

Litzsinger Road Ecology Center

COMMUNITY NEWSLETTER

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*Chesterfield Elementary students prepare their schoolyard soil for native plants.
Photo by Eddie Jones.*



November 2015

Making Space for Human Capacity?

by Bob Coulter

As you saw with my “Reinstallation of Vanished Knowledge” column, I’m drawn to evocative turns of phrase. Recently, I came across *Making Space for Active Learning*, an anthology of teachers’ stories recounting efforts to create dynamic learning spaces. In the introduction, Pat Carini—an outspoken advocate for kids—described these stories as what happens when teachers “make space for human capacity.” While that should be the obvious mission of schools, we know how hard this is in the face of educational values that counter efforts to build kids’ capacity to thrive, now and in the future.

As a quick illustration, I was in a middle school classroom a couple of days ago that had a bulletin board where kids could post something they feel good about. At least 80% of the postings were solely about grades...

Not something they feel proud to have mastered, a curiosity, or a new interest. Just a score. We know learning requires so much more, but we work in a culture that wants to reduce everything to a score. When this score becomes the coin of the realm, we tell kids that’s what we value. Thank you for resisting this trend, and for making space for human capacity. It’s good work to be doing. 🌱



Activity Spotlight—Soil Studies:

LIVING VS. NON-LIVING EXAMINATION AND SOIL TEXTURE FEEL TEST

by Leslie Memula

“How can I stand on the ground every day and not feel its power? How can I live my life stepping on this stuff and not wonder at it?”

—William Bryant Logan from *Dirt—The Ecstatic Skin of the Earth*

It's difficult to look around this time of year without noticing the beauty of the trees with their colorful leaves...or watching chipmunks and squirrels as they gather seeds to sustain them through the upcoming winter months. However, how many of us think about the ground that we step on as we carry out our daily routines? This often overlooked area beneath our feet gives life to all above and begs us to examine it more carefully.

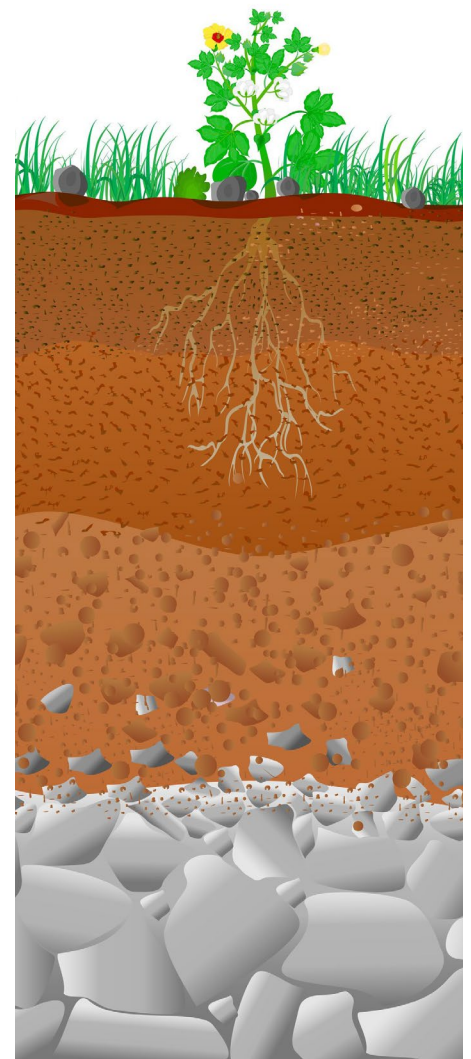
A great way to introduce students to the importance of soil is to begin by simply digging up a sample and looking at it more closely. In the EPS (Earth Partnership for Schools) activity, [Soil Studies: Living vs. Non-living Examination](#), students discover that soil contains many different things—animals, plant parts (like roots, seeds, decomposing leaves), fungi, microorganisms, water, air, rocks, and rock particles. As they work to sort these different things into two groups—living and non-living

material—they will certainly realize that soil is not as boring and mundane as they once thought. You can look at and compare soil from different areas around your school or even graph your findings or look more closely at your samples under a microscope.

Another way for students to get dirty is to have them perform a [Soil Texture Feel Test](#) to determine the type (or types) of soil present in your schoolyard. Since soil is made up of three different sized particles—sand (the largest), silt (medium-sized), and clay (the smallest)—it has different textures based on the proportions of these particles. It is important to know what kind of soil you have in your schoolyard so that your students can choose native plants that are best suited for the growing conditions present. Your students can follow a simple flow chart and answer questions like “Does the soil remain in a ball when squeezed?” or “Does it make a strong ribbon (or snake) > 2” or

longer before it breaks?” to identify their sample.

As a bonus, you can have your students try this simple, but fun, activity, [Soil Texture Analysis](#), to estimate the percent of sand, silt, and clay in your soil sample. ✂

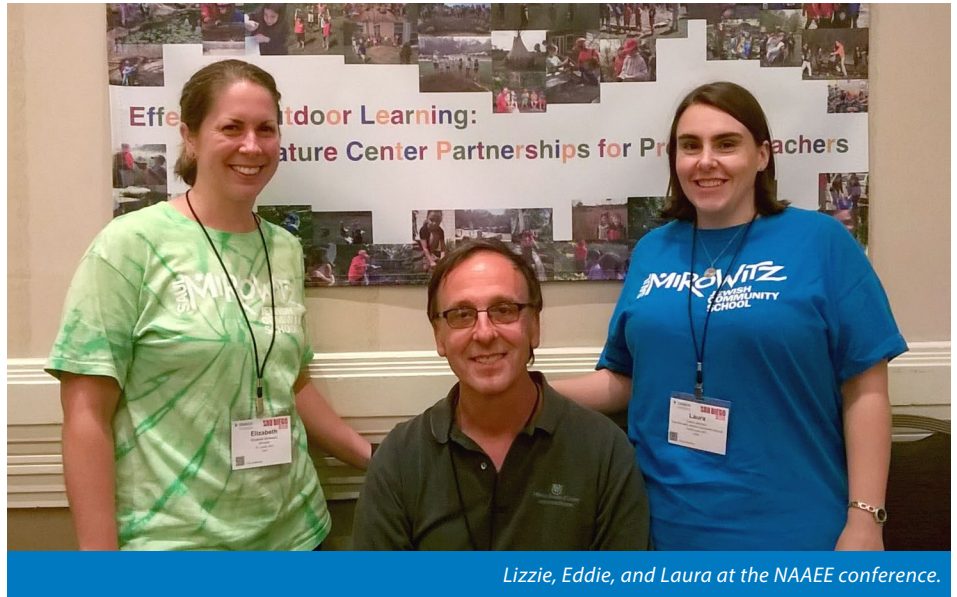


LREC Teachers Well-received at National NAAEE Conference

By Eddie Jones

It all started about 10 years ago at Saul Mirowitz Jewish Community School. A study of grasslands resulted in a traffic-island prairie created by children. The original teacher partnering with LREC became the Head of School and teachers were encouraged to step outside with their classes; new teachers with a penchant for outdoor learning were hired. A new campus brought about additional outdoor learning opportunities: a prairie, pond, vegetable garden, rain garden, honeysuckle removal, and rent-a-chickens; with children in pre-school through fifth grade right in the middle of it all. This isn't, however, just another pretty place. All of these outdoor learning spaces support the school's commitment to provide learning experiences that allow students to acquire knowledge through meaningful interactions, adventures, and explorations while reflecting the values of the communities that they serve.

That leads us to the present, with five teachers currently partnering with Litzsinger Road Ecology Center. I had the privilege of accompanying two of those teachers, Laura Johnson and Lizzie Berkowitz, to a recent



Lizzie, Eddie, and Laura at the NAAEE conference.

North American Association for Environmental Education (NAAEE) Conference in San Diego where they shared their outdoor teaching journey with other attendees. They were well-received by participants from all over the country, including classroom teachers, school district representatives, teacher educators, wildlife agency representatives, and nature center educators. The presentation focused on the benefits and challenges of long-term partnerships of nature centers, teachers, and their schools. After a lively and informative discussion, we all exchanged contact information to continue the dialogue.

Many thanks to Lizzie and Laura for representing the Litzsinger teaching community as exemplary teacher partners. And many thanks to their school, Saul Mirowitz Jewish Community School, for providing a high-quality learning environment and promoting the significance of outdoor place-based education.

The school's [website](#) states it well:

“Families whose children attend Saul Mirowitz Jewish Community School want it all: an education that combines academic excellence, social responsibility and meaningful Jewish learning. And they have it!” ✨

LREC Research: Pawpaw Pollination

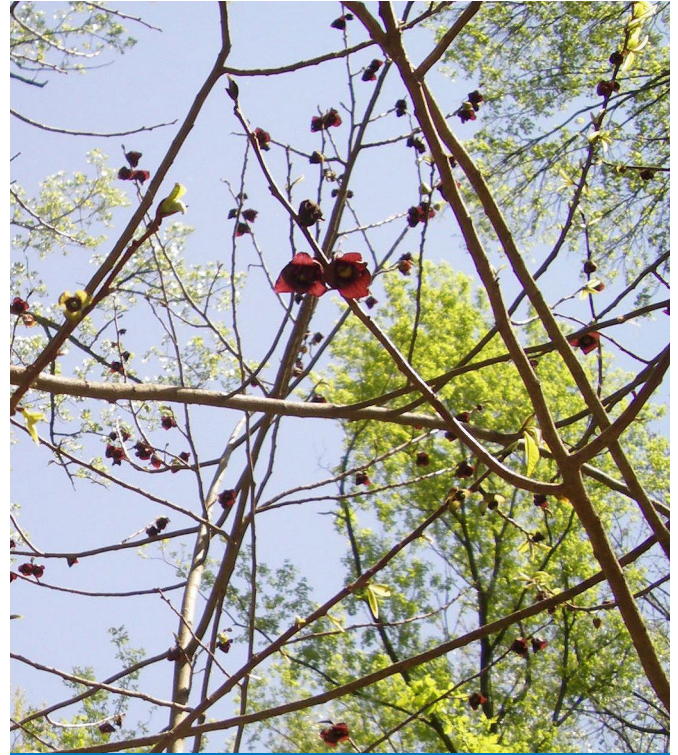
By Danelle Haake

Pawpaw trees (*Asimina triloba*) create the largest edible fruit of any Missouri native species. The ripe fruit of the pawpaw tastes a bit like a banana-mango custard. It is a favorite of both human foragers and wildlife, including raccoons and fox. Finding the fruits is not difficult in August and early September, before they ripen, but by the first of October, they are few and far-between.

Near the Cabin at Litzinger Road Ecology Center, we have a grove of more than 50 adult pawpaw. Every year we scan the trees looking for fruit; we don't expect to gather any, but it is fun to be able to point them out to students and volunteers. Unfortunately, we only find about 5 or 6 fruits each year, a rather low fruit set considering our sizable pawpaw population.

To figure out why our trees bear

so few fruits, first I did a little reading. I learned that, for pawpaws in cultivation, you need to have at least two different varieties to make sure there is enough genetic difference between the pollen and the flower to allow successful pollination. Pawpaws generally can't self-pollinate. Also, pawpaws often reproduce by 'suckering'—by sending up a stem to create a new plant that is connected to (and genetically the same as) the existing tree. This got me thinking: if our little grove is really a bunch of trees that are all growing from a single root system (clones), and if a tree

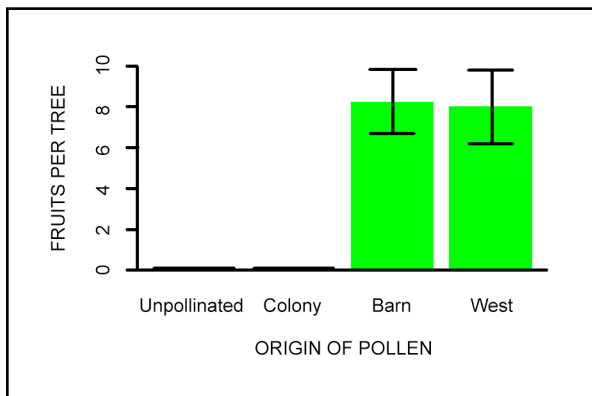


Pawpaw flowers on tree in springtime. Photo by Danelle Haake.

can't pollinate itself, then perhaps they aren't making fruit because the right pollen is not available.

I decided to test this hypothesis by doing a little experiment. In the spring, I collected pawpaw pollen from

three sources at LREC: a single pawpaw tree on the west edge of the property, a couple of pawpaws near the barn that are a short distance from the main colony, and a couple of trees in center of the main colony. Then I selected flower clusters from 20 flowering pawpaw trees within the main colony to use in my experiment. Five clusters were not pollinated, but were tracked as an experimental control (maybe they would get pollen naturally and bear fruit). Each of the remaining



Fruiting success rates by origin of pollen.

See **Pawpaw**, page 5



From **Pawpaw**, page 4

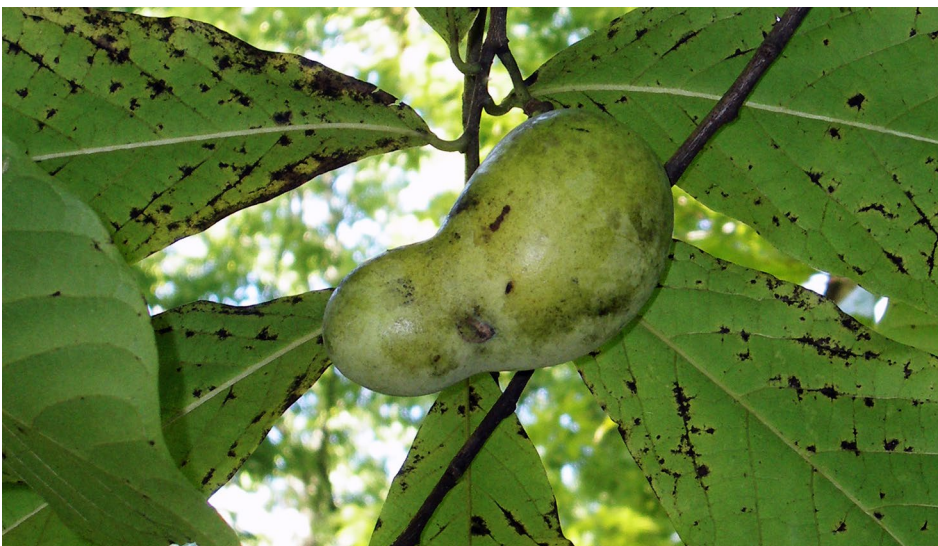
15 clusters were pollinated from one of the three source areas.

These clusters were checked each month to see how they progressed. By the time we got to the end of May, I was able to draw some conclusions. None of the control (unpollinated) clusters had any fruit; neither did any of the clusters that had been pollinated with pollen from within the main colony. All ten of the clusters that had been pollinated from outside pollen (from trees near the Barn and the west end of the property) had small immature fruits. By the end of August, nine of these clusters had fruits that were nearly ripe.



Closeup of pawpaw flowers.

So what does this tell us? Now we know that one barrier to getting pawpaw fruit at LREC is that the pollen closest to most of our trees is not the best pollen for making fruits. But this may not be the full story. Pawpaws are pollinated by insects, mostly flies and beetles. We don't know if we have enough of the right kinds of pollinators visiting our trees. Maybe when you visit in the spring, you can help keep an eye out for pollinators on the pawpaw flowers. If you see any, let me know! 🌿



Pawpaw fruit. Photo by Danelle Haake.

THANKSGIVING

by Martha M. Schermann

Thinking

Helping

Aiding

Needing

Knowing

Searching

Guiding

Interpreting

Volunteering

Inspiring

Nurturing

Growing



Glass House Quiz: The Dirt on Dirt

by Deanna English and Danelle Haake

Did you know that 2015 is the International Year of Soils? Most of us don't think much about what is right under our feet, but without soil we couldn't survive as a species. There's actually a whole barely-discovered frontier in just a shovel full of soil.

When students visit Litzsinger Road Ecology Center they are likely to flip over an old log or a bug board and get a glimpse of some of the creepy-crawlers that live in or on the surface of the soil. We think about soil a lot here at LREC and constantly have questions about soil erosion, soil life, and soil types. As usual, we took advantage of making the quiz to learn a little more as well as share what we know. Enjoy testing your knowledge of soil as we close out the Year of Soils.



Soil cores are available for study in the Cabin.
Photo by Deanna English.

- 1. Let's start with something basic (but maybe not simple). Which of the following are parts of what we call soil? Hint: there are at least three right answers.**
 - a) tiny pieces of rocks and minerals
 - b) dead, decaying plants and animals
 - c) air
 - d) water
 - e) bacteria and fungi
- 2. In just a pinch of soil (about a gram) how many bacteria can be found?**
 - a) hundreds
 - b) thousands
 - c) millions
 - d) billions
- 3. In Missouri, on average, how long does it take for nature to make one inch of soil out of bare minerals (think landslide)?**
 - a) 5 years
 - b) 50 years
 - c) 500 years
 - d) 5000 years
- 4. Missouri has a state soil. Can you name it?**
 - a) Menfro
 - b) Haymond
 - c) Winfield
 - d) Weingarten
- 5. There are three particle sizes for minerals in soil: sand, silt, and clay. From largest to smallest, what is the order of these particle sizes?**
 - a) clay, sand, silt
 - b) sand, silt, clay
 - c) sand, clay, silt
 - d) silt, clay, sand

See **Quiz**, page 7



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From **Quiz**, page 6

Answers:

- a, b, c, d, e) ALL!** All of these are considered parts of soil. The minerals and decaying organic matter form the structure or type of soil. Microbes help bind the soil particles together. Water and air spaces are needed for the survival of the bacteria, fungi, and plant roots.
- c) millions.** Millions of bacteria, representing several thousand species, can be found in a gram of soil. Most are unknown to science. Source: <http://ngm.nationalgeographic.com/2010/02/cubic-foot/wilson-text/2>
- c) 500 years.** The amount of time can vary dramatically depending on the climate and other factors. Around here, 500 years is a pretty good estimate, but if we were talking about soil formation in Alaska, 5000 years might be closer.
- a) Menfro.** All the soils listed are found in Missouri, but Menfro is the state soil and is found in central and eastern Missouri. It is very deep soil, well drained, moderately permeable and makes prime farmland where the slopes are less than 6%. Source: <http://health.mo.gov/living/environment/onsite/pdf/SoilsMissouriSeries.pdf>
- b) sand, silt, clay.** Sand is the largest of the three particles. Most soils are combinations of sand (2.00–0.05 mm), silt (0.05–0.002 mm) and clay (less than 0.002 mm), and are considered loams. The ideal loam soil for growing food is 40% sand, 40% silt, and 20% clay. ✎

LREC Announcements

November 3

Teacher Enrichment: Outdoor Learning in Winter
 4 to 5:30pm at Covenant Christian School: **CANCELLED**

November 13

Volunteer Enrichment: Rocks and Soils of LREC

1 to 3pm, meet in the Cabin. Come join us and some expert friends as we learn about the soils and geology of Litzsinger Road Ecology Center and the St. Louis region. Learn how to use our soil core samples and fossil collection as teaching resources. If you'd like, bring your sack lunch and join us on the deck at 12:30pm. RSVP to Martha at 314-540-4068 or martha@lrec.net.

Local Events

November 5

2015 Whitney and Anna Harris Conservation Forum: Conservation of the Bees

5:30 to 9pm at the Saint Louis Zoo. View an exhibit and hear talks from four scientists, followed by a panel discussion. A box dinner included. Free and open to all but registration required. Learn more at <http://www.AcademyOfScienceSTL.org> or call 314-516-4246.

November 10

Discover Nature for Science Fairs!

6:30 to 8pm at Powder Valley Conservation Center. For teachers and families mentoring students in science fair projects about nature and the outdoors. Call 314-301-1500 for information/registration.

SAVE THE DATE!

December 7

Volunteer Holiday Party

11am to 2pm at the Glass House. Come enjoy some holiday cheer in the way of food and hot apple cider. Mingle and jingle with Horticulture and Education Volunteers and LREC staff. RSVP to Martha and let her know how many people will be coming: martha@lrec.net or 314-540-4068.

January 28

LREC All-day Teacher Workshop

9am to 3pm at LREC. All LREC teacher partners are invited to attend an all-day workshop to share nature education successes and challenges with like-minded colleagues. We will also explore additional teaching and partnership strategies. Lunch is provided. Let your Litzsinger contact person know if you plan to attend and if we can help you get release time for the day.