www.MonarchsAcrossGA.org

The Chrysalis

Emerging News from Monarchs Across Georgia

A Committee of the Environmental Education Alliance of Georgia

Upcoming Events

Monarchs Across Georgia & Georgia's Native Seasons Educator Workshop
September 10, 4:00-8:30 p.m. &
September 11, 9:00 a.m.- 2:30 p.m.
Cochran Mill Nature Center
Palmetto, GA

Made for the Shade Symposium
September 25, 9:00a.m-1:00 p.m.
Carroll Co. Ag Education Center,
Carrollton, GA

Insectival
September 25, 11:00a.m-3:00 p.m.
Oxbow Meadows ELC,
Columbus, GA

Monarchs Across Georgia Educator Workshop
October 1, 5:00-8:00 p.m. &
October 2, 9:00 a.m.- 4:00 p.m.
Confederate Hall, Stone Mtn Park
Stone Mountain, GA

Plant a Pollinator Pot Workshop
October 16, 1:00-4:00 p.m.
Confederate Hall, Stone Mtn Park
Stone Mountain, GA

Monarch Butterfly Festival
October 23, 10:00a.m.-4:00 p.m.
St. Marks, FL

2011 Monarchs in Mexico Trips
February 5-12, 2011
February 12-19, 2011

For more information about these events or to register, please visit www.monarchsacrossga.org.

For other opportunities, please visit www.eealliance.org.

A Garden of Children: Students Plant For Monarchs

by Anna Allen, Trinity School

One of the most amazing experiences that I have ever had was to stand next to an Oyamel tree and see thousands of monarch butterflies clustered around its trunk. To look up at a tree or the silhouette of a tree, now hidden by a cover of butterflies, is certainly a site of pure amazement and awe-inspiring beauty. Having received a grant from Monarchs Across Georgia (MAG), I was given the opportunity to spend a week traveling in the Michoacan State of Mexico visiting the over-wintering sites of the monarch butterfly. This opportunity blossomed into a rich educational foundation that I incorporated into my work as an elementary science teacher at the Trinity School.

The Spanish word for kindergarten is *jardín de niños,* which translated literally means garden of children. What a perfect description for the classroom of this young student…and even more perfect age to garden with these children. This spring my young scientists learned about the life cycle and unique migration of the monarch butterfly. We learned about the host plant of the monarch, milkweed, and decided to try as an experiment, growing milkweed from seed at our school to add to our MAG certified Pollinator Habitat.

Trinity School students prepare soil for planting in their pollinator garden.

The children loved the idea of bringing a piece of this natural phenomenon to our own backyard and helping this small insect make its remarkable journey south by southwest. Each of the four kindergarten classes planted a different type of milkweed (*Asclepias spp.*); *A. incarnata* or swamp milkweed, *A. syriaca* or Common Milkweed, *A. tuberosa* or butterfly-plant, and *A. speciosa* or showy milkweed. After a period of stratification in the refrigerator, we started the seeds in peat pots under indoor growth lights. All seeds germinated except for the swamp milkweed. We then transplanted our seedlings to our pollinator garden, an area we have named the meadow. In addition, we added to our meadow a few other established plants loved by different local pollinators; we added 'Cinderella Pink' *Asclepia*, false blue indigo, tickseed or coreopsis, grayfeather, and a Joe-pye weed.

We will look forward to watching our plants grow and bloom, attracting more and more pollinators, especially monarchs on their way to and from Mexico!

Our Mission: To inspire future caretakers of the natural environment by educating about monarch butterflies and other pollinators.

Unique Means of Animal Locomotion Reported for First Time

Novel "two-body" system in caterpillars could have implications for robotics, human biomechanics

Biologists at Tufts University's School of Arts and Sciences studying crawling caterpillars have reported a unique "two-body" system of locomotion that has not previously been reported in any animal.

In an article published online July 22 in the journal *Current Biology*, the Tufts-led team reported that the gut of the crawling tobacco hawkmoth caterpillar (*Manduca sexta*) moves forward independently of and in advance of the surrounding body wall and legs, rather than moving along with them. Collaborating with Tufts were researchers from Virginia Tech and Argonne National Laboratory.

"Understanding this novel motion system may help efforts to design soft-bodied robots," said the article's senior author, Barry Trimmer, Tufts professor of biology and Henry Bromfield Pearson Professor of Natural Sciences in the School of Arts and Sciences. "It may also prompt re-examination of the potential role soft tissues play in biomechanical performance of humans and other animals."

Surprises Inside the Caterpillar

Anyone who has ever observed caterpillars knows that they crawl from back to front in waves. But advanced imaging reveals a surprising picture of what goes on inside.

The researchers used synchronized X-ray and visible light microscopy and videos to study the relative timing of movements of the crawling caterpillars' gut body wall and prolegs (unjointed leg-like structures on the mid-body that grip).

They found that the gut -- essentially a tube suspended at the rear and head of the caterpillar and decoupled from the body wall -- moved nearly a full step in advance of the surrounding structures. In contrast, gut movement was "in step" with motion of the head and rear.

Furthermore, points within the gut moved at different rates, suggesting that the gut was effectively shortening and lengthening during each crawl cycle.

"Although internal tissue movement caused by locomotion has been identified in many organisms, the caterpillars seemed to be propelling themselves by means of a two-body system -- the body wall container and the gut it contained. This may contribute to the extraordinary freedom of movement seen in these soft-bodied crawlers," said first

This press release was reprinted with permission from Tufts Univeristy. The full study can be found at:

Simon Michael A, Woods William A Jr, Serebrenik Yevgeniy V, Simon Sharotka M, van Griethuijsen Linnea I, Socha John J, Lee Wah-Keat, Trimmer Barry A, (2010), "Visceral-locomotory Pistoning in Crawling Caterpillars (*Manduca sexta*)", Current Biology, DOI: 10.1016/j.cub.2010.06.059.

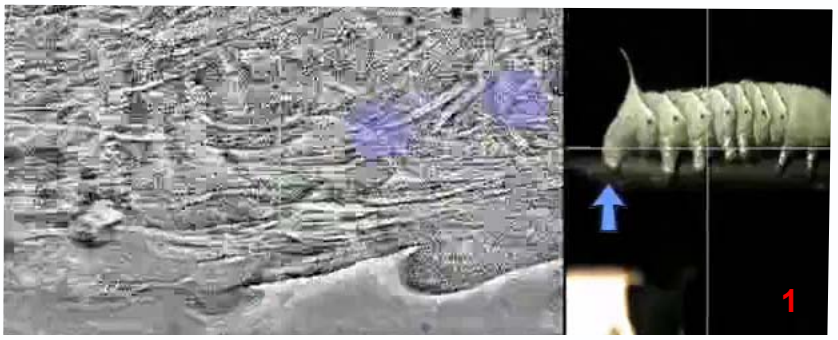
author Michael Simon. Simon conducted the study as part of his doctoral research in Trimmer's laboratory, which focuses on how cell signaling contributes to the functions of the central nervous system and has extensively studied Manduca sexta.

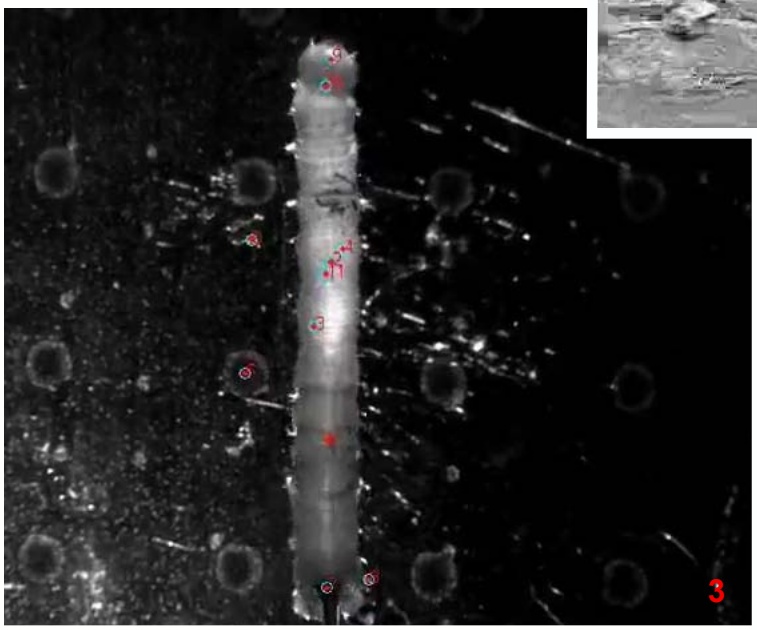
In addition to Simon and Trimmer, authors on the paper included Tufts Research Assistant Professor William A. Woods; Tufts undergraduate Yevgeniy Serebrenik; Sharotka Simon, of Brandeis University; Tufts Graduate School of Arts and Sciences doctoral student Linnea van Griethuijsen; Jake Socha of Virginia Tech; and Wah-Keat Lee of Argonne National Laboratory.

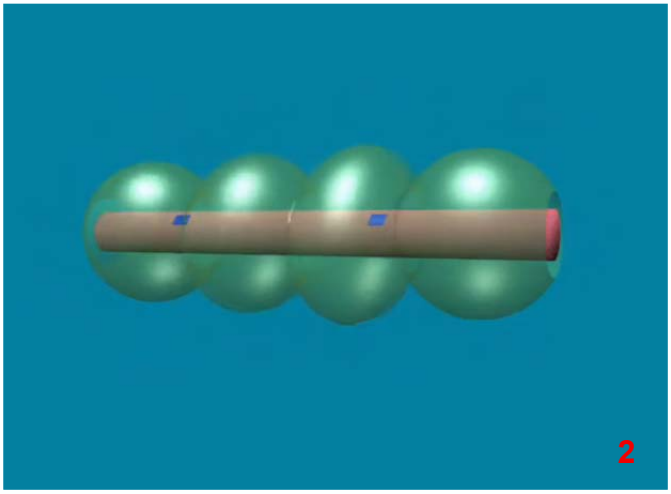
More research is needed to determine if this phenomenon gives caterpillars an evolutionary advantage, in the same way that synchronizing breathing and tissue movements benefits running vertebrates, or arm swinging by walking humans increases stability and reduces metabolic costs.

Regardless, Simon says that this insight may offer valuable application to robotics. "The focus to date has been on robots' external design but we also have to look at how it's most advantageous to arrange the inside of the robot and any payload. Would motion be enhanced, for example, by packing more mass toward the rear, as these caterpillars seem to do?"

This work was funded by a National Science Foundation grant. Use of the Advanced Photon Source at Argonne National Laboratory was supported by the U. S. Department of Energy, Office of Science, Office of Basic Energy Sciences.







1 Using X-ray imaging, scientists discovered that internal structures (such as the blue highlighted trachea connected to the gut) do not move in synchronity with the associated external body segments. Instead, they swing forward at the same time as the terminal prolegs (indicated by the blue arrow). During crawling, the gut moves forward well ahead of the external segments, advancing as much as a full segment before the body wall catches up.

2 A linear relationship between was found between position and marker reference correlation, indicating that the gut does not stay solid during crawling, but rather extends as the body moves. The gut shortens during the terminal proleg swing phase and relengthening during the stance phase.

3 Newly hatched caterpillars are observed directly under a microscope using transition light microscopy. Because their bodies are translucent, the gut movement was directly observed in it's entirety. Internal and external structured were tracked relative to the animal's head and prolegs.

2011 Monarchs in Mexico Scholarships and Application



Would you like to join Monarchs Across Georgia for the experience of a lifetime amongst the millions of Monarch butterflies in Mexico? Would you be willing to devote some of your expertise, time, and/or networking connections to benefit Monarchs Across Georgia? Join MAG as we visit the wintering grounds of three monarch butterfly colonies and explore the cultural and natural history of Mexico. Not only will you experience the breathtaking sight of millions of monarchs, but you'll also learn about local efforts to promote sustainable and environmentally sound economic activities in the areas around the butterfly preserves. We will also be delivering books purchased through our Mexico Book Project to school children.

There are two $1000.00 scholarships available!

Trips are scheduled February 5-12 or February 12-19, 2011. The fee for the trip is $1500.00 (double occupancy) which does not include airfare. For complete itinerary and details, visit **www.monarchsacrossga.org**.

Who can apply?
Anyone currently employed in Georgia as a classroom teacher or as an informal educator can apply for a scholarship. Education must be over 75% of your job responsibility. Written approval from your school district or employer must accompany the application. Five professional learning units (PLUs) are available for certified Georgia teachers.

When can I apply?
We are accepting applications until October 15, 2010.

How do I apply?
Scholarship and trip applications are accessible from the home page of **www.monarchsacrossga.org**. Simply complete the scholarship application, the 2011 Monarchs in Mexico trip application, and write a Plan of Action that includes a timeline explaining how you will promote, contribute, write grants or find partners for Monarchs Across Georgia. A rubric is also available on-line to guide you through the process. All applicants will be notified by October 30, 2010.

Mexico Book Project

Over the past six years MAG has developed a special relationship with local Mexico schools to bring elementary-level books written in Spanish to students. We need your help to reach our goal of $2,500 this year. Please consider making a tax-deductible donation to EEA designating it to the "Mexico Book Project." Your generous contribution will make it possible for MAG, a committee of the Environmental Education Alliance of Georgia (EEA), to bring much-needed educational materials to these deserving children.

As a reference, books generally cost about $5.00 in American currency. In appreciation for your donation, a bookplate with your name (or one designated by you) will be attached to the inside cover. We will also recognize donors by publishing their names on our website at www.monarchsacrossga.org. Receipts will be provided upon request. The deadline for these tax-deductible donations is December 25, 2010.

For more information about this project and how you can help, visit www.monarchsacrossga.org.

Pollinator Habitat Certifications

Do you enjoy watching and studying caterpillars on their host plants; searching for chrysalides hidden from predators; observing butterflies and hummingbirds flitting from flower to flower? Does your schoolyard, workplace or backyard have bushes, trees and flowers that provide host plants, nectar and protection for butterflies, bees, hummingbirds and other pollinators? Is there a source of water/puddling areas for thirsty butterflies? Are there places for them to roost at night? Then you might want to look into registering your backyard/schoolyard/workplace habitat with Monarchs Across Georgia's Pollinator Habitat Program. For more details and to download the form visit www.monarchsacrossga.org. No garden is too big or too small!

Congratulations to the latest gardens to be certified:

Myers Elementary, Gainesville
Parsons Elementary, Suwanee
Trinity School, Atlanta
Museum of History and Holocaust Education at Kennesaw State University, Kennesaw
Georgia Piedmont Land Trust, Snellville
Gail Woody, Whitesburg
Rachel Hendee, Villa Rica
Diane Korzenrewski, Gainesville

SPOTLIGHT...
Plants For Your Pollinator Garden

Spiked Gayfeather, Dense Blazingstar, Marsh Blazingstar (*Liatris spicata*)

USDA Native Status: Native to U.S. ● USDA Plant Hardiness Zones 3 to 10

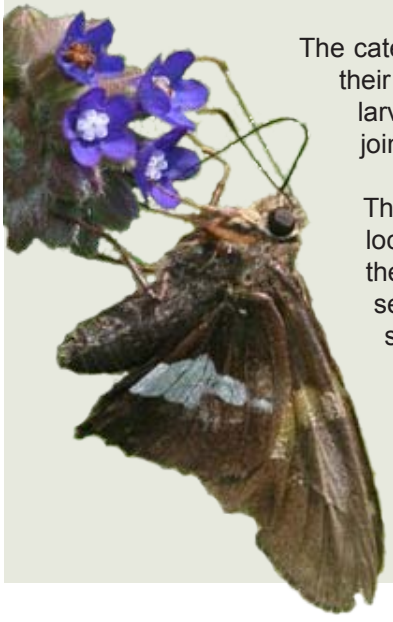
Liatris or spiked gayfeather is one of my favorite perennials although it is not widely used in southern gardens. This very attractive native wildflower will usually grow 24 to 36 inches tall but may grow up to 48 inches high with good conditions. The vertical nature of the spikes of purple flowers on *Liatris spicata* is very striking in both the formal flower garden and prairie meadow.

Liatris is a veritable beneficial insect magnet, attracting among others, monarch and swallowtail butterflies. Growing wild over most of the Eastern half of the US and hardy to zone 3, it has very few pest or disease problems. Liatris blooms in July/August and is unusual in that the flowers bloom from the top down rather than the bottom up. This makes for an excellent cut flower because the old flowers can be snipped off and the stalk will continue to have fresh blooms down the stem.

You do not need a green thumb to grow this attractive perennial. It is practically foolproof. Plant in full to part sun (at least 6 hours of direct sun), make sure to avoid wet areas or soils with poor drainage and Liatris will perform beautifully. It is extremely drought tolerant once established and spreads readily.

Silver-spotted Skipper (*Epargyreus clarus*)

So called because of their habit of dashing quickly from flower to flower, silver-spotted skippers are mostly brown with orange bands on their wings and a prominant silver spot on the underside of the hindwing. They are the largest skippers in North America with a wingspan that can reach nearly three inches. Adults have large, bulging eyes.



The caterpillars are just as distinct. Their bodies are green and banded with dark lines, but their heads are dark rust red with bright red eyespots. Add a prounced neck collar and the larva looks like a cartoon alien. Caterpillars will build themselves shelters out of leaves joined together with silk.

These skippers host on members of the legume family, such as black locust, honey locust, or false indigo. There has been some speculation that the females do not lay their eggs directly on the host plant, but nearby so that newly hatched larva must crawl in search of their first meal. However, this theory has not been proven. As adults, silver-spotted skippers rarely nectar on yellow flowers and seem to prefer blooms of the red, pink, purple, or blue variety.

At night or during poor weather, adults will hang upside down under leaves for protection. Males will also patrol for females by perching on the tops of plants. Two generations of adults will emerge and lay eggs in the southeast - one in spring, and the later generation in fall to overwinter as pupa.

2010 MAG Service Awards
Call For Nominations

On Friday, November 5, Monarchs Across Georgia and the Outdoor Classroom Symposium attendees will recognize and honor exceptional contributions to monarch education, conservation and/or habitat restoration in the state of Georgia at an awards ceremony at Zoo Atlanta. You can participate in this process by nominating and submitting the names of deserving recipients for recognition.

Criteria:
Nominations are accepted for an individual or organization whose efforts in the area of monarch education, conservation and/or habitat restoration have made a significant impact in the state of Georgia in October, 2009 – September, 2010.

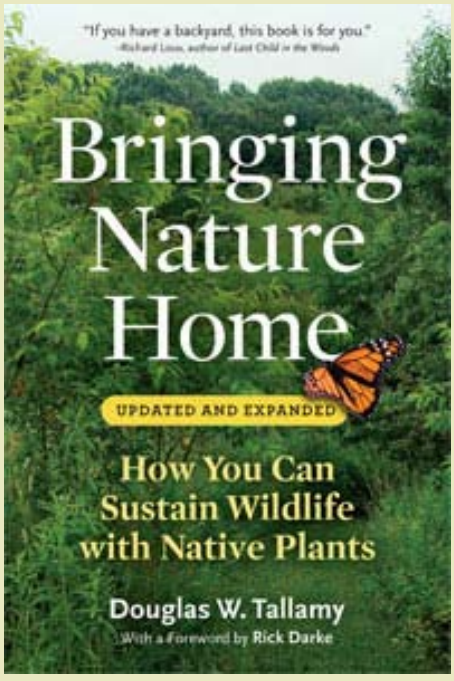
Eligibility:
Eligible for consideration are individuals, non-governmental and governmental organizations, institutions and agencies, for-profit and not-for-profit entities. Nominees are not required to be members of the Environmental Education Alliance of Georgia (EEA).

Instructions:

- Complete a separate nomination form for each nominee. Form can be found at **www.monarchsacrossga.org**.

- Submit the completed nomination form, responses, and a photo of each nominee "in action" by October 1 to Naomi Thompson at n.thompson@stonemountainpark.org.

Make your nominations today for work done October 2009 – September 2010!



Recommended Reading

As development and subsequent habitat destruction accelerate, there are increasing pressures on wildlife populations. But there is an important and simple step toward reversing this alarming trend: Everyone with access to a patch of earth can make a significant contribution toward sustaining biodiversity. There is an unbreakable link between native plant species and native wildlife — native insects cannot, or will not, eat alien plants. When native plants disappear, the insects disappear, impoverishing the food source for birds and other animals. In many parts of the world, habitat destruction has been so extensive that local wildlife is in crisis and may be headed toward extinction. Bringing Nature Home has sparked a national conversation about the link between healthy local ecosystems and human well-being, and the new paperback edition — with an expanded resource section and updated photos — will help broaden the movement. By acting on Douglas Tallamy's practical recommendations, everyone can make a difference

~ From Timberpress.com