



Mississippi Native Plants and Environmental Education



Newsletter of The Mississippi Native Plant Society and the Mississippi Environmental Education Alliance

Volume 28 Number 2 *To forget how to dig the earth and to tend the soil is to forget ourselves* ~ Mahatma Gandhi Summer 2010

The **Mississippi Native Plant Society**, promotes the preservation of native plants and their habitats through conservation, education, and utilization.

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The Lily Trees of May by Gail Barton

I have recently spent extensive time slaying privet in the most disturbed parts of my land. This experience has led me to a great appreciation for the native pioneer species that manage to come in and survive there. Of the hardwood species, sweetgum, red mulberry, water oak and tulip poplar are the most successful. My favorite is the tulip poplar that blooms in May.

Tulip poplar (*Liriodendron tulipifera*) is also known as yellow poplar, popple, tulip tree, white poplar or canoe wood. Its Latin name literally translates to Lily Tree (Leiron = Greek for lily and Dendron = tree) and tulip bearing (tulipifera). Technically it is related to neither tulip nor poplar. It is actually a magnolia cousin and is revered as the state tree of Tennessee.

Tulip poplar has a unique lobed leaf with a notched (emarginate) tip. The outline resembles the silhouette of a tulip. The long slender leaf stalk allows the leaf (like a true poplar) to move in the slightest breeze. In autumn, the leaves transform into a beautiful golden shade.

In late spring, lovely 3" cup shaped flowers are borne in great numbers. The flowers, shaped like their magnolia cousins, have greenish petals marked with orange. They grow high in the tree where they blend into the canopy. I don't realize that they are flowering until the blossoms fall to the ground. The flowers mature into a cone-like fruit that is an aggregate of winged seeds.

Tulip poplars are not considered to be wildlife trees but they have some benefits. They host the Eastern Tiger Swallowtail Butterfly caterpillar and also that of the Tuliptree Silk Moth. Nectar feeding birds (ruby-throated hummingbirds) sip from poplar flowers. Yellow-bellied sapsucker feeds on the phloem tissue. Squirrels and songbirds feast on the seeds during winter.

Each flower is said to yield a teaspoon of nectar. Right now my honeybees fly right over the white clover patch that is adjacent to their hives and up into the blooming tulip poplars to forage. I'm sure the abundant nectar attracts native pollinators as well as my exotic honeybees.

Early settlers were intrigued by the tulip poplar. Trees and seed were shipped back to Europe early on and giant specimens still grace European gardens. Linnaeus planted a tulip poplar in 1687 in his garden in Sweden. It was planted in England about twenty years earlier. Bartram sent tulip poplar seed to England in the early 1730's and wrote of it in his journals.

Tulip poplars were an important part of the primeval forests in eastern North America. They were large, very useful and abundant. Daniel Boone reportedly felled a giant tulip poplar, hollowed out a canoe from the bole and used it to move his family and their household belongings out of Kentucky and into unsettled territory. It is reported that in Colonial times tulip poplar canoes were constructed that could hold 20 men and their belongings.

To early settlers, tulip poplars indicated deep fertile soil that was excellent for farming. The wood was easy to work and thus popular with builders, furniture makers and basket makers. It was an important timber tree due to its characteristic tall straight trunk. As a result most of the giant old growth tulip poplars were harvested. Still, tulip poplar is the largest hardwood tree in North America. A few remnants have been preserved, notably in North Carolina's Joyce Kilmer Memorial Forest where old growth tulip poplars tower to heights approaching 150 feet with 90 feet to the first branches and 20 feet in circumference.

Tulip poplars are too large for the average suburban landscape. They are planted in parks and on large lots as specimens and shade trees. However like most fast growing trees they are weak-wooded and have shallow roots and should not be planted close to houses. They will survive as street trees but under such stressful growing conditions they are attacked by aphids and scale insects. The result is a sappy honeydew that rains from the trees and causes sticky deposits that foster a black sooty mold. The aphids and scale are rarely a problem unless trees are exposed to extreme drought.

I am happy that these stately magnolia cousins grace my land. They are the most beautiful of the pioneer species and are tough enough to be planted onto surface coal mine reclamation sites. I look forward to watching my own sapling volunteers grow on my privet reclamation sites.

MNP & EE Calendar, Field Trips, Native Plant Sales, Etcetera

June 9, 10, 11 & 12 Kids' Summer Nature Camp at the Crosby Arboretum in Picaucyne. Wed - Sat. 9:00 to 2:00 Children ages 6 through 12 will enjoy this four-day camp, learning about the outdoors with fun hands-on lessons, games and activities. They will leave camp with an increased appreciation and excitement for nature. Reservations required; please register by June 7. Bring sack lunch and drink each day. \$35 members' children; \$45 non-members' children. Limited to 15 registrants. 601-799-2311.

June 13 - 17 MSU Bug and Plant Intergenerational Camp www.cfr.msstate.edu/summer_camp

June 27 - July 1 MSU Wildlife Fisheries And Aquaculture Intergenerational Camp 2 www.cfr.msstate.edu/summer_camp

July 30th - August 1 Mississippi's Homegrown Sustainability Conference, Gaining Ground Sustainability Institute of Mississippi, Bost Building, MSU. For more information go to <http://www.ggsim.org/learn-experience/conferences>

October 2, 2010 Saturday MNPS Conference will be held at the Mississippi Museum of Natural Science, Jackson, MS

Native Plants for Sale at Any Time! Native plants are available throughout the year from Strawberry Plains Audubon Center's Nursery by appointment. Please contact Kristin Lamberson at 662-252-1155 for more information. Bring a wagon.

For additional opportunities monitor: EEinMississippi, <http://bigcypressoutdoorclub.wikispaces.com>, www.clintonnaturecenter.org, <http://www.crosbyarboretum.msstate.edu/>

The 5th Lone Star Regional Native Plant Conference by Cassandra Loos

The Stephen F. Austin State University Pineywoods Native Plant Center, in association with the Cullowhee Native Plant Gardening Conference, is once again proud to host the 5th Lone Star Regional Native Plant Conference June 2-5 in historic Nacogdoches, Texas. The conference will be held on the beautiful SFA campus which is home to the Mast Arboretum, the Ruby Mize Azalea Garden, as well as the 40-acre Pineywoods Native Plant Center.

Come join a unique blend of naturalists, horticulturists, nurserymen, landscapers, and gardeners to hear talks ranging from green roofs to landscape design and native azaleas. Conference attendees will also have the opportunity to enjoy unique local flora from a choice of guided tours as well as educational workshops. Mark your calendar and go to <http://arboretum.sfasu.edu> for the registration and the conference agenda. For more information contact Dawn Stover at 936-468-4404 or dparish@sfasu.edu

MNPS Officer Elections

MNPS will hold elections for officers at the annual meeting on October 2, 2010 at the Mississippi Museum of Natural Science in Jackson. Offices are: President, Vice-President, Secretary-Treasurer, and Editor. Nominations may be submitted to Bob Brzuszek [Rbrzuszek@lalc.msstate.edu], PO Box 9725, Mississippi State, MS 39762.

Greetings MNPS from Dr. Janine Conklin, MNPS President,

The Mississippi Native Plant Society field walks and native plant programs held on April 9 and 10, 2010 at the Crosby Arboretum were a hit. Twenty-three members attended Friday's event and twenty-four attended Saturday's programs. At Friday's workshop, the group enjoyed learning about plant propagation from Gail Barton. Gail is the author of "*Basic Gardening: A Guide for the Deep South*" and former Horticulture Instructor with Meridian Community College. On Saturday, the group soaked in the sun and the spring flowering plants on the field walk at the Arboretum with Bill Fontenot and Rick Webb. Bill is the former manager of the Acadiana Park Nature Center, has published several books including "*Native Gardening in the South: A Cajun Prairie Restoration Chronicle*," and currently operates Prairie Basse along with his wife Lydia. Rick owns Louisiana Growers (Amite, LA) along with his wife Susan. After the field walk, the group learned about gardening for birds with Bill and something old, something new, something borrowed, and something blue with Rick.

This two-day MNPS experience was a great chance to network with horticulturists, biologists, gardeners, and other plant professionals. Retired botany professor at Mississippi State University and past MNPS President, Dr. Sidney McDaniel, joined the group for Saturday's events. Dr. McDaniel researched and assembled the document "*Native Woody Plant Species of the Pearl River Basin*" for the Crosby Arboretum Foundation.

At the Arboretum, the MNPS group feasted their eyes on lovely Yellow Pitcher Plants in full bloom, Goldenclub, Florida Azalea, Louisiana Iris, Buckwheat-tree and several other flowering plants. The group also toured Hillside Bog with Bill, Rick, and Gail. At the Bog, the group marveled at the Piedmont Azalea, Bladderwort, Sundew, Flowering Dogwood, and Buckwheat-tree in bloom. The great weather along with several spring plants at peak bloom made for a wonderful outdoor experience. Special thanks to the dedicated MNPS members and Arboretum staff that made this event a success.

The Yellow Pitcher Plant, A Mississippi Carnivorous Plant

Most people immediately think of the Venus Fly trap when they think about carnivorous plants, but Mississippi has quite a selection including this one which is currently blooming along our roadsides in the southern part of the state.

The pitcher is actually a modified leaf that not only photosynthesizes but attracts and digest insects for their nitrogen. This is an adaptation that enables these plants to thrive in nitrogen poor soils.



The President of MEEA, Laura Beiser's letter

With the devastation of the recent British Petroleum oil spill in the Gulf of Mexico, environmental issues are in the news daily. It is most important that the public, professionals and decision makers be informed about wildlife, ecology, the food chain, habitats and the effects on the economy of our state. Contact Audubon on the Mississippi (MS) Gulf Coast by going to their web site at pascagoula.river.audubon.org if you would like to volunteer to clean up oiled birds. Training workshops will be offered on how to apply saline to bird eyes, swabbing nostrils with q-tips and washing oil from feathers.

As an environmental educator for a statewide program I have oversight for many spring and summer workshops and camps in Mississippi scheduled for summer 2010.

June 15&16 Adopt A Stream Workshop includes a field trip to a stream, macro-invertebrates as water quality indicators, mapping a watershed, and water chemistry. John W. Kyle State Park at Sardis, MS (north of Batesville, MS). Contact Deb Veeder at 601-206-5703 or dveeder@mswf.org.

June 22-24 Envirothon Teacher Workshops on Wildlife, Forestry, Aquatic Ecology, and Soils (.6 CEUs). Wildlife June 24, at MSU Berryman Cabin from 9:30 – 3:30; Forestry June 22, Aquatic Ecology is June 23, and Soils (?). Call Susan Shedd at 601-354-7645 for details and registration.

June and July The Northwest Mississippi Resource Conservation and Development Council, 11 teacher workshops will be offered in June and July in Delta counties and in Grenada and Warren counties. Contact Ann DeLoach at (662)230-3175 for CEU information.

June 1-2 The Coastal Plains RC&D Council is offering .6 CEUs for: a June 1st workshop (MGCCC George County Center) and a June 2nd workshop (Pearl River Community College) on *Food, Land and People* and the *Longleaf Pine Unit* (new curriculum).

June 17th Project Learning Tree at MSU Coastal R&E Center. Contact Patti Rogers or Amanda Gaskin at (601)528-5133.

Alcorn State University will host one teacher workshop this summer. Contact Dr. Alex Acholonu at 601-877-6236.

June 8-10 A 3 –day teacher workshop at Central MS R&E Center at Hinds Community College. Curriculum will be *Private Eye*, *Waste in Place*, and a *Watershed Study of the Ross Barnett Reservoir* (new curriculum). 2.5 CEUs will be offered. Contact Lynn Porter at (601)965-5682 ext. 3, Hinds County Soil and Water Conservation District.

Project Learning Tree Workshops throughout the year contact Harold Anderson at (601)613-5567.

June 7 – July 15 Summer Ecology Day Camp Sessions Contact Ms. Sarah Lovett at the UM Center for Water and Wetland Resources at (662)915-5479.

June 27-July 1 Wildlife, Fisheries & Aquaculture Intergenerational Camp, MSU. Contact Dr. John Guyton at (662)325-3482. (4 CEUs)

June 13-17. Bug and Plant Ecology Intergenerational Camp (4 CEUs) Contact Dr. John Guyton at (662)325-3482.

June 6-10 Summer Ecology Forestry Camp at MSU, contact Patsy Foster (662)325-5548.

MS NCLI UPDATE

As the fiscal year 2010-2011 approaches, all organizations and businesses are asking “What are my priorities and focuses for the challenges of this hard economic time?” MEEA and the NCLI Principals Committee have been asking themselves the same questions. A review of the potential impact on our NCLI plans of the restructuring and reprioritizing of all educational entities has brought forth suggestions for slightly reshaping our plans in order to move forward more successfully in these challenging times. At this time these suggestions are in an early draft format. It seems prudent to wait to finalize these suggestions until the final legislative budget is approved by all governing authorities and both formal and informal educators know how their budgets and jobs will be affected. The NCLI Principal Committee will reconvene in early July to share ideas, discuss, and finalize goals and priorities for 2010-2011.

Our environmental literacy plan is also temporarily on hold pending legislative mandates and then the Mississippi Department of Education's revised priorities. Work on the ELP should begin progressing in July. As soon as the principals meet we will reconvene the entire NCLI committee for a briefing and work session. During this session we will focus on how the efforts of the various agencies and organizations can be morphed into a workable and replicable plan for use during a pilot. A number of participants have expressed interest in launching the pilot in schools in their area and this may be doable. However, we need to be consistent so that our efforts contribute to the research base. That said, a model worth exploring is the magnet school. Members of the NCLI committee are encouraged to Google “magnet schools” and learn as much about them as possible. Also, read about the Oil City Magnet School at <http://www.learnoutside.org/successstories/oilcityelementary.html> and then download the PDF file under the “Learn More” topic. This is an article that appeared in *Science and Children*, one of the journals of the National Science Teachers Association.

And finally, we have a slight change on the MS NCLI Principals Committee. Dr. Betty Latimer will be serving as our NCLI liaison with the Mississippi Department of Education.



DISCOVER NATURE WITH BOOKS! by Terri Jacobson, USFWS, Jackson, MS

Youth Book Review: *The Turtle Saver* is written and illustrated by Laurie Parker – Some of you may know the author and illustrator of this book since she is a Mississippi native, born in Bruce and residing in Starkville. The story begins with one act of kindness when a good-hearted man stops his truck and quickly hops out to help a box turtle get safely across a road. With this one small act, a series of seemingly unrelated but interconnected events take place. This story shows us that the power of our actions are often far reaching, more than we can ever know: a wonderful life lesson for all ages. With colorful collage-type illustrations and lyrical rhyming poetic text, this book is a delight to share and read out loud. *The Turtle Saver* is a perfect book for springtime since this is the season that many turtles and tortoises are on the move with males looking for mates and females looking for nesting sites. So please do a good deed and watch out for turtles that may be slowly crawling across our Mississippi roads.

Turtles by Anita Baskin-Salzberg and Allen Salzberg. 1996. Franklin Watts, New York. ISBN 0-0531-15898-5. For my article, below, I used this book as a source for some turtle facts. *Turtles* is written especially for children age 10 and older. It is a great first book for those kids who are interested in turtles.

TURTLE TALE - May 23 is “World Turtle Day”

On March 5th, as I was driving from Flora to Canton, I stopped to rescue a turtle trying to cross Hwy 22. If I hadn't stopped, would the turtle have made it across the highway? The answer is maybe but not likely. Many turtles are crushed and killed by vehicles seasonally each year - the shell of a turtle does not protect it from being run over by a truck or car.

Turtles are reptiles with shells and they have been around a long time, first appearing about the same time as dinosaurs. In the world, there are more than 250 turtle species and they are found on every continent except Antarctica and in every ocean except the Arctic. Here, in the South, we are lucky to have a great diversity of turtle species. In Mississippi we have 28 species of turtles including musk and mud turtles, soft-shell turtles, pond and river turtles (even a chicken turtle!), snapping turtles, box turtles, one tortoise, a terrapin, and at least four species of sea turtles visit our coast. Aquatic turtles are classified as to whether they live in freshwater or saltwater. All aquatic turtles have webbed feet but some freshwater turtles are semi-aquatic and have almost no webbing between their toes. Although related to freshwater turtles, the North American box turtle lives on land while the diamondback terrapin lives in brackish waters of coastal marshes and estuaries. Turtles that are especially adapted to living on land are called tortoises. Did you know that turtles can live a long time? Depending on the species, turtles can live at least 30 years to over 150 years.

The turtle that I helped across the road was a female red-eared slider. There are at least 14 subspecies of sliders. In the United States, sliders naturally range from Virginia to Florida and west to Kansas and New Mexico. They are also found in Central and South America. A red-eared slider is a common pond turtle in Mississippi but sliders also inhabit sluggish rivers, shallow streams, swamps and lakes with soft muddy bottoms and aquatic vegetation. Being cold-blooded, turtles bask in the sun to warm up and to dry out. They use rocks, floating logs, tree stumps and branches that stick out of the water as basking structures. Sliders are often seen piled one on top of another with the smallest on top. Sliders get their name by quickly sliding into the water when they feel threatened.

How did I know that the rescued turtle was a female? In general, mature female slider turtles have short front claws and longer back claws, a well-arched domed shell, and a flat plastron (bottom shell). Mature males have longer front claws, short back claws, a flatter top shell, and a concave plastron (the bottom shell has a bowl shape to it). During courtship, the male slider will wave his long front claws in front of the female's face to get her attention and help set the mood for some aquatic lovemaking.

So why was the turtle crossing the road? She was probably on her way to find a suitable site to lay her eggs. Aquatic turtles leave the water to lay their eggs. (With one exception, the northern long-necked turtle of Australia lays its eggs under water. The eggs remain dormant in the nest until the waters recede and then development begins.) The female looks for a dry, sunny spot without a lot of vegetation where she can easily dig a hole with her back feet. Then, she deposits ping-pong ball-like eggs inside the hole and covers the eggs with soil. Nesting can take two hours from start to finish.

Don't endanger your life to rescue a turtle! Keep safety in mind if you see a turtle or tortoise crossing a road. If you want to help it, put on your hazards and pull over before stopping your vehicle - making sure to put the vehicle in park and don't get locked out (I try to remember to open my window just in case). Look for traffic before running out into the road. Carefully pick up the animal taking care not to get bitten or clawed. Some aquatic turtles will release musk or water and urine, so keep the turtle's back end pointed away from yourself or you will get wet (I am speaking from experience here). Note the direction that the turtle is heading and then carry it across the road in the same direction that the turtle wanted to go. If the turtle is attempting to cross a very busy highway, discourage it from crossing; it would take a “SuperTurtle” to safely make it across once let alone a return trip back across a busy multilane highway. Divided highways with a barrier are most certainly a death trap for turtles and other wildlife.

Internet Resources:

Tamia Nelson's Outside Up North web page, explains how to move a snapping turtle. http://www.tamiasoutside.com/help_turtles/
Discover Life, an internet field guide can help you identify a turtle or other plants and animals. <http://discoverlife.org>

MNP & EE Welcomes Lucas Majure as a new Editor

This is the second newsletter that Lucas has assisted us with, in terms of scientific names. Lucas received his BS from MSU in 2003 and worked at the Mississippi Museum of Natural Science as an herbarium assistant and doing field work for the Mississippi Natural Heritage Program. During his masters research at MSU he became interested in prickly pear cactus and its problem with an exotic cactus moth (*Cactoblastis cactorum*). This South American moth is devastating prickly pear cactus across the southern states. He is currently working on his PhD at the University of Florida. Please welcome Lucas to our editorial board.

Crosby Arboretum Spring Meeting and Field Trip by Gail Barton

It was a lovely spring weekend for the MNPS Crosby meeting. The weather was sunny but cool and breezy. On Friday, April 9 at 2:00 about 22 participants met for a Wildflower Propagation Seminar led by former MNPS President, Gail Barton.

The group stayed indoors for the first hour discussing propagation techniques and cleaning seed. We then moved to the greenhouse to divide 'Peachie's Pick' Stokes aster and transplant false indigo (*Baptisia bracteata*), black-eyed Susan (*Rudbeckia nitida*) and heart's a busting (*Euonymus americanus*). Participants took home starter plants of all of the above.

On Saturday April 10, about 24 people were in attendance. We began the morning with a stroll around the Pond Journey Trail led by Bill Fontenot and Rick Webb. We were also fortunate to be joined by Dr. Sidney McDaniel.

We meandered slowly along the trail examining plants and listening to the birds. Highlights of the walk were the blooming native azaleas (*Rhododendron canescens* and *R. austrinum*), Louisiana iris and buckwheat titi (*Cliftonia monophylla*). Rick taught the group how to tell if holly flowers are pistillate (female) or staminate (male). Bill introduced us to the beautiful song of the ruby crowned kinglet. We lingered at the pine savanna to admire the blooming pitcher plants (*Sarracenia alata*) and Oneflower honeycombhead (*Balduina uniflora*). We then enjoyed the ferns along The Crosby's new woodland trail that meanders along a small creek.

On our return to the meeting room, Bill Fontenot discussed design techniques for native plant gardens. He also showed slides of the best native plants for birds. After a short break, Rick Webb took the floor and discussed his favorite native woody plants. He also discussed some improved cultivars of native plants.

We enjoyed pizza at the Pinecote Pavilion and then followed Terry Johnson to the Crosby's Hillside Bog. The buckwheat titi (*Cliftonia monophylla*) at the site was in full bloom and was absolutely stunning. We saw pitcher plants (*Sarracenia alata*) in bloom and also the carnivorous bladderwort and sundew. As we walked, Terry discussed management of the bog and techniques and benefits of controlled burning.

I cannot say enough good things about this event. The weather was lovely. The Arboretum staff was helpful and knowledgeable. Special thanks for coordinating this event go to Pat Drackett, Janine Conklin and Terry Johnson. April is a busy month so we had a small group. If you couldn't make it to this meeting, I urge you to visit the Crosby soon. It is definitely one of Mississippi's treasures.

MNPS Sending Representative to Florida NPS Native Plant Summit by Gail Barton

Last summer the President of the Florida Native Plant Society, Gene Kelly, contacted Gail Barton and Janine Conklin and asked that MNPS send a representative of the Mississippi Native Plant Society to the FNPS Annual Conference. The conference is scheduled for May 20-23 at the Leon County Civic Center in Tallahassee. As part of the conference, FNPS is hosting a 4 hour "summit" which will be a meeting of officers and representatives of Southeastern Native Plant Organizations.

The purpose of the Summit is to explore ways that our organizations can collaborate and advance our missions to conserve native southeastern U. S. flora. A banquet will be held in the evening after the summit. Representatives will be seated together to allow for additional opportunities for informal discussion and brainstorming.

Possible topics of discussion include: defending and/or expanding protections for endangered plant species; inter-jurisdictional coordination in the control of invasive nonnative plants; advocacy for mechanisms that would prevent the introduction of new invasives, Expanding the commercial availability of native plants for landscaping, Maintaining genetic integrity of natural populations despite widespread cultivation; creation of a Southeastern Regional Association of Native Plant Societies ; and sharing of administrative and organizational efficiencies.

Gail Barton has agreed to be the MNPS Representative. She will report to members about the summit in a future newsletter. For more information about the conference, members can visit <http://www.fnps.org>

Spring Equinox on the Pontotoc Ridge by Gail Barton

On Saturday March 20, about 15 members of the Mississippi Native Plant Society traveled to New Albany to botanize on the Pontotoc Ridge. Participants hailed from Corinth, Clinton, Hattiesburg, Vicksburg, Crystal Springs, Rienzi, Water Valley and Meridian. Our group met at the Pilot Station in New Albany and convoyed to Wildside, the home and garden of Sherra and Ken Owen.

We started the morning with a stroll through Sherra and Ken's native plant garden. The garden was beautiful and it allowed us an excellent opportunity to study many wildflowers in close proximity to each other. It was particularly interesting to see three species of trillium - sweet little Betsy (*Trillium cuneatum*), prairie trillium (*Trillium recurvatum*) and twisted trillium (*Trillium stamineum*) - just a few yards apart. John Gwaltney captured images of Alleghany spurge (*Pachysandra procumbens*) in flower for his www.southeasternflora.com website.

We then took a walk on the Wildside Trail to see the wildflowers in their native habitats as understory plants beneath large hardwood trees. Preston Padgett instructed the group in winter tree identification as we walked. We saw paw paw (*Asimina triloba*) in flower but most of the trees were identified using twig, bark and growth habit.

We saw large stands of spicebush (*Lindera benzoin*) in bloom. Spicebush is host plant to Mississippi's state butterfly the spicebush swallowtail. We also saw numerous trilliums, spring cress (*Cardamine bulbosa*), cutleaf toothwort (*Cardamine concatenata*, formerly *Dentaria laciniata*), spring beauty (*Claytonia virginica*), least bluet (*Houstonia pusilla*), *Hepatica* spp., witch hazel (*Hamamelis virginiana*) and a few spring coral root orchids (*Corallorhiza wisteriana*). Debora Mann followed the group pausing to turn over logs in search of a rare salamander.

We enjoyed a picnic lunch in the garden and then continued to two other nearby sites. The first site had an interesting ledge that contained fossil rocks and is habitat for walking fern (*Asplenium rhizophyllum*). This cretaceous deposit overlies older Paleozoic rocks consisting of limestone, shale, chert and sandstone. We examined the rocks and saw fossils of ammonites, echinoids, exogyra. Native sweet flag (*Acorus gramineus*) flourished in the boggy pasture below the rock formations.

Bob and Clemmie Grisham joined us at the last site where we saw spectacular stands of trillium, May apple (*Podophyllum peltatum*) and bloodroot (*Sanguinaria canadensis*). We also saw more of the lovely spicebush, Jacob's ladder (*Polemonium reptans*) and doll's eyes (*Actaea pachypoda*).

Due to the unusually severe winter, several things that we hoped to see in bloom such as red buckeye (*Aesculus pavia*), trout lily (*Erythronium* spp.), and woodland phlox (*Phlox divaricata*) were still just budded.

So we didn't see everything expected and Deb never found her salamander. Still...it was a wonderful way to celebrate the Vernal Equinox and mark the first day of Spring.

Using Literature as Your GPS for Environmental Science by Re-C Carter

According to Wikipedia, the Global Positioning System (GPS) is a U.S. space-based global navigation satellite system. It provides reliable positioning, navigation, and timing services to worldwide users on a continuous basis in all weather, day and night, anywhere on or near the Earth which has an unobstructed view of four or more GPS satellites. I have not always been fond of the idea of owning such a gadget, although I have personally become attached to this handy little device since I travel throughout the state visiting teachers who are participants in the ATOMS2xp project. My husband requested a GPS for his birthday several years ago and I remember thinking :Why do you need one? Oh well, I purchased one and he was so elated. My first encounter with "the lady," funny how family things acquire names, was quite amusing. My husband and I headed out on a journey to my parents. Now, mind you, this is a route we travel very often, for its only eight miles from our home. As I buckled my seatbelt, I thought he is really not going to use his GPS. Much to my surprise, I liked the way "the lady" didn't miss anything. As I intently watched her navigational methods, she displayed roads that I have always known, but she prompted those road names to resurface in my mind. Yes, I had traveled this route many times, but I didn't recall paying close attention to the names of roads. As we approached our destination, she immediately began warning us of the distance to turn. Now I liked that! "The lady" with all her knowledge had changed my mind about owning a GPS, for she was helping me see things in a way I hadn't seen before plus, she took me right where I wanted to go.

So as plans were put into action for the ATOMS2xp Summer Institute, my colleague and I began the daunting task of trying to find ways of making Environmental Science more teacher-friendly. Since we were aligning our Summer Institute to the new 2010 Mississippi Science Framework, which gives Environmental Science more emphasis, we quickly realized we would have to be innovative with our plans to incorporate these competencies. For the two of us together, we had 26 years of teaching in the elementary classroom and knew all too well that teachers could not have another "something" with its own identity added to their plates. We would need to seek ways for teachers to navigate through the environmental science competencies without adding stress, that is, if there is such a thing! While attending the National Science Teachers Association Conference, we discovered many valuable resources, but the one resource that made such a connection was using literature to teach across the science curriculum.

One particular resource book that we both became fond of was Karen Ansberry and Emily Morgan's *Picture-Perfect Science Lessons*. This teacher resource not only offers literature ideas for science, but gives valuable knowledge of implementing inquiry along with the literature. Two selections we interjected into the Summer Institute were *Oil Spill* and *Prince William*. Both were informative and inspirational to read as they served as a springboard and conclusion to an oil spill simulation. Using inquiry, teachers were very engaged with experimenting and finding possible solutions to the spill. Both books channeled great discussions about careers that are often times overlooked. Being stimulated by this resource, we came up with many literature selections that correlated with our plans for the ATOMS2xp Summer Institute. Another book that we used which added humor to the lesson was *If You Give a Mouse a Cookie*. Just like the mouse, when we get, we want more! Who would ever think that a little mouse could wear out an energetic young boy? But then again, who would ever think that "my little consumption of energy" could wear out the energy sources that nature provides? Chocolate chip cookies were used to simulate the mining of coal from the earth. This coal mining simulation presented the concept of the difficulty of removing the coal (chocolate chips) without destroying the environment (the cookies). Through laughter, yes fun, teachers mined away at their cookies. This activity led to discussion of how nature will only provide so much regardless of how much more we want.

Through our travels to observe the ATOMS2xp teachers, we have seen them utilizing literature and have heard comments of how they too have been stimulated to plug in science concepts with the use of literature. One lesson we have seen by one of our teachers that has truly embraced cross curriculum teaching was *Bringing the Rain to Kapiti Plain*. Even though she wears the hat of being "the science teacher", she easily navigated across the social studies, language arts and reading curriculum using this book.

Many teachers are navigating on the same educational roads, but noticing new ways to incorporate science, especially environmental science. Through ATOMS2xp online communication board, one teacher stated, "I would read and allow my students to read the story. I would teach across the curriculum with reading, writing and math. I would also pull in several different activities using the one story. I would allow the students to compose their own stories that will help preserve the environment." Another teacher's response was, "*One piece of literature I have used in my classroom is The Great Kapok Tree*. I have used this story when we have discussed ecosystems and saving forest lands. It is also useful when teaching a unit on rainforests." Regardless of what your role is in education, I encourage you to use literature as your GPS. I don't expect "the lady" will tell you to "U turn as soon as possible!" **Re-C Carter** is a Science Field Coordinator ATOMS2xp Project – MSU

Electrostatic Precipitators and the Influence of Environmental Educators by John Guyton

It did not take Dr. Lawrence Croft very long to convince me to join him in running what I now realize was a brilliantly conceived and unimaginably effective traveling teacher demonstrator (TD) program addressing the country's energy future. I had recently produced and taught the first course on alternative energies in the southeastern part of the US and my students had built windmills, solar collectors, converted a lawnmower engine to run on alcohol, produced methane from horse manure, converted a rider lawnmower to an electric vehicle, built solar cookers and designed energy efficient houses, so I was enthralled with the opportunity.

Dr. Croft's program was the Mississippi unit of the Oak Ridge Associated University Energy Education Division's (ORAU EED) *Energy Today and Tomorrow* program. During my summer orientation in Oak Ridge, TN I studied with other TD's who would be running similar van programs all over the country and many others who were already experienced in the ways of a traveling educator. ORAU EED spared no expense in providing comprehensive training programs and unfettered access to the world's foremost authorities in every aspect of energy, education and public speaking. We toured coal mines and coal burning power plants, nuclear and hydroelectric plants and solar houses. Our sessions were taught by legends in the energy and media fields. We developed programs and tried them out before live audiences in the American Museum of Science and Energy. Our vans were equipped with state of the art equipment custom designed and built by ORAU technicians, which brings me to electrostatic precipitators...



It was a long time ago in a land far away... The year was 1980, and not only were coal power plants *not* equipped with precipitators and scrubbers, their managers were still insisting acid rain was not their problem and the particulate matter belching from their smokestacks was not even on their radar screen. They had built very tall smokestacks to more thoroughly dissipate the smoke in the, now antiquated, then commonly accepted belief that dissolution was the solution. The functioning precipitator models we used were designed to resemble coal burning power plants with a tall smokestack with a removable front panel that enabled the audience to see smoke being pulled through the plant. We heated ammonium salicitate with a soldering iron to produce copious amounts of smoke and a light in the smokestack made the demonstration very effective. When the precipitators were switched on the audience

could still observe the smoke being pulled through the plant by a fan and into the precipitators and the particulate matter in the smoke being discharged quickly disappeared! This got their undivided attention. The model is at the extreme right and the square box on the left side of the model is a precipitator unit in the photo taken by Larry Hogue then with Mississippi Power and Light.

My largest sponsors included Mississippi Power and Light and Mississippi Power and their managers frequently attended my presentation. Often after the program they would come forward to meet me and they were always curious about the electrostatic precipitators. I did a lot of repeat demonstrations for them and frequently pulled the precipitators from the unit for them to inspect. When they wondered where the smoke went I would tap one on a table liberating some of the particles that had adhered to the electrically charged collector plates. Today, this technology that is used to remove the particulate matter from coal burning power plant emissions is common in home air filters. The high school students that comprised our audiences, all over the nation, are now in their 40's. They grew up understanding the solution to many environmental problems, and when they began entering the workforce they went to work on them.

It has been enjoyable to reminisce while watching the energy/environmental news, as those ideas we expounded in our programs over 30 years ago have come to fruition. We also demonstrated natural gas-, electric- and solar-powered vehicles, discussing the infrastructure needs and environmental cost and benefits of hybrid cars. Electric vehicles, for example, reduce non-point source air pollution by concentrating the production of electricity at power plants. The waste produced in converting chemical or nuclear energy to electricity is more easily and efficiently managed at the power plants than in vehicles on every road, and in homes, too, for that matter. Oh, we also talked about the energy savings that could be derived if we would switch to aluminum cans and follow the Japanese lead on bullet trains... Environmental Educators change the future.

Dr. Sidney McDaniels Visits the Crosby Arboretum

The Crosby Arboretum is a special place for MNPS and MEEA and most of the members of the MNPS are aware that Dr. Sidney McDaniels not only did the first floral surveys of the arboretum he was a founding member of the MNPS! We are pleased to honor Jeffery Cannon with an honorary membership in the MNPS for leading the effort to get Sidney back to the Crosby Arboretum and the Gulf Coast. This was Sidney's first trip to the arboretum since his stroke. Assisting in Sidney's return to the arboretum were his brother, John, Lisa Fortt, Dr. Robert Stewart, Daryl Evans, Dr. Viana Muller, Lynn Crosby Gammill, Gail Barton, Crosby Director Dr. Janine Conklin, Senior Curator of the Crosby Arboretum, Pat Drackett is pictured with Sidney on his tour of the arboretum. The subject of Dr. McDaniels' dissertation was pitcher plants.



