

Litzsinger Road Ecology Center

COMMUNITY NEWSLETTER

www.litzsinger.org

February 2014

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Students at The Soulard School studying and managing their schoolyard habitat. Learn about why both these skills are necessary for successful sustainability on page 2. Photo by Eddie Jones.

Finding Virtue in Our Work

by Bob Coulter

Last month I had the opportunity to speak at a conference in Oxford focusing on intellectual and personal virtue. Aside from presenting some of our work, I participated in a few sessions. One of these built on the premise that we all have projects in our lives—sustained efforts with a clear goal in mind—and that by reviewing these projects we get a sense of how virtue guides what we do. Key dimensions in this framework include how meaningful projects support growth in critical areas such as autonomy, competence, and self-identity. All good and important work.

So what does this mean for us? I'll suggest that as we collaborate in planning spring projects with your kids that we identify and promote both personal virtue (such as commitment to improving local ecosystems) and intellectual virtue (shown in how we use data and build scientific arguments).

It's easy to get trapped in the day-to-day work of covering curriculum, meeting tested objectives, and getting through the day. The work you do

to raise kids' experiences toward higher meaning is a virtuous project in itself, and one you should be proud of. ✎





Schoolyards and Sustainability

by Eddie Jones

“Ecology and economy, considered today as fierce enemies, are by nature brothers. Both sciences have the same duty: the art of harmoniously managing our household, the water planet Earth. Both can do little without the help of technology, and technology goes wild without economical and ecological controls.”

—Jacques-Yves Cousteau

Many years ago, I heard Jacques Cousteau speak about the necessity of intentional interaction with our natural environment. For you young people who may not be familiar with his work, Cousteau invented SCUBA, the breathing system used in scuba diving. He was also a pioneer marine conservationist and produced numerous marine nature films. When I heard him speak, he brought out the close relationship between “economy” and “ecology,” pointing out that economy means, literally, “management of the house” and ecology, “study of the house.” Management and study go hand in hand.

Today we call that “sustainability”. And sustainability, of any kind, is best achieved in the context of local culture: the neighborhood. So what’s going on in the St. Louis region to promote sustainability?

The Missouri Botanical Garden has a Sustainability Division which, according to the Garden website (<http://www.missouribotanicalgarden.org/>

[media/fact-pages/sustainability.aspx](http://www.missouribotanicalgarden.org/media/fact-pages/sustainability.aspx)), “facilitates and implements sustainable policies, procedures and practices on behalf of the Garden. This includes addressing energy and resource efficiency, waste reduction, transportation issues, and indoor environmental quality within Garden facilities and operations. The division also provides leadership in advancing sustainability throughout the region.”

The City of St. Louis, under the guidance of the Mayor and the Director of Sustainability, has released a long-term Sustainability Plan (<https://www.stlouis-mo.gov/government/departments/planning/documents/city-of-st-louis-sustainability-plan.cfm>) and a five-year Sustainability Action Agenda (<https://www.stlouis-mo.gov/government/departments/mayor/documents/mayor-slay-sustainability-action-agenda-2013-2018.cfm>). These documents establish strategies for balancing economic prosperity, social equity and environmental health.

A regional sustainability plan, OneStl (<http://www.onestl.org>), is a product of the collaborative effort of eleven partner organizations including St. Louis City and St. Louis County. Its focus is on improving “coordination of transportation, housing, and environmental spending in recognition of the interdependence of those programs.”

Touched on in each of the aforementioned initiatives is the significance of preserving local ecosystems. Ecosystems contribute to sustainability by providing us with food, water, fibers, fuel, beauty, and a stable climate.

This is where your outdoor place-based education contributes to sustainability. Schoolyard habitats are a means of preserving and enhancing local ecosystems. But they take work, and the mission of the school must drive them. As many of you have become aware, developing a schoolyard habitat is a dynamic means of investigating local ecology and ecological principles. However, if that habitat is to continue to have value as a learning site, it must be managed. And

See **Sustainability**, page 3

2014 SUMMER WORKSHOPS

Learn more and register online at <http://www.litzsinger.org/education/professional-development/>.

Effective Outdoor Learning

*Session I: June 25–27, 2014; 9am–4pm
or*

*Session II: July 28–30, 2014; 9am–4pm
at Litzsinger Road Ecology Center*

Discover the learning opportunities in your schoolyard and community as you begin a yearlong partnership with Litzsinger Road Ecology Center. During this 3-day introduction to place-based education, you will become acquainted with outdoor learning and the unique opportunities it presents for your students to achieve curricular goals in science and across the curriculum. You will be introduced to *Discover Nature Schools*, an outdoor curriculum published by Missouri Department of Conservation and become eligible to receive funding for outdoor learning equipment. LREC will provide instructional and technical support through the next school year.

Fee: None for class or follow-up student field experiences.

Sustainable Schoolyards

*June 9–13, 2014; 9am–4pm
at Litzsinger Road Ecology Center*

Building on the principles of outdoor, place-based education, workshop participants will be introduced to teaching methods for investigating the history and ecology of your school and for enhancing the schoolyard as a habitat, all with your students and in support of your curriculum. LREC will provide instructional and technical support through the next school year. This workshop is open to teachers who have had a prior partnership with Litzsinger Road Ecology Center. Applications will be accepted from teams of two or more teachers.

Fee: None. Graduate credit is available.

Games, Models, and Simulations: New Tools for Student Engagement

*July 21–25, 2014; 9am–4pm
at Litzsinger Road Ecology Center*

Spend a week with colleagues learning how to leverage the power of MIT's free, kid-friendly StarLogo Nova tools. We'll spend time designing games, models, and simulations, and look at how you can use these tools to help kids meet the modeling emphasis in the Common Core Math and Next Generation Science Standards. We'll also share our experiences supporting kids as designers. Where you go over the course of the week and beyond is up to you: whether you are modeling ecosystem dynamics, disease transmission, or traffic patterns, the underlying tools and approaches are the same. Participants will have ongoing support during the school year as you build modeling into your curriculum.

Fee: None. Graduate credit is available.

From **Sustainability**, page 2

the management, in turn, presents challenging learning opportunities. As with the entire “water planet earth”, a schoolyard habitat is about economy and ecology, management and study. It is about sustainability.

These are beginning steps of our region's realization of Cousteau's vision of the necessary incorporation of economy and ecology in our individual and collective lifestyles. And we, in the education community, are in on the ground floor. 🌱

FEBRUARY

by Martha M. Schermann



Fulfilling
Environments
Boost
Real
Understanding
Among
Rambunctious
Youth



Glass House Quiz: February Folklore—Weather

by *Danelle Haake and Deanna English*

Our quiz subject last February was Groundhog Day and other folklore about animal behaviors that might predict weather. This February, we are focusing on how the *appearance of the sky* can be used to predict weather.

Which of the following sayings are true—at least mostly? Here's a hint: four are at least partly true.

1. Red sky in the morning, sailors take warning. Red sky at night, sailors delight.
2. A halo around the moon is a sign of rain; the bigger the halo, the sooner the shower.
3. A rainbow in morning gives fair warning.
4. Orange streaks in western sky, wind and snowy drifts are nigh.
5. Clear moon, frost soon.
6. If frost is gone an hour past sunrise, wind will bring a foul surprise.
7. If the thundery sky is green, expect hail or a tornado.

See **Quiz**, page 5

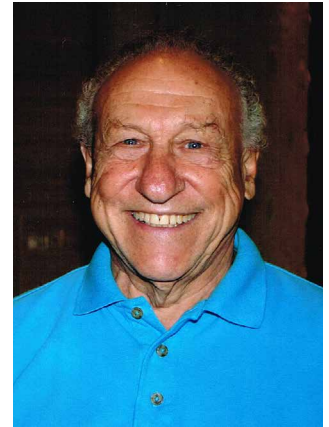
In Memoriam

WE'LL MISS YOU, RICHARD

by *Mary Voges*

Richard Pandorf, passed away on January 9. Our Friday Volunteer corps will not be the same without him.

After retiring from McDonnell Douglas, Richard began volunteering at LREC, as well as at the St. Louis Science Center. Richard's background as an electrical engineer was just what we needed. During his more than ten years with us, he joined the ranks of skilled volunteers—designing, building, and maintaining everything from office electrical projects to bridges in the woodlands, as well as repairing anything onsite with wheels, whatchamacallits, and doohickeys. Or you could find him in the prairie removing invasive species or carrying a rake during one of our prescribed burns.



Of course Richard will be missed for all the wonderful work he performed to keep LREC running, but for me he will be most missed for his kind and perceptive personality. He was a quiet mentor to me, watching and commenting as necessary. As another volunteer put it, "a wise and trusted counselor, teacher, guide, and leader".

To Richard's wife Mary Lou and son Richard, please know we will miss him every Friday...and he did look great in orange! 🍊

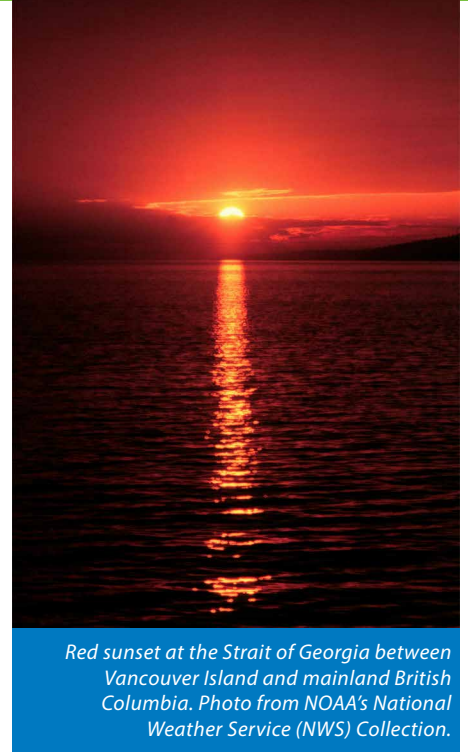


Richard Pandorf (right) working with fellow volunteers Ray Potter (left) and Fred Rauch (center).

From **Quiz**, page 4

Answers:

1. **True (at least in our part of the world where weather travels from west to east).** Red sunrises and sunsets are caused by the sunlight traveling through an area of high pressure. High pressure areas have dusty, drier air, and the dust is what makes the sky red. They are also associated with fair weather, while low pressure areas are associated with storms. High and low pressure areas tend to alternate across the earth, with a low pressure area following the high pressure area. So if it is morning and the sky is red, then the light is passing through a high pressure area to the east, which means the high pressure area is leaving and it will be followed by a low pressure area. If it is evening and the sky is red, the light is passing through high pressure to the west, which means a low pressure area is leaving and a fair-weather high pressure area is moving in.
2. **True.** Warm fronts (which often bring rain) can cause a ring or halo to appear around the moon. The high, thin clouds in advance of the front begin to lower and become thicker, often causing ice crystals to form. These crystals reflect the moonlight and create the halo effect.
3. **True.** If there is a rainbow in the morning, it will be to the west (and the sun will be in the east). If the rainbow is to the west, then so is the rain, and most often that rain will be coming in your direction.
4. **False.** The actual saying is “Yellow streaks in sunset sky, wind and daylong rain is nigh.” Unfortunately, we couldn’t find anything to confirm or refute this one, so instead we changed the words to something that is false!



See **Quiz**, page 6



Horticulture & Restoration Offerings for School Groups

by Deanna English

January was all about seed mixes. We spent many hours putting together seed mixes for our school partners and for LREC. It is so wonderful to realize how many schoolyard habitats are being developed using LREC seeds and plants.

February means the greenhouse is up and running. It's wonderful to go into the warmth and inhale the smell of warm damp earth and the fresh green growth of seedlings. As the days get longer, being in the greenhouse is another reminder that spring is just around the corner. There are other reminders on site too. Just outside the greenhouse the witch hazel is blooming and filling the air with its sweet fragrance. Make sure to stop to just inhale the scent.

Here's a list of February activities that we offer if you are bringing a group out and would like to be involved in some of our winter activities:

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.

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

Roots and plant structure demonstration—This activity introduces students to the purpose

and function of roots and plant structures.

SPECIAL EVENT—Mary is germinating avocado seeds, which are an excellent way to learn about plant germination, seed structure, and plant parts. You can probably think of other ways to use these seeds too in your teaching.

Seed sowing in the greenhouse—Students learn about seed sowing and sow some plants in the greenhouse.

Seed sowing outside—Help us spread seed and “stomp” it into the ground.

Greenhouse transplanting—Little fingers are always welcome for transplanting. This activity will be available towards the end of February. 🌱

From **Quiz**, page 5

5. **True (assuming that temperatures drop to near freezing).** Cloudy skies overnight hold heat. When the sky is clear (so you can see a clear moon), the heat is able to escape which makes it more likely that the temperature will drop enough to form frost.
6. **False.** At least it should be false since we made it up...
7. **False.** The sky can certainly turn green during a thunderstorm. This is most likely caused by the scattering of light by large quantities of small moisture particles. Though the green sky is associated with severe weather, researchers have found no link between green skies and either hail or tornadoes. So, there is just as much chance to have a tornado during a normal ‘gray’ thunderstorm as during a green one. That said, it is wise to seek shelter during any thunderstorm or severe weather! 🌱

Sources:

Green sky:

<http://www.met.tamu.edu/weather-and-climate/weather-whys/669-green-sky>

<http://www.scientificamerican.com/article.cfm?id=fact-or-fiction-if-sky-is-green-run-for-cover-tornado-is-coming>

Red sky:

<http://www.esrl.noaa.gov/gmd/grad/about/redsky/>

Red sky; moon halo; rainbow:

<http://www.almanac.com/content/weather-predicting-do-it-yourself>

LREC Research: Chloride Monitoring

by Danelle Haake

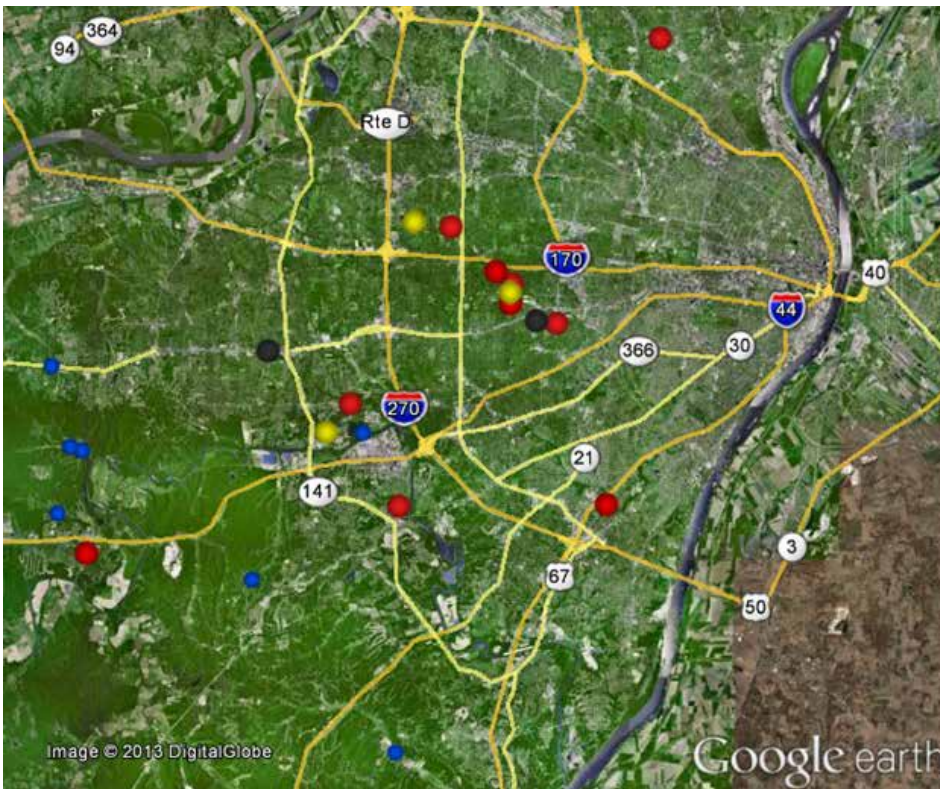
In addition to the research that is conducted at Litzsinger Road Ecology Center by interns and grant recipients, there is other ongoing research being done by staff and volunteers. One such project is a study of how our streams are effected by runoff from roads in winter. The application of road salt on streets, highways, parking lots, driveways, and sidewalks is an important source of chloride pollution in most urban waterways. As the salt dissolves, the snow melt carries the dissolved

salts into the stormwater system. The stormwater is released without treatment into nearby streams, resulting in an increase of chloride in the water. This increase can far exceed amounts tolerable to aquatic life in urban streams.

The tolerance of fish and aquatic invertebrates to chloride pollution has been studied, and scientists have determined what amount of chloride will cause harm to these creatures; this is called toxicity. Acute toxicity refers to the amount

of chloride that is harmful during short-term exposure, while chronic toxicity refers to an amount that will not cause harm in the short-term, but will become harmful if the condition persists for a longer period. As an analogy, think about our own exposure to the sun. If you go to the pool or the beach for four hours one day with no sunscreen, you will probably get a sun burn; this is like acute toxicity. If you go to the pool or beach for an hour every day for a month with no sunscreen, you will probably be burnt; this is like chronic toxicity.

Last winter, volunteers with the Missouri Stream Team put together a region-wide effort to monitor the amount of chloride in area rivers and streams. In the end, volunteers reported data from over 200 samples collected at 23 sites. Of these samples, one-third were higher than the chronic toxicity level of 230mg/l, and 11% were higher than the acute toxicity level of 860mg/l. (See the map at left.) The highest concentration measured was over 2600mg/l—more than three times the acute toxicity level! This work was put into an eleven-page report; contact Danelle if you would like a copy.



Chloride monitoring sites in the St. Louis area, winter 2012–13. Colored dots represent maximum chloride concentrations by site: blue <230 mg/l; yellow 230–860 mg/l (violate chronic toxicity); red 860–1720 mg/l (violate acute toxicity); black >1720 mg/l (more than two times the acute toxicity).

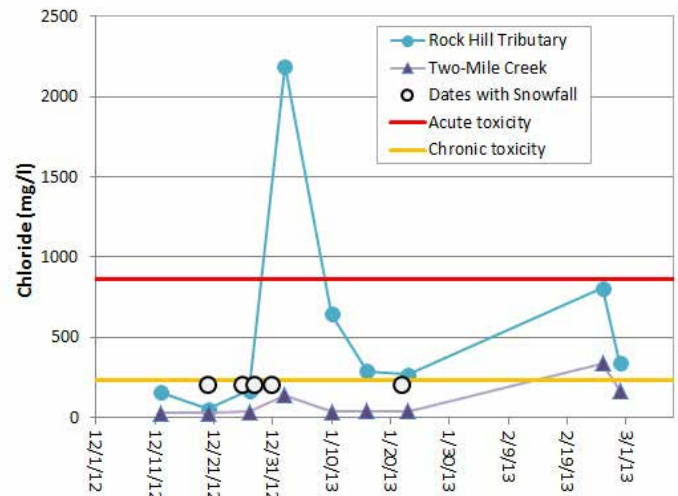
See **Research**, page 8

From **Research**, page 7

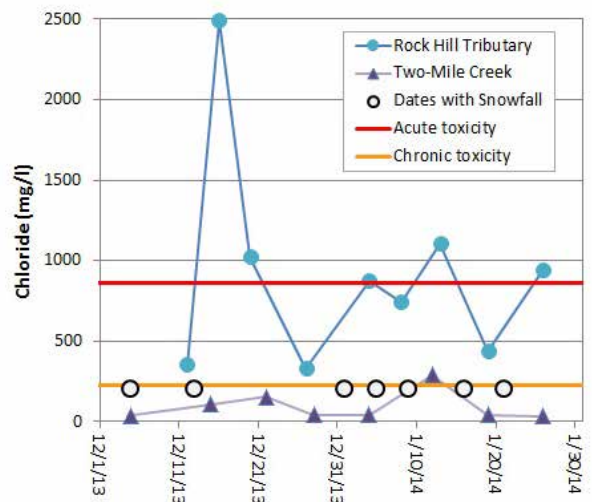
This winter, even more volunteers are participating in the project, including three of LREC's Stream Team volunteers. The group is monitoring more than 40 sites and several individuals who participated last year have reported higher chloride measurements than before; this is not surprising considering how much more snowfall we have had this winter than last.

LREC volunteer Steve Krchma has been monitoring Two-Mile Creek, a tributary that flows into Deer Creek just a short distance downstream of LREC (this is also one of the sites that intern Anna Chott monitored last summer for her research). Volunteers Janis and Rick Schweitzer are monitoring a small tributary further downstream near Rock Hill Road as well as Deer Creek near Brentwood Boulevard. Their results thus far are shown in the chart, along with results from these sites last winter. It is interesting that Two-Mile Creek has fairly low chloride, rarely even going over the chronic toxicity threshold, while the other tributary (and most other sites monitored in the Deer Creek watershed) spend much of the winter above the chronic threshold and exceed the acute threshold several times each winter.

Many thanks to Rick, Janis, Steve, and the dozens of other volunteers who brave the bitter cold winter to help us understand how our streams work! 🌿



Chloride concentrations in two tributaries to Deer Creek in 2012–13.



Chloride concentrations in two tributaries to Deer Creek so far this winter, 2013–14.



The Great Backyard Bird Count

February 14–17, 2014

The Great Backyard Bird Count is an annual four-day event that engages bird watchers of all ages in counting birds to create a real-time snapshot of where the birds are. Everyone is welcome—from beginning bird watchers to experts. It takes as little as 15 minutes on one day, or you can count for as long as you like each day of the event. It's free, fun, and easy—and it helps the birds. Learn more at <http://www.birdsource.org/gbbc>.

Left: Cardinal approaches feeder. Photo by Danelle Haake.

Feed the Birds

By Danelle Haake



Many nature lovers put out bird seed and suet, particularly during the winter. Suet is a fatty bird food that is enjoyed by many winter resident birds including woodpeckers, chickadees, cardinals, tufted titmice, and nuthatches.

In January, horticulture volunteer Susan Pang taught other volunteers to make their own suet! The process is quite simple, but a bit messy.

Lard is the primary base for the suet; it holds the rest of the ingredients together. The lard must be melted over low heat. Any other liquid ingredients you might want to add (like peanut butter, honey, jelly, or jam) should be mixed in with the lard.

All of the dry ingredients (see our list at right) should be mixed in a separate container. Before adding larger ingredients like nuts, crackers, or cereal, use a rolling pin or mallet to break them into smaller, bird-bite-sized pieces.

Once the lard has melted and blended with any other ingredients you've added, pour it over the dry ingredients and mix thoroughly with a large spoon. Spread the suet on cookie sheets or other pans and refrigerate for at least eight hours.

Cut the cooled suet into blocks that will fit into a suet cage or whatever type of feeder you are using. Once the suet is cut, wrap each piece individually and freeze until you are ready to put it out for the birds; it is important to keep the suet cold to prevent the lard from spoiling.

Making your own suet is a great group activity, and is a lovely way to use those leftover bits that have collected in the cupboard. Hopefully the birds will enjoy the fruits (and grains) of our labors in the coming weeks! 🌿

The volunteers used the following dry ingredients in their suet:

- Bird seed
- Safflower seeds
- Sunflower seeds
- Thistle seeds
- Soy nuts
- Peanuts (unsalted)
- Almonds
- Cashews
- Pistachios
- Walnuts
- Edamame
- Oatmeal
- Cracked corn
- Corn meal
- Dried cranberries
- Aronia berries
- Raisins
- Crackers
- Cereal



Top left: Volunteer Lil Collins stirs the molten lard. Above: Susan Pang watches Sharon Pedersen mix dry ingredients. Photos by Danelle Haake.

LREC READING CORNER

by Danelle Haake

Little Blog on the Prairie

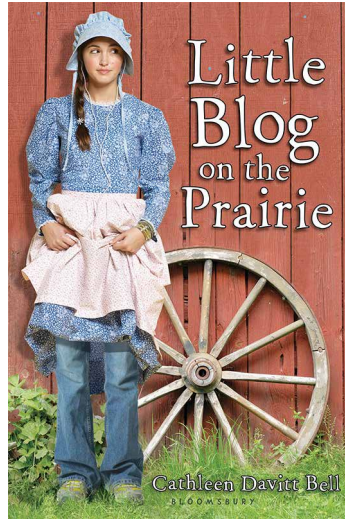
BY CATHLEEN DAVITT BELL

AUDIENCE: GRADE 5 AND UP

I expect that many of us have tried to imagine what it was like to live in some era in the past. How would I have done if I lived in Renaissance Italy? Or in Colonial America on the verge of revolution? Or perhaps during the late 1800s, when *Little House on the Prairie* is set? Usually, when I have these daydreams, it includes allowing myself a bit of non-electrical, twenty-first century technology (because having electricity would be cheating), or maybe a solar panel so I can power a couple of lights or a fridge.

Cathleen Davitt Bell's book *Little Blog on the Prairie* has taken my daydreams and turned them into a summer of hardship for a 13-year-old girl and her family. Gen's mom has booked the whole family for a two-month summer vacation at Camp Frontier, a living re-enactment of a small community of pioneers in the 1890s. Gen hates the idea of going to the camp even before they leave home, and it only gets more difficult once they arrive; no electricity or associated technology, pioneer clothes including bloomers and bonnets, and a never-ending list of chores to do. Gen's life-line is the cell phone she sneaks into the camp. She turns it on a few times a week, just long enough to text her best friends with updates on what she and the other campers are doing. Little does Gen know that one of her friends has turned the texts into a blog, and that this blog has gone viral. As she begins to adjust to (and maybe even appreciate) life in the 1890s, Gen is shocked to find that her simple act of sneaking in a cell phone may have the unintended consequence of destroying Camp Frontier.

The characters in the story are mostly well-developed and believable. The families of campers have unique dynamics that enrich the story. The excellent details of Gen's pioneer lifestyle and responsibilities help bring the past to life. I enjoyed reading this book to my 7-year-old and 10-year-old (though I did not read them a couple of teen-aged-romance passages). More importantly, they enjoyed having me read it and were always disappointed when I would stop for the day. I think they were able to really envision the surroundings and place themselves in the story. I don't know if a summer at Camp Frontier is an experience they (or I) would be interested in attempting, but it has made my daydreams feel a bit more real. 🌱



LREC Announcements

February 4

(Rescheduled from January)

Volunteer Enrichment: Geology

1pm, at the barn (or come to the cabin early at 12:30pm with your lunch). Learn about geology from our own Scott George, Volunteer Educator and Horticulture Volunteer. He will teach about bedrock, fossils, and soils and then will lead us on a field walk around the site to get some hands-on experience. RSVP to Martha at martha@lrec.net or 314-540-4068.

February 26

Water Quality Monitoring

1pm, meet at the Glass House. Questions? Contact Danelle Haake at danelle@litzsinger.org or call 314-961-4410.

Local Events

February 6

Native Plant School: RainScaping Fundamentals

1 to 4pm, at Shaw Nature Reserve. \$12 for MBG members; \$15 for nonmembers. Advanced registration required. Learn more and register at <https://www.mobot.org/classes>.

March 4

Chasing a Dream of Becoming a Nature Photographer

6 to 8pm, at the Green Center (8025 Blackberry Ave., St. Louis, MO 63130). Hear Missouri Department of Conservation photographer **Noppadol Paothong** discuss how his early childhood experiences in nature impacted his life. Donation suggested. Limited seating; reservations required by February 21. Call 314-725-8314 x 105 or email kevans@thegreencenter.org.