road Ecology Center because they are asleep during the day when we are here. We have been fortunate enough to happen upon two sleeping red bats (*Lasiurus borealis*) in the past three years.

Although we don't get to see them often, we still need to consider bats when we make decisions about our habitats. For example, we recently planted a couple of shagbark hickories: the shaggy bark is a great place for the endangered Indiana bat (*Myotis sodalis*) to roost and raise their young in the summer. It may take several years, but maybe someday these trees will shelter a truly rare species!

We know you are eager to test your knowledge of bats, but remember, we will be back with a new quiz next month. You might say, "same bat-time, same bat-newsletter." So, without further ado, cue music: Na na, na na, na na, na na, Bat Quiz!



Red bat sleeping in a tree at LREC.  
Photo by Danelle Haake.

- Bats are mostly active at night. What do we call this?**
  - Diurnal
  - Nocturnal
  - Crepuscular
  - Lunar
- People often fear bats, partly because they think that bats will bite them and drink their blood. Fortunately for us, this isn't true of any species living in Missouri (or anywhere else in the United States). So what do our local bats eat?**
  - Insects
  - Fruits
  - Leaves
  - Small mammals
  - Both a and b
- How many species of bats are there in the world? How many in Missouri?**
  - 3000 species worldwide; 22 species in Missouri
  - 300 species worldwide; 38 species in Missouri
  - 1000 species worldwide; 14 species in Missouri
  - 100 species worldwide; 7 species in Missouri
- What is the largest species of bat found in Missouri and how much does it weigh?**
  - Gray bat: 16 ounces (1 pound)
  - Red bat: 4 ounces
  - Indiana bat: 8 ounces
  - Hoary bat: 1 ounce
- Cave-dwelling bats have been having a difficult time lately. There is a fungal disease that is causing bats to wake early from their winter hibernation. When they wake, they go out to hunt but they can't find food; this wastes their precious fat stores and they starve. What is the name of this disease?**
  - Creeping bat fungus
  - White-nose syndrome
  - Cave mycoalbia
  - Fungal distress syndrome

See **Quiz**, page 5

From **Quiz**, page 4

Answers:

- 1. b) Nocturnal.** Nocturnal animals, including bats and owls, are most active at night. Animals that are most active during the day (songbirds, squirrels) are 'diurnal,' while those that are most active during twilight (deer, skunks, rabbits) are called 'crepuscular.'
- 2. a) Insects.** According to the Department of Conservation, all Missouri bats eat insects, and only the flying insects at that. There are bats in other parts of the world that will eat fruit, nectar, mice, birds, frogs, fish, and even drink the blood of larger mammals.
- 3. c) 1000 species worldwide; 14 species in Missouri.**
- 4. d) Hoary bat: 1 ounce.** The hoary bat can weigh up to one ounce and has a wingspan reaching 16 inches. The large flying fox is the largest bat in the world with a wing span of up to six feet!
- 5. b) White-nose syndrome.** White-nose syndrome is the fungal disease that is harming bats. Caves with disease-carrying bats will often lose 90–100% of the population. This is why several of the caves in Missouri parks have been closed and why those that remain open have strict regulations about cleaning footwear to prevent the spread of the fungus to other caves. ✎

Sources:

<http://mdc.mo.gov/conmag/2000/03/missouri-bats>

<http://www.fws.gov/midwest/Endangered/mammals/inba/inbafactsht.html>

<http://www.batconservation.org/about-bats/conservation/white-nose-syndrome>



Top: Hoary bat (*Lasiurus cinereus*).  
Photo by NPS.

Bottom: Little brown bat (*Myotis lucifugus*)  
displaying white-nose syndrome.  
Photo by USFWS.

## NEW GRANT LINKS LREC TO CITY SCHOOLS

by Bob Coulter

A new three-year grant awarded to the Missouri Botanical Garden by the Institute for Museum and Library Studies will be based at Litzinger Road Ecology Center.

New national standards in science and math require that students do more than just learn facts and procedures. They also need to be able to think creatively and apply what they are learning to solve real world problems.

This project lets the Garden create and test innovative ways to address these needs as area fifth graders synthesize what they are doing at school with field work in the community and at Missouri Botanical Garden sites. These investigations will be furthered as students design and create computer models of the phenomena they are investigating using MIT's StarLogo Nova tools. As they do this, students will develop a much richer understanding of key Garden endeavors researching the role of plants as a source of food and medicine, and as the base of a strong environment. ✎



# LREC Research: Sarah Black

by Danelle Haake

*Every summer, LREC hosts two interns who spend about two thirds of their time helping with restoration projects and the remaining time working on an independent project. The pair we had this summer, Sarah Black and Brittany Bratt, were exceptional! These two ladies were virtually inseparable over the ten weeks they were here. This month, I would like to share Sarah's project with you; check back next month to learn about Brittany's work.*

When interns first start at LREC, we help them become familiar with the site and start offering ideas of projects that might interest them. On one of our walks, we passed by a tall stand of cup plants that were holding water in the 'cup' that is formed where the leaves clasp the stem of the plant. I offhandedly mentioned a question that has been nagging at me: why does the cup plant have a cup?

Many plants and animals have evolved unusual traits that provide some benefit, some selective advantage, to the species. Cacti and other succulent plants evolved with a waxy skin; the benefit of this is that the plants are more able to retain water. The thorns of the cactus are a benefit as a defense to protect the plant from thirsty animals. We've seen many animals drinking from the cup of the cup plant. This is a great benefit to wildlife, but what benefit does the cup provide for the plant? Sarah was as intrigued by this question as I was, so she set out to find the reason.

The first step in this process was to search the literature to see what others had discovered about the cups of cup plants. Sarah was only able to find one article that explored this question, an article written by Beal and St. John in 1887. According to the article, the cup plant does not absorb the water held in the cups and it does not bring in nutrients from insects that accidentally drown in the water-filled cups. In their opinion, the cup is a defensive strategy that prevents wingless insects from reaching the top of the plant to feed on the pollen and nectar. Sarah decided to test this hypothesis.

Sarah identified several patches of cup plant in the prairies of LREC. She collected and identified wingless insects that she found at different heights along the plants in these patches. While she found the majority of the insects in the middle of the plants (rather than the top or the bottom), there was not a statistically significant difference. The types of invertebrates



Sarah Black in the prairie.  
Photo by Brittany Bratt.

found at the top were spiders, true bugs, and ants.

In the end, Sarah decided that, though her study did not support the hypothesis presented by Beal and St. John, she could not state that their hypothesis was incorrect. There were several things that lead to uncertainty in her results, including the fact that she was unable to collect invertebrates during the bloom period—the time when the hypothesis would truly need to be tested.

Sarah took hold of her question and found the tools and methods she needed to find an answer. She began her project with no experience collecting or identifying insects, but by the end she was quite proficient. Her enthusiasm and positive attitude were wonderful assets to LREC. We are eager to see where her path leads!

To learn more, download Sarah's paper from the Research section of our website: <http://www.litzsinger.org/research>. ✍

Litzsinger Road Ecology Center

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314-540-4068

[www.litzsinger.org](http://www.litzsinger.org)

*Special Local Opportunity:*

**Mississippi River Watershed Education Symposium**

November 14–15, 2014

Connect with your fellow educators and watershed professionals and learn about the various ways in which you can incorporate watershed focused education into your own programs.

Strands that will be addressed:

- Watershed Concepts
- Natural History/Environmental Ed
- Cultural History
- Science, Technology, Engineering, Math (STEM)
- Civic Engagement/Sustainability

This two-day conference will be held at National Great Rivers Research and Education Center in East Alton, Illinois. It includes concurrent morning presentations as well as afternoon workshops and field trip options.

The registration deadline is November 4. To learn more and to register, go to <http://www.ngrrec.org>, send an email to [nmarioni@lc.edu](mailto:nmarioni@lc.edu), or call 618-468-2783. 📧



**Macroinvertebrate Monitoring Dates in October**

- Monday, October 6: 9–11:30am
- Wednesday, October 8: 12:30–3p.m
- Monday, October 13: 10am–12:30pm
- Wednesday, October 15: 1–3:30pm
- Wednesday, October 22: 12:30–3pm
- Friday, October 24: 1–3:30pm
- Wednesday, October 29: 2–4:30pm

You are welcome to attend more than one, and you can bring a friend if you'd like!

Meet at the Glass House. Questions? Contact Danelle Haake at [danelle@litzsinger.org](mailto:danelle@litzsinger.org) or 314-961-4410. 📧

**LREC Announcements**

*Various Dates*

**Macroinvertebrate Monitoring**  
See listing at left. Contact Danelle Haake at [danelle@litzsinger.org](mailto:danelle@litzsinger.org) or 314-961-4410.

*October 6*

**Volunteer Enrichment: School Programs Update & Sample Lesson**  
Meet at the Glass House. Session offered two times (9:30–11:30am or 12:30–2:30pm). Sign up for one session. Learn updated info on our school programs and sample a lesson. RSVP to Martha at 314-540-4068 or [martha@lrec.net](mailto:martha@lrec.net).

**Local Events**

*October 11*

**Saint Louis Science Center Educator Open House**  
9am to 12:30pm at the Science Center. Reservations required. Learn more at <http://www.spsc.org> or call 314-289-4439.

*October 18*

**River des Peres Trash Bash**  
8am to 1pm at multiple locations. All-ages trash pickup includes lunch. More at <http://www.riverdesperes.org/> (see Events Calendar) or contact Danelle Haake at [danelle@litzsinger.org](mailto:danelle@litzsinger.org) or 314-961-4410.

*November 1*

**Teen Night at the Garden**  
6 to 9pm at the Missouri Botanical Garden. Bring your high school science, environmental, or leadership club to explore the Garden after hours! Club sponsor must attend the event with students. Learn more at <http://www.missouribotanicalgarden.org/learn-discover.aspx> or call 314-577-9482.

**CONGRATULATIONS TO BOB COULTER ON HIS NEW BOOK!**

Litzsinger Road Ecology Center Director Bob Coulter's new book, *No More Robots: Building Kids' Character, Competence, and Sense of Place*, was published this fall. In this book, Bob draws from our teacher partnerships and work on two National Science Foundation grants to analyze how teachers who are more successful in engaging their kids with the local community see their jobs differently and see their kids as more capable actors. 📧

