Mississippi Native Plants and Environmental Education

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

Volume 28 Number 3 ***Study nature, love nature, stay close to nature. It will never fail you*** - Frank Lloyd Wright Fall 2010

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

The **Mississippi Environmental Education Alliance** promotes EE, supports the work of environmental educators and encourages the adoption of earth-friendly lifestyles

Declare your Independence with Solidago Tea by John Guyton

Goldenrod (*Solidago odora*) became a historically significant plant in 1773 when the early colonist dumped the British tea into Boston Harbor. *Solidago odora*, recognized by its licorice or anise smell, was an ingredient in Liberty tea. Liberty tea was so popular it became an early colonial export to China! You can purchase goldenrod tea and even goldenrod honey!

There are around a hundred species of goldenrods native to North America and all can be used to make teas but the *Solidago odora* is reported by Euell Gibbons and many others as the most desirable. Collect and wash several cups of leaves and flowers and pour boiling water over them. Try 2 cups of fresh plant parts for 4 cups of tea allow it to steep for 15 to 30 minutes. Strain and drink hot with honey or lemon, if you like. Dried mint or yarrow can be added for a tasty variation. The dried herb stores well for year-round use. An added benefit is the tea's usefulness in treating sore throats, coughs, colds, flu, fevers, flatulence and as digestive aid for stomach cramps. It has antifungal and antiseptic properties and is an excellent diuretic. It is reported to help clear upper respiratory infections and reduce mucus and postnasal drip.

If you like licorice or anise you will love goldenrod jelly! My first goldenrod jelly was made by Flora Toller who many of you may remember for her delicious Kudzu dishes! Add 2 tablespoons of pectin to 1 cup of tea and bring to a rolling boil stirring constantly. Add 3/4 cup sugar and heat to a rolling boil again and still for an additional 3 minutes. Pour into jelly jars.

The proliferation of goldenrod suggests we mention possible economic uses. Thomas Edison encouraged the use of goldenrods for rubber production and its flower oil has been used in perfumes. And the flowers have been used to dye wool. A species found in Texas, *Solidago altissima*, may contain enough hydrocarbons for evaluation as an economical crop.

Everyone who has harvested goldenrod or closely examined it is aware of the huge number of insects that visit it and I would be remiss if I did not mention the goldenrod fly (*Eurosta solidaginis*). This fly produces spherical galls on goldenrod stems that many people believe are part of the plant! The small brown flies are weak flyers and spend most of their time walking up and down the goldenrod stem. Once the male finds a suitable bud he relaxes and waits for a female to notice him. Then he dances for her. If lucky, they mate after which she splits to find a suitable goldenrod stem to stick her ovipositor in to lays eggs. These flies do not eat as adults and that may be why they only live a couple weeks. Now back to our story… The fly larvae hatch in about 10 days and immediately begin eating. The lava's saliva contains a chemical that creates the spherical gall, that they will remain in for a year. As they eat the gall grows. The larvae also produce an antifreeze-like chemical that protects them from the cold during winter. Next time you are in a patch of goldenrod look for the spherical galls on their stems.

These flies have many predators including wasps, a beetle *(Mordellistena unicolor*), downy woodpecker and chickadees that prey on the larvae. Two species of parasitic wasp (*Eurytoma gigantean* and *Eurystoma obtusiventris*) lay their eggs in the fly gall and when their larval hatch, they dine on fly larvae.

Throw a goldenrod fly gall in your tackle box and the next time you go fishing try it as a cork.

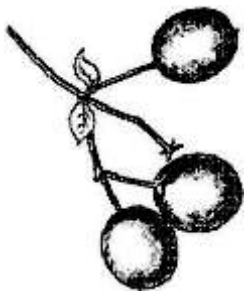
Greetings MNPS from Gail Barton, MNPS President,

There are only two things on my mind right now, Finalizing plans for the annual meeting and getting a website up and running. I am especially thankful for MNPS Vice President, Tim Schauwecker's work in getting us back on line! You can check out the newsletter at www.mississippinativeplantsociety.org. It is not completely populated but we are back on line and we are on a roll!

The annual conference is coming together very nicely and it will be exciting to be in the Mississippi Museum of Natural Science and have the opportunity to take a walk with museum educator Joe McGee, also a former MNPS VP. I have included the agenda so you can start thinking about which workshop you want to participate in. See you in Jackson!

MNPS Annual Meeting Agenda October 2, 2010 Mississippi Museum of Natural Science, Jackson, Mississippi

9-9:30 Registration
9:30-10:45 Concurrent Workshops (Choose one.)
1 Fern Identification – Heather Sullivan and Alan Holditch
2 Creating Backyard Wildlife Habitat – Adam Rohnke
3 Landscaping with Native Plants – Dr. Tim Schauwecker
10:45-11 Refreshments / Break
11-11:45 John Gwaltney – Southeasternflora.com: A Practical Resource for Native Plant Identification
11:45-12:15 MNPS Business Meeting
12:15-1:15 Lunch (on your own)
1:15-1:30 Roadside wildflower research at MSU - Edward Entsminger and Dr. John Guyton
1:30-2:15 Dr. Sherry Surrette – What's the Buzz?" - Native Plant and Pollinator Relationships
2:15-2:30 Refreshments
2:30-3:15 Tom Mann – Mississippi's Sandhills: *de facto* Refugia for the Pineland's Xeric Biota on a Landscape Under Siege"
3:15-4:430 Walk / Field Trip on Museum Trails with Joe McGee



Letter from MEEA President, Laura Beiser to MEEA members, supporters, & partners,

"Estuaries, Living on the Edge" is the Fall 2010 Mississippi Environmental Education Alliance (MEEA) Conference theme to be held on November 5th and 6th (Fri. & Sat.) at the Grand Bay National Estuarine Research Reserves (NERR) in the Grand Bay Coastal Resources Center near Moss Point, Mississippi. The NEER Facility was recently awarded a Gold Leed Certification.

Estuaries are "Where the Rivers meet the Sea" and are important habitats and nurseries for fish, shrimp and other aquatic resources. The British Petroleum (BP) oil leak into the Gulf of Mexico which occurred April 20th, 2010, brought estuaries and the importance of shoreline habitats to the forefront of the news, especially with seafood and livelihoods being adversely affected. By coincidence, "Estuaries" are the special topic for this year's high school *Envirothon Competition* with 72 Envirothon teams and 50 teacher sponsors participating throughout Mississippi. Scholarships will be offered to Envirothon teacher sponsors to assist them in attending the MEEA Conference through a partnership between, MEEA, the Mississippi Department of Environmental Quality and Coastal Plains Resource Conservation and Development Council.

I hope to see MEEA members, teachers, informal environmental educators, Envirothon teachers and others who are interested in learning and teaching about our environment at the Fall MEEA Conference on Nov. 5 & 6, 2010. Please register now using the form supplied in this newsletter. The Conference fee is approximately $45 for one day and $90 for two day registration. Please register today. Registration does not cover room but does cover food and field trip expenses.

Sincerely, Laura Beiser, MEEA President

MNP & EE Calendar, Field Trips, Native Plant Sales, et cetera

October 2, 2010 Saturday MNPS Annual Meeting will be held at the Mississippi Museum of Natural Science, Jackson, MS
October 28, 2010 Conservation Forum meeting will be at 1:00pm at the MDWFP main office, 1505 Eastover St., Jackson, MS. For more information contact Elizabeth Barber liz@barberandmann, 601-957-3443 or 601-214-3093
November 5-6 MEEA Conference will be held at the Grand Bay National Estuarine Research Reserve near Moss Point 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 Mississippi Native Plant Society is now on line! Check us out at http://www.mississippinativeplantsociety.org.

MEEA - Call for Papers for November 2010 Conference

The focus of the conference is on Estuaries, Biodiversity, Oceans, Coastal issues, (storm drains, water quality) and the oil spill. Abstracts should be single-spaced, contain 200 - 400 words. Presentations are limited to 55 minutes, however a limited number of 110 minute sessions are possible. All sessions should include time for questions. Include the name, title, affiliation, mailing address, phone number, email of each author. Submit the abstract to conference co-chair Terri Jacobson at terri_jacobson@fws.gov. Authors will be notified regarding acceptance. Authors agree to present their paper and pay the registration fee should their abstract be accepted.

Please submit an abstract of your talk and audio visual media being used to: Ms. Terri Jacobson**,** U. S. Fish and Wildlife Service, 6578 Dogwood View Pkwy, Jackson, MS 39213, Fax 601-965-4340, phone 601-321-1129 or email: terri_jacobson@fws.gov.

Attention Environmental Educators and Envirothon Team Sponsors and Trainers

This year's MEEA conference entitled ***Estuaries, Living on the Edge*** is being designed around a central theme of estuaries for two reasons. The first reason is because the Envirothon competition's Current Environmental Issue is **Salt and Fresh Water Estuaries,** and we would like to assist the trainers with experiencing estuarine ecology first hand by actually hosting parts of the conference out in an estuary**.** The second reason is because the BP Oil Spill has drawn so much attention to estuaries and their importance that we want to make sure that our educators have accurate and timely information regarding estuaries and the estuarine impacts associated with the spill. Local, experienced, estuarine educators will be conducting many of the sessions to insure that you have an interesting, informative and interactive experience here at Grand Bay National Estuarine Research Reserve.

MS NCLI UPDATE

The most descriptive comment on where we are in our NCLI effort is that we are in a holding pattern. Budget cuts, personnel shortages and new leadership has slowed the rapid progress that was so exciting last year. And, as we move toward "common core state standards" it is prudent to wait before developing the curriculum matrix that was at the core of our Environmental Literacy Plan. We have a great and dedicated team that is ready to break sod and plow and asking for patience is a difficult exercise!

The Common Core State Standards is an initiative of the National Governors Association Center for Best Practices and the Council of State School Officers. Common standards will provide a clear and consistent framework for schools and universities across the country. Currently each state has its own curriculum framework, and comparing progress across states has been difficult. A common core will also be useful for teachers trained in one state to move to another. Some states have done masterful jobs of involving the business community in their curriculum development and applying these types of innovations across the country will strengthen all states' programs.

There will be a huge advantage to the EE community from common core standards. Instead of every project team aligning their activities with their state's curriculum framework, the national offices of each project will be able to do this for all of their state offices. So financially this will be a huge benefit. This will not negate the benefit from the curriculum matrix we will be building and incorporating in our ELP although it will supplant our state standards on one of its axes. Our ELP will identify where EE centers and programs such as those offered by the Rainwater Observatory and Planetarium, the Mississippi Department of Transportation, the Mississippi Museum of Natural Science and others fit into our environmental education curriculum. Further, the assessment of EE can be nationalized as well, enabling national comparisons of progress among the states, because all states will be using the same standards.

Southern Natives Under Attack, the Last Gumbo and the Death of Guacamole
By John Guyton, Ed.D., MNPS Education Chair

Our redbays (*Persea borbonia*) and sassafras (*Sassafras albidum*) are under attack by a fungus (*Raffaelea lauricola*) that is new to science and carried by a 1/16 inch (2 mm) long Asian ambrosia beetle (*Xyleborus glabratus*). The deadly disease is known as *laurel wilt* since it impacts members of the laurel family (Lauraceae). The damage is caused by the fungus plugging the vascular tissue and cutting off water and nutrients to the tree resulting in a vascular wilt. Also at risk are other members of the laurel family: pondspice (*Litsea aestivalis*), the endangered pondberry (*Lindera melissifolia*), the avocado (*Persea americana*) and over 100 ornamental plants in the Lauraceae family that are grown on south Florida farms.

Ambrosia beetles have a symbiotic relationship with fungi and carry them in specialized pouches, or mycangia, behind their mandibles. Normally, they attack dead and dying trees where their fungal symbionts colonize the galleries, bored by the beetles for their eggs, and produce fungi gardens that the beetles graze. This is typically beneficial in nature since it accelerates the decay process, contributes to nutrient cycling in forests and creating forest edges that benefit wildlife. The fungi benefit by transportation to new sources of food and the beetles benefit from the fungal gardens. Laurel wilt is disturbing since the redbay ambrosia beetle attacks

healthy trees, and its fungal symbiont is a very aggressive plant pathogen. Like many non-indigenous species, this ambrosia beetle has escaped its predators by coming to North America where it found a family of plants without the resistance that, in the normal course of nature, takes centuries to develop.

First identified on Hilton Head in 2003, the redbay ambrosia beetle, with its accompaniment of fungi, likely arrived under the cover of solid wood packing material, on a container ship. Then, in an unforeseen surprise attack, reminiscent of the Europeans' inadvertent smallpox attack on the Native Americans, the beetle-fungi alliance has quickly spread along the coastline from Virginia to Texas, taking no prisoners - unlike the other Asian ambrosia beetles that have arrived on our shores that only attack dead and dying trees. Armies of foresters, entomologists and environmental educators are rallying to the battle cries: "figure it out, extinction is forever," "remember guacamole" or "save the filè for gumbo!"

Unfortunately science has become reactionary and left us ill prepared for such unanticipated attacks. However, it is ramping up amid the persistent pessimistic notion that it is too late. The search is on for resistant trees and commercial cultivars. Some scientists are searching for the volatiles that attract the beetles and others are investigating ambrosia beetle epidemiology ,searching for weaknesses or vulnerabilities. When you consider that only one redbay ambrosia beetle is necessary to destroy a tree, the urgency and magnitude of the task comes into clearer focus. As world consumers, we remain vulnerable to continued attacks delivered via international commerce.

The redbay was a valuable medicinal tree for the Native Americans and used for innumerable problems including: aches, arthritis and pains, chills, constipation, cough, diarrhea, dizziness, drooling, eye problems, fever, headaches, loss of appetite, nausea, numbness in the limbs, stiff necks, stomach ache and thirst, to name a few.

A popular naturalist's welcome to the maritime coastal forest community is the gift of a ceramic pot of aromatic redbay leaves or a sandwich bag of sassafras leaves. Barbecues and gumbos are not just meals, they are social occasions where people enjoy each other's company and naturalists share stories about local resources, such as using the aromatic redbay wood for barbecuing. When wandering the woods with youth or teachers, the redbay and sassafras are two important trees that are enjoyable to point out.

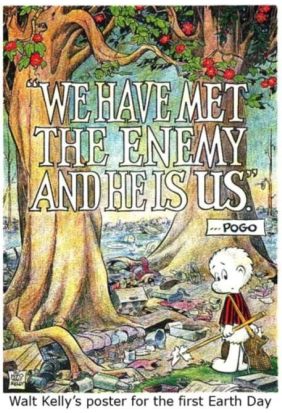
When you begin looking at redbay you notice that it is a common evergreen understory tree of the maritime forests, typically filling the gaps between towering longleaf pines and providing evaporative cooling to bipedal mammals more used to air conditioned habitats. It can be as much as 10 degrees cooler under a redbay canopy! Crushing a few leaves for forest visitors to enjoy instantaneously etches the volatile molecules' unique electrical signal into their olfactory bulb while stimulating a gustatory response! You know gumbo is on their minds and menu when you see them slip a few leaves into their pockets. Often tour guides smile to themselves or wink at each other because they realize they have orchestrated another connection between nature and a visitor. One might wonder what will replace this ancient angiosperm that is so well adapted to the pine savannas of the coastal plains, even germinating in wetland muck and proliferating in the wet/dry soils that for many trees would be too stressful.

Redbay is browsed by deer and bear and the dark blue fruits, that mature in the fall and remain on the tree into winter, are used by many wildlife species including squirrels. It is popular with birds and a popular dining place for blue birds, bobwhites, brown thrashers, crows, mocking birds, quail, robins and wild turkeys.

The sassafras with its three different shaped leaves and delightfully flavorful twigs and root bark is steeped in history and legend and quick to interest visitors. Choctaw legend tells of a prophet that warned his people of the Great Spirit's intent to destroy the corrupt and wicked members of the human race, who did not repent for their ways, with a great flood. The prophet survived the flood on a raft of sassafras logs. Sassafras was the first export from the colonies to Europe by early settlers who were finding no gold to pay for their voyage. And, it was a popular tree with the Europeans who found it useful for masking the bitter taste of the medicines of the times. It was also a useful tree from which bedsteads were made, since its insecticidal properties discouraged bed bugs. That said, it is unfortunate that this tree is in rapid decline since bedbugs are on the increase! Being an important and sacred tree to the American Indians, they were less than reticent to see the landscape being stripped of the tree they had shared with the colonists. Even the roots were being pulled up and sent to Europe. This early exploitation of an important Native American resource kindled the first conflict between the Native Americans and Europeans.

It is easy to see the early colonists' fascination with sassafras, especially when you realize they were boiling the roots in molasses and allowing it to ferment to make the *real* root beer. And, it had other useful properties. Its use as a stimulant and pain killer may be a moot point after the preceding statement but it was also used for rheumatism, breaking the tobacco habit, headaches, stomachaches, fevers, malaria, liver problems and colds. It has been used as a treatment for syphilis since the 1600's, a spring tonic, an eye wash and an antiseptic. The flowers have been used to make teas and tonics and the bark a blood thinner. Young leaves have been eaten in salads and the dried ground leaves, or filè powder, used to thicken gumbos! Naturalists remember Donald Culross Peattie's tip that chewing on a twig will moisten your mouth if you are without water. And, sassafras with hickory makes a good combination for smoking hams and sausage.

Redbay and sassafras are ecological and cultural treasures in south Mississippi and they may soon be a thing of the past - extinction may be in progress. Sassafras, redbay and spicebush are important host plants for the palamedes (*Papilio palamedes)* and spicebush (*Papilio troilus*) swallowtails. Is it redbay today, no swallowtails tomorrow or are there suitable alternative hosts? Butterflies use the nectar of many plants but caterpillars are adapted to fewer plants.



Walt Kelly's poster for the first Earth Day

There are some things you can watch for. Watch for thin streams of slightly solidified sawdust protruding from the side of trees. Wilted leaves will follow beginning in the canopy or crown. Stem and limb dieback will follow and the tree's death is relatively quick. The bark may be loose at the site of the infection and removing it may reveal what looks like shot holes with dark stains. You will want to have a forester verify that it is infected and immediately destroy it. Do not move its wood from the site. Do not take wood with you to a camping site - use what is there. Be on the lookout for trees that have a natural resistance.

The "tragedy of the commons." (Garrett Hardin, *Science* 1968) for Lauraceae is the lack of sustainability of local resources and a heavy dependence on international commerce. It appears that all members of the Lauraceae in the Americas are susceptible. With billions of transoceanic containers moving back and forth 24 hours a day, bioinvasions have become a sad fact of life, uh death. Billions of organisms, many not even described by science, are in transit hitchhiking the world looking for their place in the sun. Walt Kelly's Pogo poster for the first Earth Day hit it on the nail - "We have met the enemy and he is us." As long as overseas products make up the bulk of our purchases, these ecological disruptions will continue. This is very likely a significant anthropogenic cause of the great extinction current underway, and this time, we invited the invasion.

2010 MID-SOUTH NATIVE PLANT CONFERENCE OCTOBER 8 - 10, 2010

Natives & beyond: sustainable plants, gardens & communities

Nationally recognized speakers:
Dr. Peter Wyse Jackson: new President of the Missouri Botanical Garden and former Director of the National Botanic Gardens of Ireland and the Secretary General of the Botanic Gardens Conservation International; author of 10 books and over 200 scientific articles
Cole Burrell: award-winning author, garden designer, and teacher at the University of Virginia School of Architecture in Charlottesville
Don Shadow: world-famous horticulturist, author, and owner of Shadow Nurseries in Winchester, Tennessee
Ann English: landscape architect from Baltimore whose specialty is designing and overseeing the construction of gardens that include low impact methods of water management
Rick Lewandowski: director of the renowned DuPont family-funded Mt. Cuba Center for native plants in Delaware
Felder Rushing: author, newspaper columnist, humorist, and gardener extraordinaire from Jackson, Mississippi
Plant and Local Craft Vendors & Garden and Nature Tours

Call the Dixon at 901.761.5250 for information or to request a conference brochure. Dixon Gallery & Gardens, 4339 Park Ave., Memphis, TN 38117 or www.dixon.org.

Returning Wildflowers and Native Grasses to Mississippi's Roadsides by Edward D. Entsminger

I am a Mississippi State University Graduate Student in Wildlife, Fisheries and Aquaculture, working with Dr. John Guyton on Evaluating an Alternative Mowing Regimen and the use of Native Grasses and Wildflowers on Roadside Right of Ways. Our research plots are on the west side of Highway 25, south of Starkville, Mississippi, into Winston County. Beginning in late April 2010, I identified ten sites, five uplands and five lowland river bottoms. With help from faculty, staff and colleagues, I conducted vegetation samples and keyed out over 100 species in all of the ten sites. Each plot is divided into three areas. One section will be 'mowed once a year,' the second section is 'mowed once a year and has supplemental plantings of native grasses and wildflowers" and the third section is 'traditionally mowed' by the Mississippi Department of Transportation (MDOT) twice a year. The supplemental plantings of native grasses and wildflowers may include Indiangrass (*Sorghastrum nutans*), Little Bluestem (*Schizachyrium scoparium*), Big Bluestem (*Andropogon gerardii*), Switchgrass (*Panicum virgatum*), Eastern Gamagrass (*Tripsacum dactyloides*), Partridge Pea (*Chamaecrista fasciculata*), Blazing Star (*Liatris spp.*), and Coreopsis/Tickseed (*Coreopsis grandiflora*). By mowing once per season, in late October, we believe that the native grasses and wildflowers will reach maturity and release their seeds sustaining a more desirable native right of way. Knowing what species of plants are currently along the roadsides and with the native wildflowers and native grass species needed to supplement, we will create attractive highly desirable roadways in Mississippi, like those Texas and North Carolina have become known for.

MNPS Remembers Ed Blake

Every artist and architect has a creation that best defines them and the Crosby Arboretum is a fine testament to Ed Blake's interpretation of the Piney Woods. After wandering the trails at the Arboretum and coming upon Pinecote Pavilion ,I was in awe. The opportunity to visit the Arboretum before meeting Ed certainly cast him in a bright light.

It is difficult to write something that does justice to a great artist, so we are using Ed's own words to describe a few salient observations. "Along the way, the rewards! have been many. I've experienced the unity, drama, and serenity of life coalescing from its mixture of opposites. I've marveled at our inability to make the simplest and most commonplace of things: grass, trees, and birds, and realized that this awareness is the source of my exquisite pleasure in them. From observing nature's ability to generate dazzling complexity by endlessly varying a few common themes, I've chosen to honor the aesthetics of simplicity and restraint."

"Culturally, landscapes are portraits of human endeavor. They have recorded our thoughts and deeds as hunters, agriculturists, explorers, industrialists, and information gatherers. They inspire our sense of beauty and fuel our search for truth and utility. Biologically, landscapes are diverse communities of organic forms appropriate to their time and place. Their nature is expressive of their fitness. They contain the chemical memory of all that has worked in combining light, w life support system for all animated life. As art, the landscape tickles our perception of ourselves and our relation to the cosmos. As mind and spirit seek expression, the landscape is the medium through which we re-shape our shelter, the Earth. How a designer perceives these relationships determines the form of his art."

MNPS President Gail Barton was unable to reach Hattiesburg for Ed's funeral on her return from the funeral of another native plant enthusiast in Texas, and decided to pause at the Crosby Arboretum to reflect on Ed's life in one of his favorite creations. Ed has left a legacy and an incredible arboretum in his beloved Mississippi. ***– The MNP&EE Editors***

MNPS Meeting Speaker Profiles

Alan Holditch and Heather Sullivan will lead the Fern Identification Workshop. Alan is a Forester with the USDA Natural Resources Conservation Service. Heather serves as Botanist and Herbarium Curator for the Mississippi Museum of Natural Science. Heather is a long time MNPS member and one of our most popular field trip leaders. Alan and Heather are co-writing a book called *Mississippi Ferns* and are creating a website at www.mississippiferns.com.

Adam Rohnke is a Wildlife Biologist who works as Wildlife Extension Associate with the Central Mississippi Research and Extension Center. Adam, an accomplished birder, has served as President of the Jackson Audubon Society. During his "Backyard Wildlife" workshop, Adam will discuss using native plants to create habitat for desirable backyard wildlife. Rumor has it that the bird list Adam's his own back yard contains close to 40 species.

Dr. Tim Schauwecker is Assistant Professor in the Department of Landscape Architecture at Mississippi State University. Tim also serves as Vice President of MNPS and has recently devoted his time to creating the new MNPS web site. During his "Landscaping with Native Plants" workshop, Tim will discuss landscape design principles and then lead a walk through the Museum's native plant landscape.

John Gwaltney is president of Forestry Suppliers, Inc in Jackson. He has a BS and MS in Wildlife Management from Auburn University. John is an accomplished photographer. He is creator of the amazing and useful Southeasternflora.com web site.

Edward Entsminger is pursuing a Master's Degree in Mississippi State University's Department of Wildlife, Fisheries and Aquaculture. His research involves wildlife interactions with roadside wildflowers. We are very fortunate to have Dr. John Guyton as our MNPS Newsletter Editor. John serves as Associate Extension Professor of Conservation and Environmental Education and as Edward's major advisor.

Dr. Sherry Surrette coordinates the MMNS Natural Heritage Program which monitors Mississippi's most rare and endangered plant and animal species and their habitats. She attained a B.S. at the University of TN at Martin, a M.S. degree in Plant Science at Mississippi State University and a Ph.D. in Plant Ecology at the University of Mississippi.

Tom Mann earned a B.S. in Biology from the University Of Miami. During that time, fortunately, he met his wonderful wife Deb (our MNPS Secretary-Treasurer) at a Biology Club function. He attained a Masters Degree in Zoology from Florida Atlantic University and has worked as Zoologist for the Mississippi Museum of Natural since 1990. His projects for MMNS have involved surveys for gopher tortoises, diamondback terrapins and Gulf saltmarsh snakes. Since 1997, he has conducted surveys of sandhill communities for Florida harvester ants, gopher tortoises, oldfield mice, and rare plants–including inland populations of beach rosemary. Tom is also working with Natchez Trace personnel to implement a program to reduce vehicle-caused mortality to breeding migrations of spotted salamanders.

Joe McGee is the Mississippi Museum of Natural Science's Conservation Biologist/Outreach Naturalist. Joe is an excellent field trip leader and according to him, our afternoon walk will begin behind the museum in a calcareous upland forest (a rare plant community in Mississippi). We'll then hike down slope exploring several bottomland forest plant communities as we go. We'll end up near the Pearl River in a wet bottomland/swamp habitat with associated shrub wetlands, oxbow lakes and sloughs. A number of fall wildflowers should be in bloom and we will pass the state's champion American Beech tree.

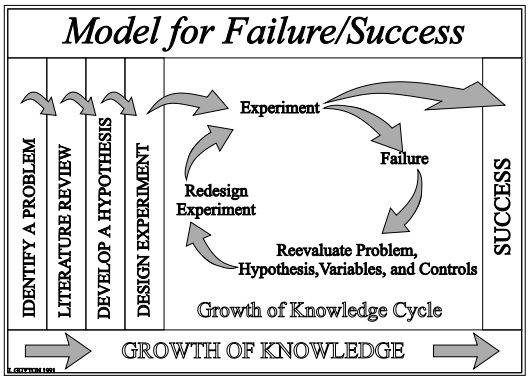
The Importance of Failure in Teaching Science Inquiry by Dr. John Guyton

Children learn a lot through mimicry, and the science classroom is a great place where teachers and students can experiment, complete with failures and successes, and learn together. Teachers are probably much better before they know all the answers, and after they have learned to admit they don't know everything!

Often classroom experiments do not yield the outcomes we expect. Many teachers just say the experiment failed and move on, missing the essence of inquiry. ***Science is a systematic process of inquiry***, or a scientific way of figuring something out. Science is all about discerning or interpreting **patterns**, analyzing nature's **systems and interactions**, using **models and scale** to understand and explain phenomena, discovering the whats and whys of things that are **constant** and things that **evolve or change over time.** And, those process skills taught children are not just the tools scientist use; they are the essence of the inquiry process.

Primary Science Process Skills: observation, communication, classification, quantifying or measurement, inference and prediction. Integrated Science Process Skills: formulating hypotheses, identifying and defining variables, discovering and describing the relationship between variables, designing investigations or experiments, systematically collecting and organizing data in tables and graphs, analyzing experiments and data for human or perception error or extraneous influences, identifying cause and effect and developing models that are useful in describing your observations.

In science we learn as much from failure as success. In fact, if we are initially successful, we must repeat the research many times, adjusting each variable until we know their range of application in this situation. Only then do we know the range of applications for the new discovery. Thomas Edison conducted more than 50,000 experiments before successfully storing electricity in the forerunners to today's batteries. Each step along the way he learned things that did not work.



The illustration of my Model for Failure/Success shows the path scientists follow in research. First, they formulate a problem, followed by a review of the literature to determine if it has already been solved or to learn what is already known. Then, they develop a hypothesis and design an experiment. The experiment might be successful or it may fail. When an experiment fails the researcher reevaluates the problem, reconsiders the statement or formulation of the hypothesis and searches for variables that were not controlled. The experiment is redesigned and repeated. Repeating this cycle many times is often necessary and, each time, knowledge accumulates.

This is the *inquiry process*, that *is* science. Science is a verb. The product of the inquiry process is a collection of facts or the body of scientific knowledge.

Outdoor classrooms or school gardens are a perfect place for students and teachers to learn together. What insects that visit the school garden are beneficial and which should we step on! Which is better - compost or fertilizer? How can we figure this out? Why did all of the plants in the control and experimental groups die or what does it mean that there was no difference in their performance? Remember, students learn a lot by mimicry or modeling on their teacher's practices. Somewhere in children's lives they need to learn how to profit, or recover, from their failures; and, this really does not show up in many curriculum frameworks! However, it fits very well in the science processes and outdoor classrooms are a great place for students and teachers to experiment and learn together!

Science fairs provide an opportunity to engage in real research. Classroom laboratory exercises are usually ?cut and dried" and the exercise is merely repeating a known procedure. A science fair type project is different and more closely parallels the work of scientists because the answers are not known and the methods of solving the problem need to be developed through a trial and error procedure. Is that why it is called ?re-search?" Using the Environment as an Integrating Context, where students work on questions, problems, projects and issues, represents an excellent application of this model.

I have not failed. I've just found 10,000 ways that won't work. – Thomas Edison
Failure is the opportunity to begin again, more intelligently. – Henry Ford

The true beauty of the *body of knowledge* that results from the process that is commonly known as *scientific inquiry*, is that it is self-correcting. When we find a better explanation, an oversight in our processes or an incorrect premise, we make changes to the body of knowledge! A best teaching practice, when working with children, is to accept the result of their carefully conducted investigations or experiments as fact, even when we know it is incorrect; with their understanding that as more information becomes available the process of inquiry may require us to make some changes to the body of knowledge. This builds their faith in and understanding of the process of inquiry and reinforces their use of inquiry in life. Science processes, after all, are not just useful in physics, chemistry, the earth and space sciences and biology - it is useful in all aspects of life!

MS Native Plant Society Membership Application or Renewal Form
The organization devoted to the study and appreciation of wildflowers, grasses, shrubs and trees native to the state of Mississippi. **Join Today!**
New member? ___ Please provide the information below.
Renewing? ___ Please indicate any changes.

_____ Individual or Family: $10.00
_____Student: $7.50
_____Sustaining: $15.00
_____Contributing: $35.00
_____Life: $125.00

Name_____
County_____
Address_____
_____
Telephone_____
email_____

Newsletter preference _____ emailed (PDF) or _____ mailed (USPS)
Please return this form with check to: MNPS, Inc., C/O Dr. Debora Mann, 114 Auburn Drive, Clinton, MS 39056-6002

Mississippi Environmental Education Alliance Membership Application
The state alliance devoted to environmental education and the affiliate of the North American Association for Environmental Education. **Join Today!**
Name:_____New____ Renewal____
School or Organization:_____
Address:_____**City:**_____**State:**____**Zip:**_____
Phone:(office)_____**(cell)**_____
e-mail:_____**Fax:**_____

Membership Category
Individual $15.00
□ Student $5.00
□ Family $25.00
□ Institution/Business $50
□ Life $150.00
□ Patron $150 - $1,000+

Committee Interests:
□ Strategic Planning
□ NCLI
□ Conference
□ Awards
□ Communications
□ MEEA Board

Return this application, with your check or money order, to MEEA, C/O Angel Rohnke, MS Museum of Natural Science, 2148 Riverside Dr. Jackson, MS 39202

MS Native Plant Society Chapters

Coastal Plains MNPS Meets every 4th Monday in Gulfport. Contact president, Edie Dreher at 228-864-2775 or mail to 100 24th St., Gulfport, MS 39507.
Starkville MNPS Contact Bob Brzuszek at rbrzuszek@lalc.msstate.edu or phone 662-325-7896.
Northeast MNPS Contact Margaret Gratz at 662-844-5640 or gratz@redmagnet.com http://www.nrims.org/mysite2/
North MNPS Contact Hilary Shughart at 662-816-3459 or shughart@watervalley.net

Join MNPS, MEEA or Both!

The Mississippi Environmental Education Alliance conducts an annual fall conference and occasional workshops. For information on upcoming activities and who is doing environmental education, check the EEinMississippi website or contact President Laura Beiser.

MNP&EE is the quarterly newsletter of the Mississippi Native Plant Society and the Mississippi Environmental Education Alliance.

Deadlines for Articles
Winter - November 15
Spring - February 15
Summer - May 15
Fall - August 15

Mark your calendars: MNPS Annual Meeting at the Mississippi Museum of Natural Science on Saturday, October 2, 2010
MEEA Conference, "Estuaries, Living on the Edge" Grand Bay NERR, Moss Point, MS, November 5 - 6, 2010

The MISSISIPPI NATIVE PLANT SOCIETY
c/o Dr. Debora Mann
Millsaps College
Box 150307
Jackson, MS 39210
RETURN SERVICE REQUESTED