



# Mississippi Native Plants and Environmental Education



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

Volume 27 Number 3 MNPS Ver. *Time to break out the hard apple cider and wind breakers and celebrate the harvest!* Fall-Winter 2009

The **Mississippi Native Plant Society**, is a non-profit organization established in 1980 to promote the preservation of native plants and their habitats through conservation, education, and utilization.

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The **Mississippi Environmental Education Alliance** promotes EE, supports the work of environmental educators and encourages the adoption of earth-friendly lifestyles leading to the sustainability of natural resources.

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## **Your Editors' Christmas Greeting Christmas Colors**

### **Bring the Northern Lights Home for Christmas this Year**

Christmas is the perfect time for warm colorful fires. You may remember bonfires on the beach as being a little more special with their more vibrant blue or lavender colors that originate with the sea salts that soaked into the drift wood; or homecomings on the farm, where aged apple wood, that produces an incredible array of colors, is burned to make special occasions even more memorable. You can simulate the northern light-like swirls of rainbow colors in your fireplace and show your children the secrets of nature this Christmas.

It is also a great time to introduce your children or grandchildren to the physics and chemistry of light. When the atoms of a gas are excited by heat or an electric field their electrons absorb energy by moving to higher energy levels. As these electrons, responding to nature, return to their steady state they give up this energy and since all elements' atoms are different each gives off a different color light or spectrum. Wood burns yellow because it contains a lot of sodium and calcium chloride and that is the color sodium and calcium chloride emit when its excited electrons return to their steady state level. Some of the yellow is caused by uncombusted wood gases as some of you might recall are eliminated by carefully controlling the air fuel mixture on gas furnaces and cookers.

Collect the following materials from around the house and shop: a large cork, a sewing needle, steel wool or fine sand paper and a gas (methane) flame (home or camp gas stove or grill or a butane lighter). Now you will need some salts and beside each we have listed the color flame you will notice: table or sea salt (sodium chloride - yellow flame), salt substitute (potassium chloride - lavender), *Ice Melt* (calcium chloride - red-orange), road flare (strontium chloride - scarlet) and an algaecide (copper sulfate - green- can purchase from a pool or aquarium shop).

Push the needle point into the cork, then wet the eye end and dip it in a salt. Next, stick it in the top part of the flame and note the color. Clean the eye end of the needle with the steel wool and repeat with each salt enjoying the colors.

Now, to bring the northern lights south to your fireplace... Wood chips, small wood scraps from the workshop, sawdust, pine cones or tight rolls of newspaper can be soaked in a solution of water and the chemicals listed above and then dried ahead of time. Experiment with the ratios of chemicals to water to find your preference. This year start with about a half pound dry chemicals per gallon of water. Work outdoors, use plastic or glass containers for mixing and wear protective gloves. Those discarded 5 gallon paint or plaster buckets are good for mixing and soaking. You can use a porous bag to hold your wood chips or pine cones and a brick to keep it submerged. Soak for a couple days and then allow to dry. Resist the temptation to mix colors and use only the form of salts indicated above. Do not color cooking fires.

**We hope you have a very Merry Christmas and a Happy New Year with lots of enjoyable fireworks! – John, Peggy, Debra and Brian**

**Two must read articles: MEEA to Offer Guidelines Training, the National Standards for Environmental Education and Green Teacher Offer. Your editors are subscribers of Green Teacher and the Green Teacher Editors are good friends of ours and Mississippi's!**

MEEA Member Katie Boyle, Outreach & Education Director, Strawberry Plains Audubon Center has found a great article. If you have finished the newsletter, checked out Green Teacher on line and are looking for a little more inspiration. Go to  
<http://www.nytimes.com/2009/11/30/nyregion/30forest.html?em>

## ***MEEA MNPS Calendar, Field Trips, Native Plant Sales and Etcetera***

**January & February, every Thursday and Friday 10:00 - 2:00** Prescribed Burn Demonstration at the MSU Crosby Arboretum

**January 20 (Wednesday), 2010 Guidelines, the National Standards for Environmental Education Training**

**February 6, For the Birds (Children) 10:00 - 11:00** in preparation for the Great Backyard Bird Count, MSU Crosby Arboretum

**February 13, Arbor Day Plant Sale - Members only 9:00 - 10:00; Public 10:00 - 3:00** MSU Crosby Arboretum

**February 20, Project Learning Tree Workshop,**

**February 27, Snakes! Snakes! Snakes! (Family) 1:00 - 2:00** MSU Crosby Arboretum

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

**Any Time!** Native Plant 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.clintonnaturecenter.org), <http://www.crosbyarboretum.msstate.edu/>

### **Greetings MNPS,**

The 2009 MNPS Conference was a great experience. I really enjoyed seeing so many familiar faces and meeting new ones as well. The speakers were excellent and the field trips exciting. We had 54 register for the conference and 21 new members join MNPS. Of this group, 15 were from the Coastal Plains Mississippi Native Plant Society Chapter, one lifetime member attended from Texas, and a new member from Minnesota joined MNPS. At the conference, a vote was taken and the majority voted in favor of holding the next conference at the Mississippi Museum of Natural Science. Please mark your calendars: **We will be holding the 2010 MNPS Conference at the Mississippi Museum of Natural Science (Jackson, MS) on Saturday, October 2. The Museum will charge each MNPS conference attendee \$5 at the gate to cover admission and meeting space reservations.** Field trips and speakers for this conference will be announced in future newsletters.

I am honored to be elected your president in the coming year and look forward to what lies ahead for MNPS. It is wonderful to belong to a group that is as enthusiastic about plants as I am! Speaking of plants, I don't know about you, but recently I can't stop admiring the beauty of *Ilex opaca* (American Holly). This plant's red fruit can easily be spotted in the woods this time of the year. Its showy drupes are a popular source of food for birds in the winter months. The fruits are also a wonderful reminder that the holidays are close at hand. If you have a chance to take a leisurely walk outdoors, take a few moments today to marvel at its beauty!

**Dr. Janine Conklin, MNPS President**

### **Greetings MEEA,**

Starting my term as president after such an inspirational No Child Left Inside (NCLI) meeting and MEEA conference is exciting. After stimulating conversation with the participants at these two important events I realize how appropriate the time is for my vision. It is time to focus our teaching emphasis on *ecological restoration* and the habitat quality native plants and animals enjoyed before invasive aquatic and terrestrial species arrived on the scene. As we teach about the interconnectedness of healthy ecological systems, we need to declare war on non-native invasive plants and animals. This represents an area where our youth can become involved in meaningful community service.

As we do this we help them understand and develop *a sense of place*, the ecological system in which they/we live. We must share with them the unique plants and animals that make our ecosystems unique. Teaching about the value and sustaining nature of these ecosystems will provide a sense of place, pride and community responsibility. Great strides can be made through the promotion of cultural and ecological tourism, camping opportunities for scouts and others, and the inclusion of nature walks and wildlife workshops at community festivals. There are great opportunities to encourage youth and their families to celebrate the area we live in, urban or rural. We can teach ecological restoration by encouraging our teachers to learn about native plants and help them improve their school yards habitats. Youth and their families can in-turn begin restoring the ecosystems on their property. Youth can be involved in the creation of parks, wildlife corridors and other green hubs as service learning, community service or Eagle Scout projects.

And best of all this will get youth, teachers and their families outside! The best way to value these ecological systems is to experience them. Nature walks, biking, camping, hiking and Sunday picnics help us remember what an incredible place we live in, replete with sunshine, shade, fresh air, water and hiding places. These activities come with the added benefit of promoting a healthier lifestyle. Teachers have an important role in reconnecting people to the outdoors thus improving the physical and mental health of our communities.

I encourage you to join me in supporting No Child Left Inside. We can all begin by strengthening the connection of our environmental education programs to the outdoors. Research indicates students standardized test scores, problem solving and creativity improve with the use of environmental education and we know that with increased exercise their health improves. The NCLI legislation is probably a year away, but why wait? The health and education benefits work and justify moving ahead, now. I look forward to seeing all of you in the woods, or identifying trees in your neighborhoods with your children.

**Laura Beiser, MEEA President**

**Editors' Note:** Thanks for your patience. We are making some changes in where and how your newsletter is printed and think that with this issue we have a new system in place. Please welcome Brian Templeton, from Landscape Architecture, to our editorial staff. We are fortunate to have an individual with his talents, ideas and energy on our staff!

### ***Mississippi Begins Preparation for No Child Left Inside by John Guyton, Ed. D.***

No, this is not a school fire drill but it is a *call to arms* for everyone who understands the tenuousness of today's youth's link to nature! The No Child Left Inside (NCLI) legislation being considered in Congress makes provision for environmental education. Substantial funding will become available to state education agencies once NCLI becomes law. Mississippi is one of several proactive states making preparations to receive NCLI funding by creating a required Environmental Literacy Plan.

On November 6, environmental education leaders and educators from across Mississippi met with Mississippi Department of Education staff and began the process of crafting two documents of great value to environmental education in our state. These documents will include Mississippi's Environmental Education Curriculum and an Environmental Literacy Plan. EE leaders representing the majority of agencies and organizations involved in EE participated.

Details about the NCLI legislation are available at <http://www.govtrack.us/congress/bill.xpd?bill=s111-866>.

John Stark is Mississippi's NCLI committee chair and if you are not yet involved give him a call at 601-214-7426.

### ***MEEA to Offer Guidelines Training, the National Standards for Environmental Education***

***Very important for those who provide EE sessions, activities or lead teacher workshops by John Guyton, Ed. D.***

*The Guidelines, the national standard for environmental education*, is one of the most important documents and procedures in the environmental education field. During the mid 90's when most disciplines were developing their national standards, the North American Association for Environmental Education (NAAEE) was developing standards for Environmental Education. The Guidelines are heralded as brilliant by the writers of other disciplines national standards and succeeded in bringing credibility and structure to the field. Incidentally, the decision was made during the creation of the Guidelines that environmental education was appropriate and most useful when taught at all grade levels and in all subjects. With the Guidelines developed, NAAEE went on to gain a seat on the National Council for the Accreditation of Teacher Education. This means that when Mississippi's colleges of education come up for reaccreditation they will have to demonstrate they are preparing all preservice teachers to teach EE.

The Guidelines Workshop should be attended by everyone who develops curriculum, prepares teachers, the State Department of Education curriculum specialists and others. If you manage one of the "Projects" provide EE activities, manage EE field days or develop EE materials you must be familiar with the Guidelines. When the Mississippi Science Curriculum Framework is produced the developers are guided by the National Science Standards and the same is true for Environmental Education.

I am extremely pleased to announce that Dr. Bora Simmons, who lead the development of the Guidelines, will conduct this one-day training on the Guidelines. Printed copies of the Guidelines will be provided for all members in attendance and can be reviewed on the NAAEE website beforehand.

The Mississippi Environmental Education Alliance, the MS affiliate of NAAEE, is making this workshop available. John Stark, is MEEA's NCLI Chair and is leading Mississippi's No Child Left Inside effort. State-wide training in the Guidelines will be essential to Mississippi's chance at receiving funds when the legislation passes. The Guidelines workshop will be on **Wednesday, January 20**. Please contact John Stark ([starkjohn@sbcglobal.net](mailto:starkjohn@sbcglobal.net) or 601-214-7426) to register for this important workshop and for further information. Seats in the workshop will be limited and we may have to screen applicants. Questions about NCATE or Mississippi's Environmental Education Curriculum can be directed to me, [jguyton@cfr.msstate.edu](mailto:jguyton@cfr.msstate.edu) or 662-325-3482.

### ***Falling into Nature: MEEA 2009 Conference by Terry Jacobson***

The Mississippi Environmental Education Alliance (MEEA) hosted its annual conference at Eagle Ridge Conference Center in Raymond, MS November 6<sup>th</sup> and 7<sup>th</sup>. This year's theme was "Fall into Learning with Nature." Our keynote speaker Robin Whitfield is a painter, teacher, and naturalist. She chooses to work out of doors, exploring swamps, creeks and woods. She typically works on site with watercolors and oils and is known to paint from her kayak. Her paintings portray the seasons, weather, plants, animals and geology of the Mississippi landscape. She says "*Painting feeds my curiosity, sharpens my senses, and deepens my awareness of life.*" Robin received grants to complete two school mural projects – the "Walls That Teach" at Grenada Middle School and the "Pearl River Ecosystem" for Clinton Junior High School. She leads various workshops such as nature journaling and is currently working at Tie Plant Alternative School as a Core Arts instructor for Communities In Schools of Greenwood Leflore Inc.

The conference included several workshops designed to give teachers and community members a better understanding of the growing importance of environmental education and demonstrated ways to connect children with nature, which is fundamental to their health and the preservation of our planet. Interactive sessions used art, creative writing, story telling, and nature observation as a venue to inspiring nature awareness, appreciation and increase knowledge.

### ***MNPS 2009 Annual Meeting at the Grand Bay NERR Report by Gail Barton***

On Saturday morning, September 26, the Mississippi Native Plant Society met at Grand Bay National Estuarine Research Reserve's Coastal Resources Center near Moss Point, Mississippi. Peggy Guyton efficiently handled registration. She reported that 55 people registered for the meeting. This included 21 new members. Forty-two of the attendees were from Mississippi, 11 from Alabama, 1 from Texas and 1 from Minnesota. At registration, each participant received a door prize ticket and chance to win native plants donated by Peter Loos and Gail Barton. After registering, members explored the new LEED Certified Coastal Resources Center. The consensus of the group was that the building was a fine meeting space. Our MNPS meeting was the first daylong conference hosted at the facility and we thoroughly enjoyed breaking it in.

At 8:00 our group organized into a convoy and followed Fred Nation and Dr. Harry Larsen to a pitcher plant bog near the meeting facility. Some botanical highlights of the bog walk were: foxtail clubmoss (*Lycopodiella alopecuroides*), wiregrass (*Aristida stricta*), toothache grass (*Ctenium aromaticum*), pink muhly grass (*Muhlenbergia capillaris*), white topped sedge (*Rhynchospora latifolia*), Chapman's beaksedge (*Rhynchospora chapmanii*), netted nutsedge (*Scleria reticularis*), hatpins (*Eriocaulon decangulare*), red root (*Lachnanthes caroliniana*), sandbog deathcamus (*Zigadenus glaberrimus*), saltmarsh false foxglove (*Agalinis maritima*), Jackson false foxglove (*Agalinis filicaulis*), savanna honeycomb (*Balduina uniflora*), coyote thistle (*Eryngium integrifolium*), swamp sunflower (*Helianthus angustifolius*), blazing star (*Liatris spicata*), Barbara's buttons (*Marshallia graminifolia*), candyroot (*Polygala ramosa*), foldear lobelia (*Lobelia flaccidifolia*), yellow screwstem (*Bartonia verna*), spadeleaf (*Centella asiatica/erecta*), musky mint (*Hyptis alata*), goldcrest (*Lophiola aurea*), wand goldenrod (*Solidago stricta*), rayless goldenrod (*Bigelovia nudata*), 3 species of pitcher plant (*Sarracenia alata*, *S. leucophylla* and *S. psittacina*), Laurel-leaf catbriar (*Smilax laurifolia*), saw palmetto a.k.a the rattlesnake Riviera (*Serenoa repens*), waxmyrtle (*Morella cerifera*), evergreen bayberry (*Morella heterophylla*), gallberry (*Ilex glabra*), large gallberry (*Ilex coriacea*), longleaf pine (*Pinus palustris*) and slash pine (*Pinus elliotii*).

We returned to the meeting facility where Jennifer Buchanan, Grand Bay NERR Education Coordinator, welcomed the group and spoke briefly about the NERR's mission. Fred Nation then gave a presentation on "Gulf Coastal Bog Habitats." Those who had taken the bog walk, were able to see beautiful photos of the plants accompanied by Fred's entertaining trivia. It was much easier to make notes from the air conditioned comfort of an armchair.

After a pizza lunch, members attended the MNPS business meeting. Tim Shauwecker agreed to take on the arduous task of creating the MNPS web site. Joe and Merrill Willis offered to assist a committee in attaining 501(c)(3) status for MNPS. Debora Mann gave the Treasurer's Report. John Guyton then presented a Lifetime Achievement Award to Dr. Debora Mann who has served as MNPS Secretary / Treasurer since 1997. Dr. Janine Conklin was elected as the new president. Gail Barton and Pat Drackett will serve as Trips Chairs. Dr. Tim Shauwecker will continue as vice president and Dr. John Guyton as Education Chair. John and Peggy Guyton will continue to edit the newsletter with assistance from Brian Templeton. A poll of members was taken and it appears that our 2010 meeting will be held at the Mississippi Natural Science Museum in Jackson. Janine Conklin asked for volunteer to help coordinate that meeting. The meeting was adjourned and Dr. Mac Alford took the floor to talk about "Special Places of the Gulf Coastal Plain." Mac discussed bog habitats and the Southern Evergreen Hardwood Forest.

Mac's presentation prepared the group for the afternoon field trip to Ward Bayou Wildlife Management Area. Along the swamp margin we saw bitter pecan or water hickory (*Carya aquatica*), cardinal-flower (*Lobelia cardinalis*), white oak (*Quercus alba*), overcup oak (*Quercus lyrata*) and baldcypress (*Taxodium distichum*). We then enjoyed a delightful walk through the Southern Evergreen Hardwood Forest. Some of the plants we observed were nodding nixie (*Apteris aphylla* - a mycoheterotroph, that is parasitic on fungi that help other plants absorb water and minerals), Jack in the pulpit (*Arisaema triphyllum*), small flower pawpaw (*Asimina parviflora*), horsebalm (*Collinsonia anisata* formerly part of *C. serotina*), American beech (*Fagus grandifolia*), little brown jug or wild ginger (*Hexastylis arifolia*), American holly (*Ilex opaca*), starbush, Florida anise or stinkbush (*Illicium floridanum*), mountain laurel (*Kalmia latifolia*), southern magnolia (*Magnolia grandiflora*), pyramid magnolia (*Magnolia pyramidata*), sweetbay magnolia (*Magnolia virginiana*), sourwood (*Oxydendrum arboretum*), red bay (*Persea palustris*), Christmas fern (*Polystichum acrostichoides*), needle palm (*Rhaphidophyllum hystrix*), dwarf palmetto (*Sabal minor*), silky camellia (*Stewartia malacodendron*), horse sugar or sweet-leaf (*Symplocos tinctoria*), southern shield fern (*Thelypteris kunthii*) and net-vein chain fern (*Woodwardia areolata*). As our hike was gearing down, the rain began and we returned to the Coastal Resources Center. We savored Marc Pastorek's wonderful gumbo (or should I say *yumbo*) supplemented with sandwiches and cookies.

Dr. Richard Brown provided the evening entertainment with his presentation "Caterpillars as Botanists and Community Ecologists." Dr. Brown showed numerous pictures of caterpillars which normally only feed on plants that are very closely related. He cited many instances where caterpillar species had been documented feeding on plants that (according to the taxonomists) were unrelated. Later, the human taxonomists found evidence that caused the plant classification to be changed.

On Sunday morning, two groups floated the Pascagoula River with McCoy's River and Swamp tours. Each group departed from the Pascagoula River Audubon Center in Moss Point with Benny McCoy at the helm. The Pascagoula is one of the last free flowing rivers in the contiguous 48 states. Because of its pristine condition, the biodiversity of the basin is very impressive. We saw a multitude of migratory birds that use the river basin throughout the year and many shore and water birds including great blue herons and ospreys. We also observed an American alligator nest. But, of course, we were there to see the plants! We admired vast swaths of sawgrass (*Cladium jamaicense*), cut grass (*Zizaniopsis miliacea*), maiden cane (*Miscanthus hemitomom*), needle rush (*Juncus roemerianus*), salt meadow cordgrass (*Spartina patens*), smooth cordgrass (*Spartina alterniflora*), wild rice (*Zizania aquatica*), common reed (*Phragmites australis*), duck-potato (*Sagittaria lancifolia*), palmetto (*Sabal minor*), and spatterdock (*Nuphar luteum*). On a more somber note, we observed large stands of redbay that were devastated by laurel wilt. We saw smaller populations or scattered specimens of pickerelweed (*Pontederia cordata*), switch cane (*Arundinaria gigantea*), arrowwood viburnum (*Viburnum dentatum*), large gallberry (*Ilex coriacea*), winterberry (*Ilex verticillata*), buttonbush (*Cephalanthus occidentalis*), leatherwood (*Cyrilla racemiflora*), leatherflower (*Clematis crispa*), morning glory (*Ipomoea* spp.), bitter pecan (*Carya aquatica*), live oak (*Quercus virginiana*), black gum (*Nyssa sylvatica*), water tupelo (*Nyssa aquatica*) and baldcypress (*Taxodium distichum*). Benny McCoy pointed out Ross Hutchins' *Island of Adventure* as we passed. A participant on each of the boat trips won a copy of the Hutchins book. The company was pleasant and our guide, Benny McCoy was extremely knowledgeable. He also told some good jokes. We were sad when the tour and our wonderful 2009 meeting ended.

**Conference Note:** Special thanks to John and Peggy Guyton, Gail Barton Jennifer Buchanan and the Grand Bay NERR and Debora Mann for their help in coordinating the meeting and to Marc and Candi Pastorek for the delicious gumbo.

## ***Sweetgum Gets a Bad Rap by Gail Barton***

I must confess that I chose the subject of this article somewhat out of guilt. I've been working on a new golf cart trail through our woods. In the process, I've had to make a lot of choices like "If I go to the right I'll take out a red maple, oak, etc. but if I go to the left I'll lose a sweetgum." Given that decision, I've almost always chosen to bump off the sweetgum. Don't get me wrong – I really do like sweetgums but there are so many of them and .... hopefully this tribute to the undervalued sweetgum will assuage my guilt.

The American sweetgum (*Liquidambar styraciflua*) is a member of the Witch Hazel Family sometimes known as redgum, star-leaf gum, sapgum, copalm, liquid storax, white gum, opossum tree, bilsted, satin walnut or alligatorwood. It occurs from Connecticut south to central Florida and west to Texas and Oklahoma. It is also found in Mexico and Guatemala. It is particularly abundant in the Southeastern U.S. There are only two other existing species of sweetgum – one from Formosa and one found in Turkey although there are fossil records of about 20 species that are now extinct.

The genus name translates as *Liquid Amber* and refers to the brown gummy sap that flows from the injured bark and hardens (like amber) when exposed to the air. The species name *styraciflua* means "flowing with styrax" and alludes to a similarity with storax, an aromatic resin that exudes from Old World sweetgums.

The sweetgum's aromatic resin has been used in medicine, incense or perfumes throughout history. In the Southeastern U.S. it has served as a substitute for chewing gum as well. During the Second World War, foreign supplies of storax were needed as a base for salves, adhesives, perfuming powders, soaps and as a tobacco flavoring. Since storax was unavailable, local folks in Clarke County, Alabama began tapping native sweetgums and became the center of the industry. In the 1830's sweetgum resin was used in experiments that led to the discovery of polystyrene, the first man made polymer.

Most Mississippians (even those uninterested in Botany) can identify a sweetgum. The tree has unique star shaped leaves and often bears twigs adorned with corky wings. The tree's best identification feature, however, is its abundance of spiny fruit.

These sweetgum balls are actually clusters of many beaked capsules. In early spring as the leaves emerge, every healthy sweetgum bears green pistillate (female) and staminate (male) flowers that co-mingle to produce a green mace-like fruit. In case, like most people, you have never noticed them, a picture of sweetgum flowers can be found at <http://www.backyardnature.net/flswtgum.jpg>.

After reaching its mature ping pong ball size, sweetgum fruit turns brown and an opening forms in each capsule through which tiny winged seeds are released. A sweetgum ball contains 50 or more seeds that are dispersed on the wind. This allows successful pioneer sweetgum seedlings to colonize even the most disturbed or barren landscapes.

The sweet gum fruits stay on the tree most of the winter acting as a sort of "launching platform" for the seeds. Since all sweetgums produce the fruit, the tree is much maligned as a producer of litter and many gardeners have an aversion to it.

It has not always been so. Historically, the sweetgum has been revered for its medicinal attributes. According to Donald Culross Peattie's *A Natural History of Trees of Eastern and Central North America*, the first reference to the American sweetgum was made by Don Bernal Diaz del Castillo who accompanied Cortez to the New World in 1519. Peattie says "Out of a bizarre and dramatic moment of history comes, like a puff of pungent smoke, the first reference to this American tree. It is written by a witness of the ceremonies between Cortez and Montezuma, and he says, of the Emperor: *After he had dined, they presented to him three little canes highly ornamented, containing liquid-amber, mixed with an herb they call tobacco, and when he had sufficiently viewed and heard the singers, dancers, and buffoons, he took a little of the smoke of one of these canes.*" Don Bernal Diaz del Castillo probably identified the scent of the liquid-amber because incense made from Turkish sweetgum resin was commonly used in Christian churches and Indian temples.

Peattie also says that "Francisco Hernandez, the first great herbalist of Mexico who dwelt in that country from 1571 to 1575 speaks of it ... as having ... a resin of which the *nature is hot in the third order, and dry, and added to tobacco, it strengthens the head, belly and heart, induces sleep and alleviates pains in the head that are caused by colds.... It dissipates humors, relieves pains, and cures eruptions of the skin.... It relieves wind in the stomach and dissipates tumors beyond belief.*"

Sweetgum may have a modern medicinal use. Chemists have recently found that sweetgum seeds contain significant amounts of shikimic acid which is used to make the main antiviral agent in Tamiflu®. So far shikimic acid has been obtained almost exclusively from the Chinese star anise. The supply of star anise has dwindled due to high demand for the flu drug. The lowly sweetgum could save the day! To optimize shikimic acid extraction, the gumballs need to be harvested when they are still green and attached to the tree with the seeds safely ensconced inside.

In addition to its possible health benefits, sweetgum is a great wildlife plant. The tree is host to giant silkmoth larva such as caterpillars of the luna moth, imperial moth and promethean moth. It also hosts the caterpillar of the royal walnut moth which is commonly called a hickory horned devil.

The pesky tent caterpillars and fall webworms that frequent sweetgums are a food source for many species of birds, squirrels, chipmunks and an estimated 25 species of birds feed on sweetgum seed as well. Perhaps that's why they don't get the flu! Renowned Louisiana Naturalist and Birder, Bill Fontenot, says about sweetgum seed, "Tiny as they are, the seeds are fat & greasy, and taste as sweet and oily as a pecan. Squirrels and numerous songbirds (especially American goldfinch and white-throated sparrow) love them. In fact, each winter, goldfinches will refuse to go to artificial seed feeders until they've cleaned out the sweet gum seed from local trees. Most years, you begin hearing goldfinches around October; but they won't hit the feeders until AFTER thanksgiving (and some years not until AFTER Christmas)." Some other birds that feed on sweetgum include junco, mourning dove, rufous sided towhee, grosbeak, wren, chickadee, titmouse, quail, mallard and wood duck.

I didn't decide to write this article just out of guilt. Sweetgums are among my favorite trees this time of year because they provide intense fall foliage color in all parts of Mississippi. Each autumn the leaves are tinted red, orange and yellow – sometimes all on the same tree. A few rare specimens will even transform into a deep wine color that I describe as royal purple. American sweetgums are popular landscape trees in some parts of the world due to their ability to color during less than ideal fall weather. They're sold in

nurseries in California and used as street trees in Europe.

From a landscaping perspective, I'll admit that the spiny fruit does annoy me. As I researched this article, I found numerous references to the fruitless sweetgum, a form with rounded rather than pointed lobes. I've tried growing it but was not impressed. To me it was just a watered down version of the original. The fall color was not great and with rounded lobes instead of the typical star shaped leaf, it just didn't look right.

I'll stick with the original – the one that plants itself throughout the great state of Mississippi. The sweetgum balls are not a problem except in high traffic areas. Brightly tinted sweetgums can color our roadsides and woodlands without annoying the public. They can feed the wildlife and like good pioneers, quickly fill in the gaps when we clearcut and demolish. And who knows, if a pandemic does happen, we may all be glad to have some sweetgum balls to chew on!

### ***Carnivorous Omnivorous Plants? By John Guyton, MNPS Education Chair***

*Omnivores Carnivorous* sounds like an oxymoron but Dr. Ashok Prasad reported in the September 08 *Natural History* magazine that evidence is accumulating that the algae many of us have seen and considered incidental in bladderwort bladders is being used by the plants. Carnivorous plants are still amazing us with their ability to adapt to their environment! There were so many titles I considered using: Even Carnivorous Plants Eat their Greens (too close to *Natural History* article title); I Love Greens and so do Carnivorous Plants, so We Must be Kin (too long); Carnivorous Plants Competing with Omnivores (no evidence of competition); Carnivorous Plant Adaptations to Water Hardness; Omnivorous Carnivorous, Science May Necessitates a Name Change, etc.

Both aquatic and terrestrial bladderworts can be found in south Mississippi. The terrestrial bladderworts catch insects underground and the aquatic bladderwort dines, and lives, in shallow ponds. Bladderworts maintain a negative pressure (partial vacuum) inside their bladders and when the trigger hair is touched its door opens and the nematode, insect or other organism that touched the trigger is sucked in. If you are patient enough you can watch this happen under a dissecting scope.

*Natural History* reported that Marianne Peroutka at the University of Vienna examined 1,450 traps from 4 species and found algae in over half made up 80% of the material found in the traps. And to make it even more interesting some of the algae was partially digested. Bladderwort in soft water, which has a lower mineral and animal content, contained more algae than algae in hard water.

Seems we may need to start rethinking the name, carnivorous plants! The natural progression of science is to respond to new information and as information continues to accumulate we may need to change carnivorous to omnivorous!

### ***American Beech – King of the Winter Woods by Gail Barton***

I was inspired to write this article when I looked out the window and realized that the American beech in my backyard had suddenly become the star of the garden. This particular beech has a story, of course. It was moved in from the woods to serve as a spindly understudy to my 100 foot tall white oak. I knew it would adapt to the shady understory conditions and that it had the potential to eventually outgrow the white oak.

It is beautiful in all seasons. When the hickory, dogwoods and adjacent oaks drop their leaves, the beech is revealed in its golden splendor. It becomes as prominent as if suddenly elevated onto a pedestal.

This same scenario is taking place in woodlands throughout the beech's range from Canada to northern Florida and west to eastern Texas and southwestern Oklahoma. As autumn progresses, beech leaves turn chartreuse, then golden and finally a burnished bronze. In the south, the bronze leaves remain on the tree all winter and take on the appearance of expensive parchment paper against the smooth gray bark. All winter when most branches are bare, the glowing leafy beech dominates woodland vistas.

American beech has simple oval (ovate to oblong) leaves with coarse teeth or a wavy edge. Leaves are covered underneath with silky hairs. Beech twigs have prominent sharply pointed winter buds that resemble a scaly pencil point or a tiny one inch cigar. In spring trees shed their dried winter leaves as the new buds swell to the bursting point. When the leaves emerge, the bud's covering seems to explode leaving the ground littered with bud scales.

There are only 10 species of beeches in the world. Most of them occur in Europe and Asia. American beech is the only member of its genus in North America although at least three variations or races occur. One of these varieties exists in the mountains of northeastern Mexico. This Mexican beech is referred to as a separate species (*Fagus mexicana*) in some literature.

American and European beech's smooth clear trunks have inspired generations of scribes and graffiti artists. According to Donald Culross Peattie's *A Natural History of Trees of Eastern and Central North America*, "on the Beech was written, probably, the first pages of European literature. For it is said, the earliest Sanskrit characters were carved on strips of Beech bark.... Indeed, our word *book* comes from the Anglo-Saxon *boc*, meaning a letter or character, which in turn derives from the Anglo-Saxon *beece*, for Beech..."

European settlers were familiar with their own European beech (*Fagus sylvatica*) when they arrived in the New World. Since American beech does not differ greatly in appearance, they recognized it as if it were an old friend. The European beech had provided food to primitive people and later to the peasants of central Europe. The importance of beech nuts as mast is even reflected in the tree's Latin name. The word *Fagus* is derived from a Greek word "to eat." Beechnuts are not produced until trees are 50 to 60 years old and then they are produced in large numbers only about every third year. The triangular nuts are highly nutritious, containing about 20% protein and 20% oil. In 1713 the playwright Aaron Hill established a patent on a device to peel the nut. His company failed spectacularly.

Nuts from American beech are said to be much sweeter than those of European beech. Once peeled, the nuts have a taste somewhere between that of a walnut and a hazelnut. The French regard the best beech oil to be better than olive oil. The cold pressed oil has a pleasant sweet taste. It is clear, yellow and viscous. It matures with age and will reach a prime at about six years.

American beech is an important tree for wildlife. Old trees often become hollow and serve as den trees. When beech trees reach 50 to 60 years of age, they begin to produce irregular crops of beechnuts. The beech tree yields nuts on every third or fourth year; botanists say that the exact timing is unpredictable. The nuts fall from the tree in small spined husks and can be gathered.

In the fall, triangular beechnuts ripen, wrapped in prickly burs. The sweet, pea-sized nuts are a primary food source for more than thirty species, including whitetail deer, raccoons, opossums, gray squirrels, chipmunks, red foxes, wild turkeys, wood ducks, rose-breasted grosbeaks, blue jays, white-breasted nuthatches, white-throated sparrows, red-bellied and red-headed woodpeckers, purple finches, common grackles, and chickadees. When the nuts are in season, they can make up half of a black bear's daily diet.

According to Entomologist Douglas Tallamy, author of *Bringing Nature Home: How You Can Sustain Wildlife with Native Plants*, American Beech leaves and twigs "support over 100 species of Lepidoptera" (butterflies, moths and caterpillars). "On a per species basis this makes beech more productive in its support of wildlife than even the number-one-ranked oaks."

American beech is also superior to oaks in its resistant to lightning strikes. Several theories exist as to the reason for this. Trees high in oils (birch and beech) are poor conductors of electricity, whereas trees high in starch (oak, maple, ash, and poplar) are good conductors. Pines and other conifers have high resin content that conducts more electricity than trees with low resin content. Conifers, then, are more susceptible to explosion and internal heating. When wet, the smooth beech bark may conduct electricity outside the tree. A beech's shallow roots may not have direct contact with ground water. Oak trees have vertical roots which provide a more direct route to ground water. Whatever the reason, it is said that a person standing under an oak tree is 16 more times likely to be hit by lightning than someone who had refuge beneath a beech tree.

American beech is a lightning resistant tree and a tree to fall back on during the hard times. It feeds wildlife, provides fall color and enhances the winter woods. What more would you expect from the *King of the Winter Woods*?

### ***Field Trip to Clark Creek Natural Area by Gail Barton***

On November 14 a small group of MNPS members met at Clark Creek Natural Area in extreme southwestern Mississippi near Woodville to relax for a few hours in the woods. Gail Barton and Marc Pastorek, field trip leaders were late. Upon arrival, the small group of participants, Eileen and John Atkins and Dianne Lafferty was waiting in the parking lot. We gathered water, provisions and maps and our group began the strenuous trek.

The uniqueness of Clark Creek occurs because of its steeply sloping loess bluffs, which can be very physically demanding. We chose to hike on the improved trails that were covered with pea gravel. These trails also offered steep stairs as an alternative in the most difficult areas. The Natural Area is comprised of a mixed hardwood and pine forest dominated by beech and magnolias. We enjoyed viewing the Southern sugar maple (*Acer barbatum*), serviceberry (*Amelanchier arborea*) and chinquapin oak (*Quercus muehlenbergii*). We wandered off the trail into the woods in search of the Mississippi state recorded Mexican Plum. We found a very mysterious tree. We then visited two waterfalls. We found the champion Bigleaf Snowbell (*Styrax grandifolia*) along the way and it was loaded with fruit. After an enjoyable morning in the woods, our group adjourned and headed to Woodville for a tasty plate lunch.

### ***Did You Know? by Gail Barton***

Every beginning Botany or Plant Materials student can tell you that native yaupon (*Ilex vomitoria*) was gifted with its specific epithet *vomitoria* because a tea made from the holly caused those who imbibe to vomit. The practice of drinking emetic tea was a ritual of coastal Indians who consumed a tea made from yaupon leaves, berries and bark. The strong "black drink" caused vomiting which was viewed as a way to cleanse the body and soul before battle. Yaupon tea made from leaves and twigs is still enjoyed by some long-time residents of remote coastal areas. If the berries are ingested, however, vomiting and diarrhea will result.

University of Florida research (using dwarf yaupon *Ilex vomitoria* 'Nana') indicates that yaupon holly twigs also contain significant amounts of antioxidants. Research was conducted on tea brewed from young dwarf yaupon twigs and leaves. The resulting brew was dark brown and tasted much like green tea. Yaupon holly is the only U.S. plant that produces substantial amounts of caffeine, said Jack Putz, a botany professor affiliated with UF's Institute of Food and Agricultural Sciences.

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