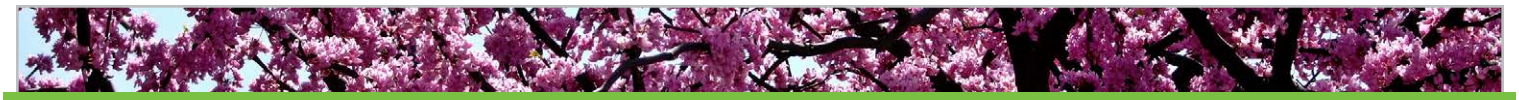


Litzsinger Road Ecology Center

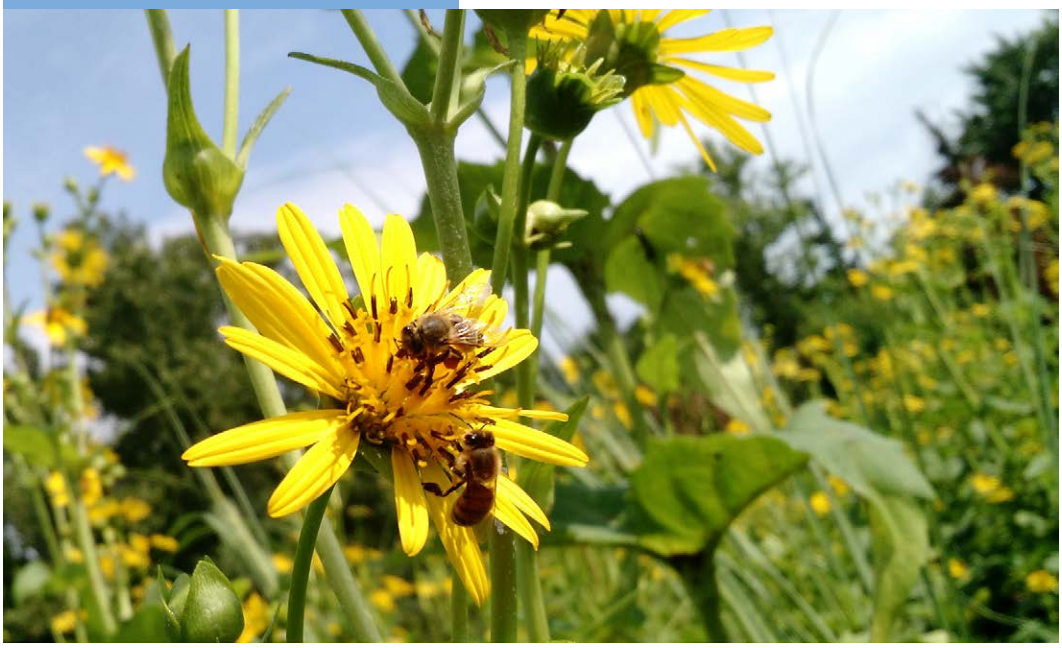
COMMUNITY NEWSLETTER

www.litzsinger.org

April 2016

in this issue

Honey bees on cup plant. Learn about pollination activities you can do with your students on page 2. Photo by Leslie Memula.



Share Your Stories

by Bob Coulter

I'm pleased to be about halfway through writing my new book, *Learning Out of the Box: Promoting Growth Through Community Engagement*. The argument I'm making is that we can best help kids grow into active, responsible citizens if we give them opportunities to have ongoing, meaningful engagement with their community. In terms of what this looks like on the ground, it builds off of John Dewey's framing of experience as a process of doing something, undergoing the consequences, and then using that experience and the results to better inform the next action. The key difference for Dewey (and me) is that a meaningful experience is more than a one-off action. It's a way of being, as one experience leads to the next, with each of us rethinking and adjusting our plans as we work toward a valued goal.

I'd like to be able to make the book more real with vignettes and short case studies of the great work you are doing in your schoolyard or in the local community. If you have a project you'd be willing to share that is underway now or that has recently been completed, please drop me a note (bob@lrec.net) with a quick summary. I'll follow up with you right away. Thanks.

Bumble bee on wood mint. Photo by Leslie Memula.

Activity Spotlight: Plants and Pollinators

by Leslie Memula

It's exciting to see the prairies greening up and the trees and shrubs beginning to bloom. I love this time of year when the outdoors is waking up and coming alive once again. Before you know it, the woods will be teeming with a dazzling display of showy flowers. The prairies will continue to grow taller and then almost magically burst into amazing colors. What makes this possible, time and time again, season after season? Pollinators!

"Dialogue Between a Plant and a Pollinator" will get your students out into the schoolyard to observe the different insects that visit a plant. One technique is to have a group pick out a specific plant and record the different pollinators that visit their chosen plant. A second technique is to pick out a specific pollinator and have the group follow their pollinator to see how many different plants it lands on. It would be interesting for students to compile their data to see if different pollinators prefer certain flower colors or if certain plant species attracted a greater number of pollinators to them.

When working with younger students, you could create your own spotting sheet (or modify this one to include insects commonly seen in your outdoor space). You could also go on an alphabet bug scavenger hunt and then talk with your students about which of the critters that they found are pollinators. "Flower Color & Pollinators" will let your students focus on a specific color flower and then circle the different pollinators—bee, butterfly, beetle, moth, fly—that visit.

Here are a couple of web resources that you may find interesting and helpful on your journey to learning more about the importance of pollinators:

- "Pollination Information" (Lady Bird Johnson Wildflower Center)
- "Our Future Flies on the Wings of Pollinators" (USDA Forest Service)

We are also fortunate here at LREC to have two copies of the book *Pollinators of Native Plants—Attract, Observe and Identify Pollinators and Beneficial Insects with Native Plants* (2014) by Heather Holm. Let us know if you'd like to look through it the next time you are here!

Expanding Adult Programs

by Susan Baron

We're excited to expand our adult program offerings at Litzsinger Road Ecology Center! To help facilitate this, I am transitioning to a new role as adult programs coordinator, after having spent the past three years working with Bob developing mobile games. In my new role, I'll be working primarily in three areas:

Susan Baron.

- **Interns:** We currently offer summer horticulture/restoration internships, but I'll be working to expand opportunities for interns throughout the year, particularly for students interested in working with our education programs.
- **Volunteers:** I will be the main liaison with the Missouri Botanical Garden volunteer office and serve as the first point of contact for new volunteers. Current volunteers will continue to interact with staff at Litzsinger as they do now.
- **Advanced Inquiry Program:** In the summer of 2017, the Garden will be launching a new Master's degree program in partnership with the Saint Louis Zoo and Miami University in Ohio. Look for more information on this program in upcoming newsletters. (See their current work at *http://aip.miamioh.edu/*.)

Feel free to contact me if you have any thoughts or ideas about volunteers or interns at the Litzsinger Road Ecology Center! My email is *susan.baron@mobot.org*, and my phone number is 314-691-2628.

APRIL

by Martha M. Schermann

A
Possum
Rarely
Is
Loved

Find us on: facebook®

Teachers and Volunteers: Have you joined one of our Facebook groups yet? Join to learn about local events and site news, and share posts with your colleagues.

Join LREC Volunteers

Join LREC Teachers

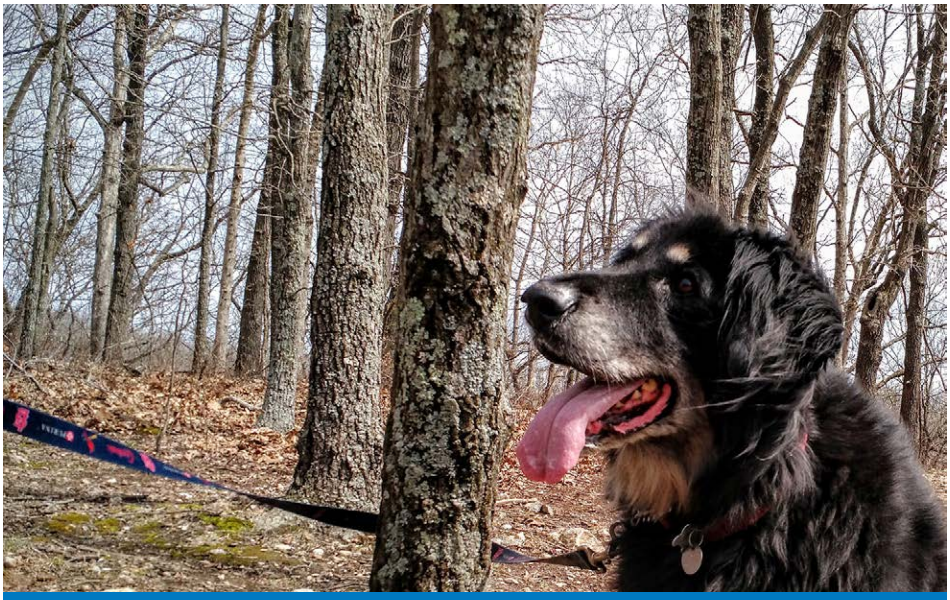
Take a Hike!

by Eddie Jones

On a recent sunny day, I played hooky from work—don't tell anyone!—and spent the day with my wife and Romeo (the Gordon Setter) hiking the trails at Rockwoods Reservation. The bloodroot and serviceberry were boldly announcing the imminent arrival of springtime.

Back at work, I had a wonderful conversation about favorite hiking spots with long-time Volunteer Educator, Marty Schmitt. The next day she sent me an email list of her favorite local hikes. Having personally experienced several of these amazing places, I am compelled to share them with you. It is my sincere hope that you will take some time this season to explore one—or more—of these inspiring and restorative places. Marty's list is at right. (Note: all these hikes are in the book *60 Hikes Within 60 Miles: St. Louis*.)

Bloodroot. Photo: NPS.



Romeo relishing Rockwood Ridge. Photo by Eddie Jones.

FAVORITE NEARBY HIKES:

- Castlewood State Park (River Scene Trail)
- Lewis and Clark Trail
- Hilda Young Conservation Area
- LaBarque Creek Conservation Area
- Lost Valley Trail

HIKES FARTHER OUT:

- Hawn State Park
- St. Francois State Park (Mooner's Hollow Trail)
- Silver Mines-Millstream Gardens Trail
- Pickle Springs Natural Area
- Hickory Canyons Natural Area (combine with Pickle Springs if you want a longer hike; they're each about 3 miles)
- Amidon Memorial Conservation Area (short but gorgeous)
- Bell Mountain Wilderness Area (but you have to get off the trail at the mountain top and explore the views on the far side)
- Johnson's Shut-Ins and Taum Sauk State Park
- Hughes Mountain Natural Area (really cool, but the hike is short)

GREAT HIKES, BUT THE TRAILHEADS ARE HARD TO FIND:

- Lower Rock Creek
- Ozark Trail (Courtois Section)

LREC Research: Groundwater Flow

by Danelle Haake

During the summer and fall of 2015, Dr. Elizabeth Hasenmueller and her team of students from Saint Louis University monitored water quality in Deer Creek at Litzsinger Road Ecology Center. They looked at many aspects of the water chemistry to try to understand how Deer Creek is supplied by groundwater and overland flow, particularly during storms.

To do this, they looked at both the conductivity of the water as well as the isotopes of oxygen (see inset box) that make up the water. Conductivity is the amount of dissolved salts in the water and is measured as the ability of the water to carry an electrical charge.

Dr. Hasenmueller's team used the amount of heavy oxygen in the stream flow compared to the amount typical in rain water in St. Louis to determine how much of the flow was from recent rain versus the amount from groundwater. They found that groundwater makes up a large part of the water that flows through Deer Creek during storms, often accounting for more than half of the water, especially for small to medium storms (Figure 1). This is contrary to what other people have found in other urban and suburban streams. The expectation is that pavement sends water into stormwater pipes and prevents rainfall from recharging the groundwater system and reducing the amount of groundwater that moves into streams. This does not appear to be the case in Deer Creek.

We hope that additional study will help discover why Deer Creek does not follow the trend.

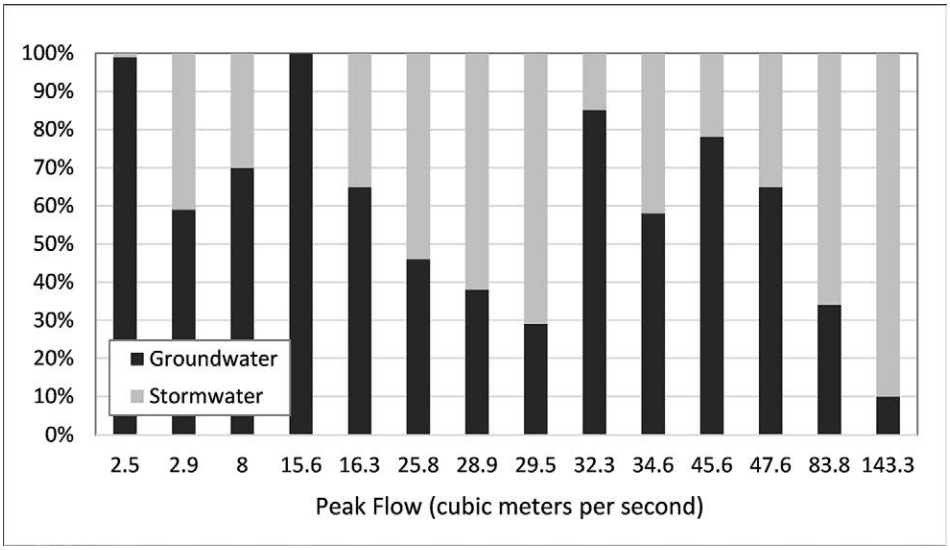


Figure 1. Water source in Deer Creek during peak flow during storms between June 26 and September 11, 2015. Each column represents the highest flow for a particular storm.

ISOTOPES

Isotopes are atoms of an element, in this case oxygen, that have different numbers of neutrons. Isotopes are naturally-occurring and can be either stable or radioactive. The most common stable form of oxygen—which accounts for over 99% of the oxygen on earth—has 8 protons and 8 neutrons, giving it an atomic weight of 16. Other stable isotopes of oxygen still have 8 protons, but have 9 or 10 neutrons, giving them atomic weights of 17 and 18; these are called 'heavy' isotopes. All three of these isotopes can be found in different proportions in the air we breathe and the water we drink. The amounts change regionally and based on water source, making them very useful in tracking water movement.

Glass House Quiz: Pollen

by Danelle Haake and Deanna English

Litzsinger Road Ecology Center is partnering with Missourians for Monarchs to create a monarch waystation near the Glass House patio. This area will provide added habitat for monarchs and many other important native pollinators.

The word "pollinator" seems to be used ever more frequently in news media, social media, and daily life. When we think of pollinators, most of us probably think about insects (mostly bees and butterflies) doing the important work of fertilizing plants. But, how often do we consider the precious cargo these insects are carrying? Where does the pollen come from? Why do the pollinators carry it? Now is the time to see how much you know about pollen.

Bees on cup plant. Photo by Danelle Haake.

1. **Where do pollinators get pollen?**
   a) they make it in special glands in their legs called pollenules
   b) they collect it from flower petals
   c) they collect it from anthers inside the flower
   d) both b and c

2. **Most of us know that bees carry pollen attached to their legs or other 'hairy' parts of their bodies. How does the pollen attach?**
   a) static electricity holds pollen to the hairs
   b) the hairs have special forks and combs to collect pollen
   c) the bees gather pollen and carry it on their hind legs
   d) Both a and c

3. **How do bees use the pollen they collect?**
   a) they make bee bread
   b) they use it to ward off predators
   c) they turn it into honey

4. **Not all plants need insects to transfer pollen. Which of these is NOT a way that pollen can move?**
   a) wind
   b) fire
   c) water
   d) bats
   e) humans

5. **Many people have allergies to pollen of plants that are wind-pollinated. Which of these species have pollen that causes allergies? (Hint: There is more than one right answer.)**
   a) maple
   b) ragweed
   c) goldenrod
   d) cedar
   e) honeysuckle
   f) lamb's quarters

See **Quiz**, page 7

From **Quiz**, page 6

Answers:

1. **c) they collect it from anthers inside the flower.** Most flowers have stamens (male reproductive units) and pistils (female reproductive units). Each stamen are made up of a pollen-bearing sac called an anther which is held up by a stalk called a filament.
2. **d) both a and c.** When bees brush up against flowers, the pollen is attracted to their hairs. Periodically, the bees will groom themselves, gathering the pollen from their bodies and placing it in a pollen basket (called a corbicula) on their hind legs or in a special set of brushy hairs on the legs or abdomen called a scopa.
3. **a) they make bee bread.** Oddly enough, bees make something called "bee bread" from pollen, nectar, and digestive enzymes. This is a highly nutritious food made by both honeybees and native bees that is high in protein and essential nutrients for bee larvae.
4. **b) fire.** While fire is needed to allow seeds of some species (some pines) to germinate, there are no known instances of fire transferring pollen. Water pollination is not common, but it does occur in several aquatic species.
5. **a, b, d, and f) maple, ragweed, cedar, and lamb's quarters.** Pollen from maple, ragweed, cedar, and lamb's quarters are known to cause seasonal allergies. Most wind pollinated plants have small greenish flowers; they don't need bright, showy flowers to attract pollinators. They have large quantities of very small pollen that can blow to another plant on the wind, a feature that allows the pollen to find its way into our noses, resulting in allergies. You may have thought goldenrod would be included here. Many people blame goldenrod for their allergies, but it is more likely that it is ragweed, which blooms around the same time.

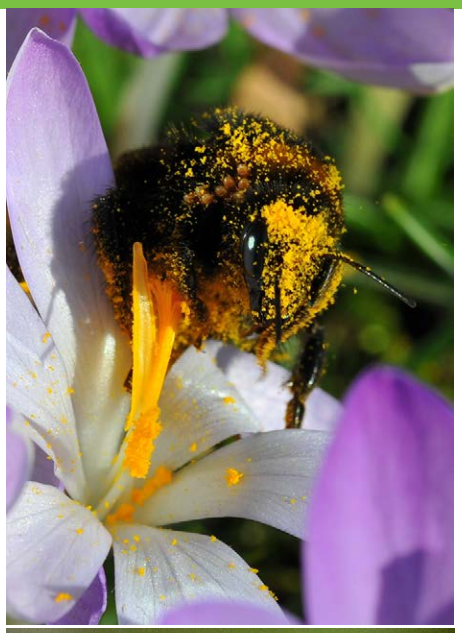
Useful Resources:

Holm, Heather. *Pollinators of Native Plants*. Pollination Press, LLC; Minnetonka, MN, 2014.

U.S. Forest Service (http://www.fs.fed.us/wildflowers/pollinators/wind.shtml)

HealthLine (http://www.healthline.com/health/allergies/pollen-library)

Xerces Society (http://www.xerces.org/pollinator-conservation/native-bees/)



*Top: Bee covered in pollen. Photo by Phil Holker. Middle: Bee showing pollen basket. Photo by James K. Lindsey. Bottom: Close up image of common ragweed (*Ambrosia artemisiifolia elatior*) showing the flower's green petals and cuplike structure. Photo by Frank Mayfield.*

Litzsinger Road Ecology Center
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Mailing address: 101 W. Argonne Drive #177, Kirkwood, MO 63122
314-540-4068
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SUMMER WORKSHOPS

Register for a workshop online at http://www.litzsinger.org/. Keep in mind that summer workshops are part of a **year-long training program**.

EFFECTIVE OUTDOOR LEARNING

July 6–8, 2016

Kindergarten–fifth grade teachers will be introduced to outdoor place-based education techniques for using the schoolyard and neighborhood outdoor spaces as learning environments that support the curriculum. Along with an introduction to LREC's on-site and school resources and support, participants will be provided with training and materials to use *Discover Nature Schools*, an outdoor curriculum published by Missouri Department of Conservation, and become eligible to receive funding for outdoor learning equipment. During the workshop teachers will develop a plan to integrate outdoor place-based education into their teaching through the next school year.

LREC will provide staff support and resources through the 2016–17 school year.

This training program is designed for K–5 teachers **beginning** an LREC partnership.

SUSTAINABLE SCHOOLYARDS

June 27–July 1, 2016

Teachers will use principles of outdoor place-based education to develop a unit of study around the theme "Schoolyard Habitats." Participants will be provided with training and materials to use the *Earth Partnership for Schools* guide to teaching across the curriculum as students plan, develop, and manage a schoolyard natural habitat. During the workshop teachers will create a plan to integrate the schoolyard habitats theme into their teaching.

LREC will provide staff support and resources through the 2016–17 school year.

This training program is designed for teachers who have had a **prior partnership** with LREC.

PLACE-BASED LEARNING

July 25–29, 2016

Teachers will use principles of outdoor place-based education to develop an interdisciplinary unit of study around the theme "Community Partnerships." Participants will be provided with training and materials that incorporate the use of local history, cultures, landscapes, and community organizations to support subjects across the curriculum. During the workshop teachers will develop a plan to integrate the community partnerships theme into their teaching.

LREC will provide staff support and resources through the 2016–17 school year.

This training program is designed for teachers who have had a **prior partnership** with LREC.

LREC Announcements

April 6

Aquatic Macroinvertebrate Monitoring

10am to noon. Meet in the parking lot near the barn. RSVP to danelle.haake@mobot.org.

April 13

After School Teacher Enrichment: Schoolyard Habitats

4–5:30pm at Gateway Elementary School (a St. Louis Public Schools Magnet School, located at 1200 N. Jefferson Ave., St. Louis, MO 63106). After learning a bit about the school we will head outside to explore their large, central courtyard and investigate its various habitats. RSVP to your LREC staff contact so we can plan accordingly.

April 18

Volunteer Enrichment: Foraging and Wild Edibles

1 to 3pm, meet at the Glass House. Bring your brown bag lunch at 12:30pm or meet us at 1pm for the program. Join Jan Phillips, author of *Wild Edibles of Missouri*, and Ryan Maher, forager and chef, as we learn what to gather and how to prepare it. RSVP to Martha at 314-540-4068 or martha@lrec.net.

Local Events

April 24

St. Louis Earth Day

10am to 6pm, at Muny Grounds in Forest Park. Learn about sustainable products and services, meet area nonprofits, catch local music acts, participate in hands-on educational activities, and enjoy diverse cuisine, plus much, much more. Free. Learn more at http://www.stlouisearthday.org/events/festival/.