

# Litzsinger Road Ecology Center

## Community Newsletter

9711 Litzsinger Road • Ladue, MO 63124 • Phone (314)442-6717 • [www.litzsinger.org](http://www.litzsinger.org)

### Looking Ahead to Next Year

By Bob Coulter

**B**y now all of the schools we've worked with this year should have received a renewal application for next year. In keeping with the evolving identity of the Litzsinger Road Ecology Center as a resource for place-based education, we're asking schools to highlight in their applications a few key features. In particular, we're asking school partners to describe how what they are learning at LREC and in the classroom will be applied in the schoolyard and in the community. Another way of thinking about this is to ask how your immediate surroundings can be a learning resource for the students, and how students can build (and demonstrate) their sense of responsibility for that place.

Knowing that ambitious projects like this can become complex, we hope that you have colleagues, parents, and other community members ready to help. Some of our school partners have strong teams of teachers collaborating. Others have a strong volunteer group ready to help. Filling us in on your situation as part of your application will help us to work with you most effectively.

Finally, we want to continue to be a resource for your professional growth. By alerting us to areas in which you are looking to develop, we can work with you in designing your program, put you in touch with teachers from other schools with similar interests, and suggest resources in the community that might be useful. As clusters of interest emerge, we can create mini-workshops to support your continuing professional growth.

We truly see this work as a partnership between the Center and your school. Please don't hesitate to let us know how we can help you in preparing your application and in designing your curriculum.

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#### Upcoming LREC Events:

##### Ecology School

##### (Volunteer Enrichment)

May 24, 1–3pm. Glass house. Topic: Ecosystem Management.

#### Upcoming Opportunities:

##### Annual Horticulture Plant Sale

May 10, 9am–4pm. MBG horticulture greenhouse complex. Offering overruns of annuals; large, unusual stock plants used in propagation; and many perennials, tropicals, ferns, and interesting woody plants.

##### SNR Spring Wildflower Sale

May 11, 4–7pm, members only.  
May 12, 9am–4pm, for all.

##### Classes at SNR

Wildflower Class: May 19, 9am–12pm.  
Tree Class: May 26, 9am–12pm.  
\$20 each (\$17 for Garden Members). Download a class schedule and registration form at <http://www.shawnature.org/education/adultfamilyprog.aspx>.

##### Chinese Culture Days

May 19 & 20. Missouri Botanical Garden. Includes martial arts, music, tours, tea tasting, arts, cuisine, and acrobats. Grand Parade at 2pm. Details at <http://www.mobot.org>.

# Geographic Distribution of the Schools We Served

By Eddie Jones

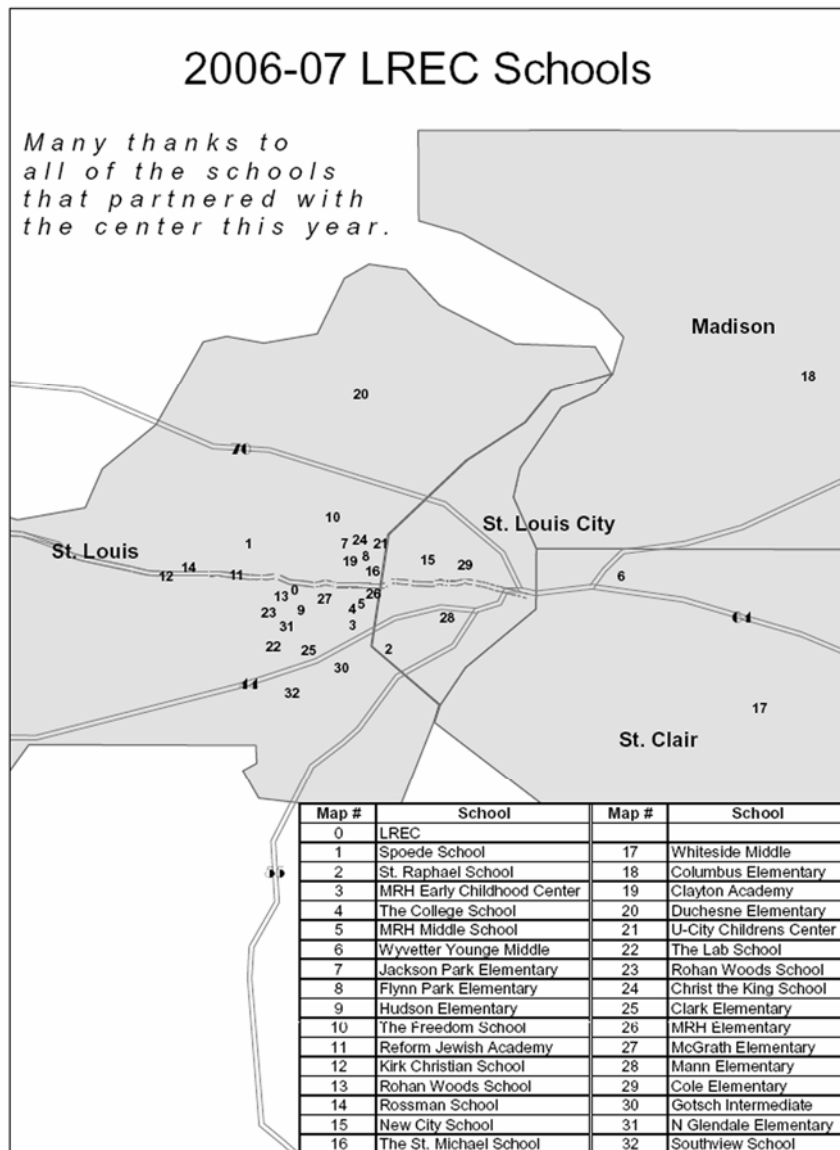


Photo by Eddie Jones

## Flynn Park Students Display Prairie Art

Students from one of our partner schools, Flynn Park Elementary, will be exhibiting their prairie artwork at The Green Center's Spring Arts Festival on Sunday, May 6, 2-5pm. Other highlights of the festival include: nature poetry workshop, international dancers, music, nature walks, student one-act plays, and art activities. The Green Center is located at 8025 Blackberry Avenue in University City. For more information call (314)725-8314 x102 or visit <http://www.thegreencenter.org>.

# Tiger Tiger Burning Bright: Tiger Beetles Hunt at Litzsinger

By Malinda Slagle

**M**any of us have noticed the bright green beetles that hop and fly around on the sand and rocks by the creek. These beetles move very quickly when they see our shadows or movement as we approach. They are six-spotted tiger beetles (*Cicindela sexguttata*) that can have six, five, two or even no white spots on their backs.

Tiger beetles are excellent predators that like to sit in sunny open sand, logs, tree trunks, or bare ground to better spot prey, usually insects such as ants and flies. They often sit near sand or bare ground because this is the substrate their larvae require. Male tiger beetles hold on to the females after mating with their strong



Tiger Beetle  
Photo by Eddie Jones

jaws (mandibles) to ensure the female does not mate with another male.

Beetles go through complete metamorphosis like butterflies do. They have an egg stage, a larval stage, a pupal stage, and an adult stage. You may be familiar with beetle larvae living underground as grubs eating the roots of your lawn. Tiger beetle larvae also live underground in burrows in sand or bare moist ground. They have large heads with big jaws used to dig their burrows and for ambushing prey. Tiger beetle larvae detect small insects near their tunnel entrance and whip their heads out of the burrow in a couple hundredths of a second. They have hooks near the end of their abdomens to prevent their whole body from coming out of the hole. Then they pull their prey back into their burrow where they mash it into a fluid. The tiger beetles then eat their victims by filtering out the remaining solid parts through hairs on their lip (labrum) and drinking the liquid. Tiger beetle larvae live in their burrows for two to three years.

In addition to being predators, tiger beetles are also prey. Many invertebrates such as spiders, robber flies, and

dragonflies eat tiger beetles as do vertebrates such as toads. Bee fly parasites and several types of wasps attack tiger beetles as larvae.

Because of their habitat restrictions, tiger beetles are good indicators of environmental quality, and some species are endangered or threatened. There are seven species of tiger beetles reported in Missouri, some of which require specific types of soil to burrow in and live only in the Ozarks. Six-spotted tiger beetles are generally considered woodland beetles and can be found commonly throughout the state.

To better observe tiger beetles, move slowly and approach so that your shadow doesn't give you away! Happy hunting!

## Sources

Hoback, W. Wyatt, and John J. Riggins. 2001. *Tiger Beetles of the United States*. Northern Prairie Wildlife Research Center Online: Jamestown, ND. <http://www.npwrc.usgs.gov/resource/distr/insects/tigb/index.htm>

Marshall, S.A. 2006. *Insects: Their Natural History and Diversity*. Firefly Books: Buffalo, NY.



# Creepy, Crawly Eastern Tent Caterpillars

By Martha Schermann

**A**s you may have noticed, the Eastern tent caterpillars (*Malacosoma americanum*) are on site and boy are they hungry. These little buggers are eating the cherry tree near the cabin and parking area. You will notice pink flagging tape near two egg masses that were laid this spring, these will over winter and emerge next spring. Each egg mass contains an average of 200–300 eggs. Embryogenesis proceeds rapidly and within three weeks fully formed caterpillars can be found within the eggs.

But the small caterpillars lie quietly until the following spring, chewing their way through the shells of their eggs just as the buds of the host tree begin to expand. These new caterpillars will initiate construction of silk tents soon after emerging. They will remain at the tent their whole larval lives, expanding the tent each day to accommodate their increasing size. They feed three times each day, just before dawn, in mid-afternoon, and in the evening after sunset. During each feeding session they emerge from the tent and add silk to the structure, move to distant feeding sites en masse, feed, and then return immediately to the tent where

they rest until the next activity period. The only exception to this pattern occurs during the last instar when they will feed only at night. They lay down pheromone trails that guide them between the tent and feeding sites. There are six larval instars and when fully grown they will disperse and construct cocoons in protected places. The adults emerge about two weeks later. Mating and oviposition typically occurs the same day they emerge from the cocoon and being completely spent the females die soon after.



Eastern Tent Caterpillar  
© Clemson University - USDA Cooperative Extension Slide Series,  
<http://www.forestryimages.org>



Eastern Tent Caterpillar  
© University of Minnesota,  
Department of Entomology

The tents of the Eastern tent caterpillar are among the largest built by any tent caterpillar. Constructed in the crotch of the host tree and oriented so that the broadest face of the structure faces southeast to take full advantage of the morning sun. They will typically add silk to the structure at the beginning of their daily activity periods. Silk is added directly to the surface as the caterpillars walk back and forth over the surface. The silk is laid down under slight tension and eventually contacts, allowing the new spun layer to separate from the previous layer. The tent consists of discrete layers separated by gaps within which the caterpillar rests. Openings are usually at the apex of the tent. Light plays a large role in the caterpillars

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while they are spinning: they always spin the majority of their silk on the illuminated face of the tent. If this is done under laboratory conditions and the dominant light source is directed from below, they actually build their tent upside down. They will continue to expand their tent until they reach their sixth instar when they conserve their silk for constructing their cocoons.

They cannot digest food when the temperature is below 59° F. They will typically pack together tightly to reduce heat loss and allow them to warm up. They can easily overheat and must take evasive action when they become too hot. Because of the layered structure, the tent is

thermally heterogeneous and the caterpillars can adjust their temperature by moving from layer to layer.

Few birds other than the cuckoo find the hairy caterpillars palatable. The leaves of the cherry tree are cyanogenic and the caterpillars regurgitate cyanide-laden juices when disturbed.

Tent caterpillars secrete silk from a spinnert wherever they go and frequently used pathways soon bear conspicuous silk trails. As they move about the tree they will confine their movements to these trails. It is not the silk that they are following but a trail pheromone secreted from the posterior tip of their

abdomen. They deposit exploratory trails by dragging the tip of their abdomen as they move over the tree in search of food. Caterpillars that find food and feed will overmark the exploratory trails they follow back to the tent, thus creating recruitment trails. These recruitment trails are much more attractive to the caterpillars and serve to lead hungry caterpillars directly to the newest food finds. It is possible for one single successful forager to recruit the entire colony to its food find.

### Sources

<http://web.cortland.edu/fitzgerald/Easterntent.htm>

## Congratulations Heather!

We join Heather Wells-Sweeney, LREC School Partnership Coordinator, her husband Patrick and big brother Alex in welcoming baby Jacob!



*Jacob Casey Sweeney  
Born March 22, 2007  
Weight: 9lb 15oz*

# Freak Freeze Frosts Flora

By Eddie Jones

**A**h, it's finally springtime at Litzinger Road Ecology Center. From March 19 to April 3, there was only one day that didn't reach the 70's, with thermometers reading as high as 83° F and no lows below 55° F until April 2. We were all wearing our short-sleeved orange attire! Then the bottom fell out. From April 5-9, nighttime temperatures dropped below the freezing mark, with a record 23° F on the morning of April 7. The sweatshirts, hats, and gloves reappeared rapidly.

Now if you were a plant, how would you respond to this topsy-turvy weather pattern? There is no bundling up or going inside, so you just have to take it! The problem is that the early warm weather brought many plants out of winter dormancy, and they proceeded to open their leaf and flower buds. The subsequent freeze caused damage to these delicate tissues, killing the leaves and flowers. And that happened to plants across the Midwest as early April temperatures plummeted. Decimated Missouri crops include apples and peaches, blackberries, blueberries, pecans and grapes. 2007 Missouri wine will be pricey! The damage at LREC was evident even to my untrained eye. I first observed the blackened pawpaw flowers

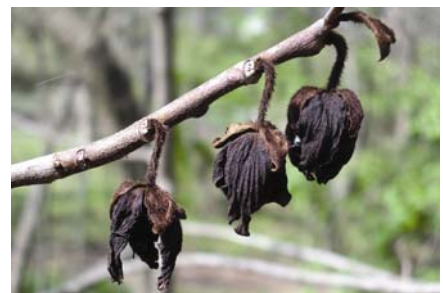
and the wilted box elder leaves. On the other hand, the trillium and Virginia bluebells didn't seem to notice that anything was awry. The Ohio buckeye trees are still making up their mind.

Most plants native to temperate climates are capable of developing freeze tolerance after exposure to cold, non-freezing temperatures. According to the Kansas State University Cooperative Extension Service, wheat plants grown in warm temperatures die when they are exposed to low temperatures as mild as 41° F, while cold-acclimated plants tolerate temperatures as low as -4° F. How do they do that?

Apparently, the tender new growth on plants is easily killed by dehydration during freezing temperatures. Ice typically forms first on the outside of these structures and then ice crystals draw water out of the plant cells. Ice can also invade the plants tissues disrupting the membrane

architecture of its cells. Either way, the plant cells die and the tissues wilt like cooked spinach. However, when plants have a chance to undergo a period of cold acclimatization, they produce a variety of chemicals, proteins, and carbohydrates, that function as antifreeze, slowing both the water crystallization process and the movement of water out of plant tissues. Plants also chemically modify their cell membranes to withstand the impact of desiccation.

As for the trees here at LREC, we will just have to wait and see how they recover from the damage. If the buds stayed dormant through the warm March days, then they should not be affected. The box elders are already putting out some new leaves. All in all, things are "greening up" nicely in the woods, prairies, and riparian areas. I'm waiting to see if those stray blackberry plants in the south prairie are going to bear this year!



Pawpaw, *Asimina* genus, before and after freeze. Photo by Eddie Jones