

Litzsinger Road Ecology Center

Volunteer Newsletter

9711 Litzsinger Road ♦ Ladue, MO 63124 ♦ Phone (314)442-6717 ♦ www.litzsinger.org

Well Aren't We Spatial?

by Bob Coulter

The National Academy of Sciences released a report last month highlighting the significance of helping students to think spatially—in other words, helping them to not just know *what* something is, but to be able to place it in a larger context relative to what is near by. Why are you more likely to find moss on the northern side of a tree? Why do different sides of a hill often have different vegetation?

The original impetus for the *Learning to Think Spatially* report was to make sense of the growing interest in the use of computer-based mapping tools with students, and I was pleased to see that some of our programs were cited as being among the leading examples in the field. Beyond the technology focus that gave birth to the report, the Academy notes that there is a great deal of work to be done in all areas of the curriculum. Given current popular obsessions with testing it is both more challenging and more important to promote spatial thinking. In a school environment that is all too driven by a narrow pursuit of facts, we need to emphasize the rich web of connections that comes out by thinking spatially.

Fortunately, this is something we do every day. In light of the strong need cited by the report, we can be proud of the many ways that we promote complex spatial thinking in all of our programs. Whether we are helping teachers and students to see their place in the watershed, or guiding them to compare and contrast prairie and woodland ecosystems, we are helping them to be more aware of how the various elements that make up the space around them work together.

As ecologically-minded people, we often take for granted these dynamic interplays among species and between specific biotic and abiotic factors. It's good to keep in mind that for many with whom we work, this is a very different way of thinking, but it is one that opens many doors to the wonder of nature.

Inside this issue:

Invasives in the Midwest Conference Summary	2
Deer Creek Study	3
LREC Stream Team	5
Natural Happenings in February	6

Upcoming LREC Events:

LREC Stream Team:
Water Quality Testing
February 2, 9–11a.m.
For those currently trained
in the Missouri Stream Team
Protocol. Contact Jennifer
Brown for more information at
(314) 961-4410.

Field Lab Training for *Can
You Put Nature in a Box?*
February 14, 12–3p.m. Meet at
Cabin. RSVP to Martha at (314)
442-6717.

LREC Stream Team:
Bush Honeysuckle Removal
February 16, 9a.m.–12p.m.
For more information, contact
Jennifer Brown at (314) 961-4410.

Upcoming Opportunities:

Backyard Birding Festival
February 5. Missouri Botanical
Garden. A day of classes,
presentations, stories, and
guided bird walks. Call (314)
577-9506 for more information..

Missouri Stream Team
Training
See page 5.

Invasives in the Midwest Conference Summary

By Malinda Slagle

In December, Mary Voges, Jennifer Brown and I attended the Invasive Plants in the Midwest Conference in Kansas City. We learned from Missouri State Botanist, Tim Smith about invasive plant species that are a problem in the Lower Midwest. Some species that he mentioned are well known to us at LREC including wintercreeper (*Euonymus fortunei*), bush honeysuckle (*Lonicera maackii*), Japanese honeysuckle (*Lonicera japonica*) and garlic mustard (*Alliaria petiolata*). Others were not as familiar such as cheat grass (*Bromus tectorum*), autumn olive (*Elaeagnus umbellata*), and kudzu (*Pueraria montana var. lobata*). Smith also addressed species that are projected to be a problem in the future in Missouri such as Japanese stiltgrass (*Microstegium vimineum*) and Chinese yam (*Dioscorea oppositifolia* L.).

Several speakers addressed tips for controlling some particular problem species. Particularly interesting was Ron Rathfon who talked about bush honeysuckle control. He recommended digging out honeysuckle when it is small, cutting it every spring until the root stores are gone, using herbicide such as Garlon 3a or Roundup on leaves, and/or cutting and painting the stumps with herbicide.

Dave Borneman who spoke on garlic mustard also had some good tips. He mentioned that if garlic mustard has begun to bolt (send up central stalks with non-basal leaves) then even if it has no flowers, it must be

bagged or separated from its root system. If garlic mustard has bolted already, it will form flowers and seeds even after being pulled if the plant is still connected to its root system. He also informed us that garlic mustard is allelopathic, meaning that it inhibits the growth of other plants around it using chemicals. Additionally, garlic mustard is non-mycorrhizal and inhibits mycorrhizal associations of other plants. Mycorrhizae are symbiotic associations of fungi and plant roots. They help plant roots absorb more nutrients by increasing the surface area of roots and providing food for the fungi as well. To control garlic mustard, Borneman suggested several treatments such as pulling it in October–March, cutting it with a weedwhacker right after bolting, burning it in mid-April, and/or spraying the leaves with herbicide in late fall to early spring. He also mentioned a number of insects that are being tested as biological controls that would serve to control the plant by herbivory.

Other speakers at the conference spoke about work being done with the horticulture industry to ensure horticultural introductions are not invasive into natural communities and discussed the possibility of educating master gardeners on invasive species. We also learned about the formation of Cooperative Weed Management Areas, which allow organizations to share educational and physical resources to control invasive



Garlic Mustard (*Alliaria petiolata*)

species. We are looking into the possibility of forming a St. Louis Cooperative Weed Management Area to help share information with the public about invasive species, how to control invasive species more effectively, and to share resources for controlling invasives. Only by working together can we control these problem species.

Deer Creek Study

by Jennifer Brown

Recently, the Litzinger Road Ecology Center (LREC) hired a stream engineering and restoration company called Intuition & Logic to conduct a geomorphic field study along the reach of Deer Creek flowing through the LREC property. This study was meant to identify the dominant processes at work along the stream and develop preliminary recommendations for intervention strategies that would alleviate our erosion concerns and potential threats to site infrastructure.

As suspected, this reach of Deer Creek appears to be highly unstable, with erosion and sediment transport processes out of balance from that of a healthy functioning stream. The study indicates that the stream channel is adjusting via lateral

meander migration. What this means is that the stream channel is moving at an annual rate of approximately 3–6 feet, perpendicular to the channel's centerline and in a downstream direction along the valley. Evidence of meander adjustments can be seen in the build-up of bedload (rock/sediment material transported by the stream), along with a pattern of bank scouring and erosion opposite wide, steep-sided point bars.

While meander migration is a natural phenomenon that occurs without human influences, it can be exacerbated by land use changes in a watershed such as urbanization, bridge and culvert construction, and the removal of riparian vegetation. The meander migration along this section of Deer Creek was most likely provoked by the straightening

of the stream channel, or channelization, in the sections of stream directly upstream and downstream of the site. In fact after examination of historic aerial photos, it was estimated that the net effect of upstream channelization from 1968 to 1997 was an estimated loss of nearly 1,000 linear feet of stream channel. Channelization is known to cause water to flow faster, increase erosion and liberation of sediment, and create greater flooding problems.

The good news is that the vegetative interventions that LREC has been employing for a number of years, including bank revegetation, riparian corridor expansion, and the removal of invasive plant species, has likely increased the resistance of stream banks to erosion. We have a lot



Bank scouring and erosion opposite wide steep-sided point bar.

Point bar displaying excessive sediment buildup.

Evidence of meander adjustments along Deer Creek.

of good work to continue! However, the study points out that vegetative strategies alone probably are not enough to slow the channel migration occurring along the reach.

Solutions that combat something as large as channel migration need to be ones that aim at working with the driving forces shaping the stream, rather than just trying to increase the resistance of stream banks to erosion. In this case, manipulating the channel's slope or bedload could achieve stability in this reach of stream. Much of the bed material in the reach is being transported from upstream locations in the watershed, making it hard for us to control. The only way to work with this variable is to install specialized structures that would help to direct the deposition of bed material and position the deepest part of the stream towards the center of the channel, thereby directing stress away from

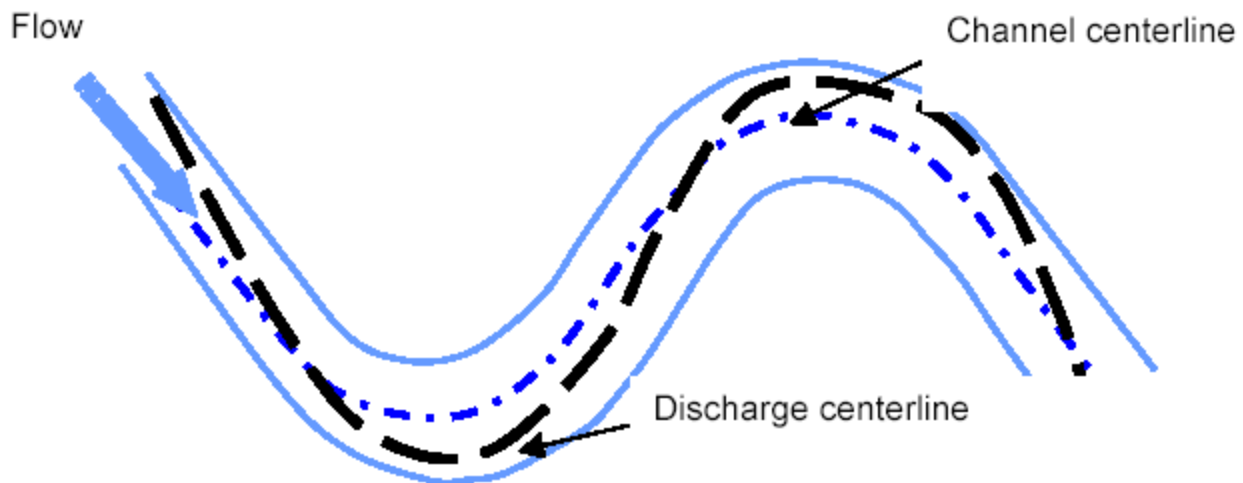
eroding stream banks. Coupling such interventions with vegetative strategies would help to imitate a natural rock-riffle and pool-habitat sequence that would be beneficial to aquatic life. Additionally, the study suggests that creating localized reductions in slope via grade controls would help with the distribution of energy and thereby reduce the stream power and erosive force. These recommendations, of course, are preliminary, and additional information that was not gathered and analyzed in this study, such as the flow of water and flooding variables, need to be explored.

This study has helped us to better understand the processes at work along the reach of Deer Creek flowing through the site, which is sure to enrich our education programs and site management. It highlights how the use of historical resources can improve our understanding

of the processes shaping our landscape. It also stresses the importance of looking at streams with a holistic, watershed view and striving to understand that changes taking place in one location within the watershed have the ability to impact areas elsewhere in the watershed. In an effort to practice this, LREC staff will continue to be part of local watershed groups and seek to develop productive partnerships that improve how we manage our part of the watershed.

For a more in-depth look at this study, background information on urban stream evolution, and details about Intuition & Logic's recommendations, a complete read has been posted to the research section of our website at: www.litzsinger.org/research/streamstudy.pdf.

Any questions regarding this study can be directed to Jennifer Brown at (314) 961-4410.



Typical flow pattern of a meandering stream depicting channel centerline versus discharge centerline.

LREC Stream Team

By Jennifer Brown

I would like to formally invite anyone interested in stream stuff to become a member of the Litzsinger Road Ecology Center's (LREC) Stream Team. The only criteria for becoming a member are enthusiasm to learn and the ability to volunteer your time when you can! Jennifer Brown and Malinda Slagle completed their Stream Team Introductory and Level 1 training in 2005 and are actively seeking additional members to join the LREC Stream Team (Stream Team #2760).

Over the upcoming year, we will be working to establish a comprehensive stream-monitoring program along Deer Creek. LREC staff and volunteers got a great start on this in 2005 with the initial mapping of Deer Creek, the macroinvertebrate sampling, and the water chemistry monitoring. Thanks to all of you who lent a hand in 2005! You helped to make it a fun endeavor and your time and knowledge were extremely appreciated.

We have a lot of work ahead of us for 2006! Stream team activities range anywhere from creek mapping to researching and developing a site-based field guide of some of the living things dependent upon Deer Creek. This could include riparian food web species such as birds, reptiles, amphibians, fish, mammals, and invertebrates.

Water chemistry testing is scheduled to occur regularly on the first Thursday of every month from 9–11 a.m. For those of you who are currently trained in the Missouri Stream Team Protocol and don't intend to let cold weather slow you down, please come help out starting Thursday, February 2nd. For those of you who are not currently trained or need a refresher course, water chemistry training will be offered at LREC sometime this spring—stay tuned—or you can become Missouri Stream Team certified by participating in one of the workshops listed at right.

Another "Stream Team"-related event in February is a bush honeysuckle removal project that will help to clear the way for native woody plants we will plant in March in strategic places along stream-banks and riparian areas. This invasive species removal project is scheduled to take place on Thursday, February 16th from 9 a.m.–12 p.m.

Please contact Jennifer Brown at (314) 961-4410 if you are interested in participating in any of these activities or if you wish to find out more about ways in which you can be a part of the LREC Stream Team.

Upcoming Missouri Stream Team 2006 Introductory Level Volunteer Water Quality Monitoring Workshops

Chesterfield:

Friday, March 24, 2006
8:30 a.m. to 5:00 p.m.
Babler State Park
800 Guy Park Drive
(register by March 9)

St. Charles

Saturday, May 20, 2006
8:30 a.m. to 5:00 p.m.
Francis Howell High School
7001 Highway 94 South
(register by May 4)

You can register on the Stream Team Web Page at www.mostreamteam.org

If you have other questions about the workshops call Priscilla Stotts at (573) 526-3406.



Natural Happenings in February

By Malinda Slagle



Dr. Lloyd Glenn Ingles
© 1999 California Academy of Sciences

Some of the happenings this month include many different mammals mating. Coyotes (pictured left top) will start mating late this month. I sighted a coyote in January behind Bob's house and mentioned in the blog that we might be seeing activity due to looking for mates. Mink, groundhogs, skunks, opossums, raccoons, squirrels, and bobcats breed in February. All the love in the air can only be a sign that spring will soon be on its way.

Some plants to watch for include snowdrops (*Galanthus nivalis*) and lesser celandine (*Ranunculus ficaria*) (pictured left bottom). Although these plants are not native to this area, they are some of the earliest bloomers and provide some of the first signs of spring. On warm days, I will be spraying herbicide on lesser celandine, Japanese honeysuckle (*Lonicera japonica*), and garlic mustard (*Alliaria petiolata*). Late winter is a good time to control invasive species because they are some of the few actively growing plants at that time. However, there are also some native beauties in February. Some native shrubs bloom in February such as Ozark witchhazel (*Hamamelis vernalis*) and fragrant sumac (*Rhus aromatica*). These beautiful shrubs grow on the creek side of the barn parking area, on the berm, and in the savannah.



Eddie Jones
© 2005 Litzsinger Road Ecology Center

February is also a great time to do bird watching. It's easy to see the birds with no leaves in the trees and they are easy to observe at feeders. Also, because the migrants are just beginning to return, there are few bird species to keep up with! Start learning your birds in February and then add to your list as the migrants come in. Migrants to watch for this month include killdeer and robins.

On warm days, insects and spiders can be seen. Comma butterflies and mourning cloak butterflies (pictured right) can be seen in the woodland resting on leaves on the path. Adult stoneflies may be seen along creeks, although likely not at LREC. Stonefly nymphs are an indicator of excellent water quality, and they would be a nice surprise on Deer Creek. Recognize stonefly nymphs by looking for 2 tails on their abdomen, hairs on their body underneath their legs, and 2 hooks at the end of each of 3 pairs of segmented legs.



Marguerite Gregory
© 2004 California Academy of Sciences