



Mississippi Native Plants and Environmental Education

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



Volume 34 No. 1 *Saving the Milkweed Saves the Monarch, Saving the Monarch Helps Save Us All* **Spring 2016**

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.

President: Dave Thompson
dgthompson@mdot.state.ms.us

Vice-President: Dr. Tim Schauwecker
tjs2@msstate.edu 662-325-7895

Secretary/Treasurer: Dr. Debora Mann
manndl@millsaps.edu

Education Chair: Heather Sullivan
Heather.Sullivan@mmns.state.ms.us
601-576 6000

Trips Chairs:
Gail Barton 601-483-3588
lgbarton@gmail.com
Pat Drackett 601-799-2311
Dr. Victor Maddox

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.

President: Janet Chapman
Janet_chapman@deq.state.ms.us
601-961-5266

President Elect: Harold Anderson
Handerson212@gmail.com

Secretary: Debra Veeder
dveeder@mswf.org 601-605-1790

Treasurer: Peggy Guyton
peggyguyton@gmail.com 228-324-3136

MEEA Mini-Grants: Matthew Miller
Matthewmiller328@gmail.com

Past President: Jennifer Buchanan

MNP & EE Newsletter Editors:
Dr. John Guyton, Editor, 662-325-3482,
228-324-4233 (cell)
j.guyton@msstate.edu
Brian Templeton 662-325-3190
btempleton@lalc.msstate.edu,
Lucas C. Majure, 352-273-1962
lmajure@ufl.edu

MEEA & MNPS Webmaster: Peggy Guyton

Milkweeds Native to Mississippi by Patricia Drackett, Director, The Crosby Arboretum, MSU Extension Service

Since the spring of 2015, the Crosby Arboretum has received numerous inquiries about which native milkweeds (*Asclepias*), the host plant for monarch butterflies, are the best for home gardeners to plant. Ever since the 2013-14 population of overwintering monarch butterflies in Central Mexico was reported to be the lowest in twenty years, media sources have been encouraging home gardeners to grow milkweed to help boost monarch population numbers, and in particular, have promoted planting native *Asclepias* species rather than the widely available non-native tropical milkweed, *Asclepias curassavica*.

This past summer, Dr. Wayne Morris of Troy University graciously provided the Arboretum with a list of fifteen native Mississippi milkweeds suitable for growing in the Picayune area. (Dr. Morris was employed at the Arboretum in the summer of 1986 through Dr. Sidney McDaniel, Mississippi State University Professor of Botany, while he was working on his M.S. at MSU.) After studying the USDA range maps for these species and learning about their environmental preferences, a poster was compiled illustrating these *Asclepias* species and presented at an Extension field day event. An accompanying table summarizing each plant's preferred habitat was also developed. These resources are being made available at the Arboretum, and have become the foundation for an Extension publication planned for release in spring 2016 aimed at helping Mississippi home gardeners to quickly determine which native milkweed species would be suitable for growing in their garden or in natural areas on their property.

This process has provided an enjoyable journey. Going from the point of only being acquainted with a few species in the genus *Asclepias*, it is a great pleasure to have made the acquaintance of so many individual "personalities." The plant is fascinating to study – and the morphology of the milkweed flower has been compared in complexity to that of orchids. Flower pollination alone is an intriguing story – a pollinator's leg must pass through an extremely narrow slit to hook a pollen sac, which must then be transferred to another flower by the reverse process. Sometimes a pollinating insect can lose a leg during the procedure, or even become trapped and die.

Some species occur as solitary specimens, such as white milkweed (*A. variegata*), while others, like whorled milkweed (*A. verticillata*) are found in colonies. Some have long taproots, such as butterfly weed (*A. tuberosa*) and green milkweed (*A. viridis*) and are finicky about transplanting, while others, like aquatic milkweed (*A. perennis*) have fibrous roots. Some prefer consistently wet conditions, i.e. longleaf milkweed (*A. longifolia*), fewflower milkweed (*A. lanceolata*), and aquatic milkweed (*A. perennis*), while others occur in dry sites, i.e. pinewoods milkweed (*A. humistrata*), pineland milkweed (*A. obovata*), and tall green milkweed (*A. hirtella*). Some species produce copious amounts of milky sap, so much that it can drown early instars of monarch caterpillars. The most commonly known native species, *Asclepias tuberosa*, has clear sap and much lower amounts of the cardiac glycosides that render monarch caterpillars unpalatable to predators. Interestingly, if other species of milkweed are present, monarchs will usually choose these over *A. tuberosa*. Hopefully, by getting to know these native *Asclepias*, you will find a few new favorites among them! (Note: Avoid contact with *Asclepias* sap as it is toxic to humans and livestock, some species more than others.)

See photos page 3

Greetings Fellow MNPS Members! by Dave Thompson, President

Friends,

We are just a month away from our annual meeting, to be held at the Crosby Arboretum in Picayune, MS. The dates are April 22-24. I hope everyone is planning to attend.

We will start the meeting on Friday April 22 with speakers and a tour of the Arboretum. Saturday morning, we will hear a few more speakers then go for a field trip to a pitcher plant bog Saturday afternoon. We're planning to have a lot of fun and many learning experiences. Don't forget to bring your camera; there will be plenty of Kodak moments. We are focusing many of our talks on pollinators this year as that subject is currently the hottest item in the national wildlife scene. I am pleased to welcome a new writer to this issue of our newsletter. Mrs. Audrey Harrison is working on a PhD and has prepared an article on her conservation activities. Also there is an article by Pat Drackett on some of the species of milkweed found in our state.

If you want to make a reservation to stay in Picayune, there are several, including the Holiday Inn Express.

See you next month!

Greetings MEEA and Others by Janet Chapman, President

Spring has sprung!! With the changing of the seasons comes the yearly reminder of new beginnings. We welcome long forgotten flowering plants as they bring their beauty once again to our world. But for the insects and other wild animals plants are often times essential for survival. This issue features particular plants and opportunities to promote programs that will enable Mississippi to step ahead in pollinator habitat establishment. This also will provide important environmental education opportunities within the reach of everyone. Inquisitive minds can investigate ecosystem function, plant-animal (including insect) interdependence, and even human-environment interaction in environmental education 'laboratories' to become much more prevalent throughout our state.

I invite you to consider how you and your class or neighborhood can join in the fun of planting pollinator plants and exploring interactions in nature! Join in the excitement of BugFest and our MEEA Fall Conference to be held November 11 and 12, 2016. Follow MEEA on our Facebook page Meea4ms for updates! If you know of other environmental education opportunities across the state let us know so we can help spread the word. I hope to meet many of you as this year progresses!

Mississippi Native Plant Society Annual Meeting Crosby Arboretum, Picayune, April 22-23, 2016

Friday April 22, 2016 The Arboretum is great place in Mississippi to spend Earth Day!

The Arboretum is having a native plant sale so come early to shop!

- 12:30 Registration opens
- 1:00 Welcome - David Thompson, MNPS President; Welcome, Arboretum Overview, & Mississippi Milkweed Project - Pat Drackett, Crosby Arboretum Director
- 2:00 Milkweed on the Right-of-Way Initiative - Audrey Harrison
- 3:00 Crosby Tour - Pat Drackett
- 5:00 Business Meeting / Officer Elections
- 7:30 Nocturnal Insects of the Arboretum (blacklighting)

Saturday April 23, 2016

- 8:00 Monarch Watch
- 9:00 Milkweeds for Monarchs at the Stennis Space Center – Quinn Kelly
- 10:00 Mississippi's Roadside Plants - Victor Maddox
- 10:30 A Little Creativity Training in Exchange for Assistance with the Newsletter - John Guyton
- 11:00 Milkweed Propagation at the Jamie Whitten Plant Materials Center – Alayna Jacobs
- 12:30 Hillside Bog Field Trip – Pat Drackett

Conference Notes:

Registration is \$25 (includes membership for the coming year); \$15 for members whose dues are current. Meals are on your own to sample some of Picayune's wonderful dining opportunities. The Holiday Inn Express is nearby in Picayune. For directions to the Arboretum, please visit <http://crosbyarboretum.msstate.edu>. For additional information about the meeting, contact Dave Thompson, dgthompson@mdot.ms.gov.

10 Mississippi Milkweeds



Asclepias longifolia



Asclepias tuberosa



Asclepias perennis



Asclepias variegata



Asclepias obovata



Asclepias viridis



Asclepias lanceolata



Asclepias humistrata



Asclepias hirtella



Asclepias verticillata

All images are from SoutheasternFlora.com and are courtesy of John Gwaltney who has been a great supporter of the Mississippi Native Plant Society!

You may pull this page out while reading the front page article, and/or copy it for sharing.

From Mississippi Native Plants and Environmental Education Vol. 34 No. 1

***The Only Thing Preventing Change is You* by Audrey Harrison, Ph.D. student, University of Mississippi**

I wasn't raised by activists; my parents don't fight for any major causes on a day-to-day basis. They have their opinions, of course, but never felt like it was in them or within their power to elicit any real change, through policy, law, advocacy, etc. Somehow I was different—and they never stifled me. I have always felt like I have a voice. From a very early age, I organized various groups, beginning with service clubs made up of neighborhood children, and nature clubs on the playground in elementary school. I started recycling programs in high school and college. Many of my efforts have been without success and my few accomplishments were hard fought, but it is in the small victories that I have found the energy to continue on to other feats. My dad once told me that I can't change the world, but I have changed him, and the people around me, and that is not insignificant.

Most of my efforts stem from worry and concern. I can't detach myself from the realities of a changing planet or the footprint of my fellow man. Over the years I have tried to become more pragmatic, and it is out of pragmatism and environmental concern that I started my 8-month relationship with the Mississippi Department of Transportation (MDOT). According to MDOT, there are approximately 130,000 acres of roadside habitat in Mississippi. I routinely travel MS Highway 22 as I commute from my home near Flora, MS, to work in Vicksburg, MS. Every day, I take note of the plants and animals I see. It is a beautiful drive through a largely pastoral setting. One of my favorite plants to see along my drive is green milkweed (*Asclepias viridis*), and Highway 22 is loaded with it. Last spring, I was thrilled to see how much milkweed there was and waited in anticipation as the Monarch Butterflies made their incredible journey north from their overwintering sties in Mexico. It was very disheartening to see the mowers cutting it all down days before the Monarchs got to Hinds County. I was excited again throughout the summer as the milkweed rebounded and as the fall Monarch migration approached, the milkweed, other wildflowers, and grasses had peaked, and there were no mowers in sight. I rejoiced! The Monarchs began to lay their eggs on the bountiful milkweed, and on my way home from work one afternoon, I was brought to tears as I saw the mowers.

The next morning, my five month old daughter and I stopped to gather all of the remaining milkweed before the mowing was complete. We gathered 253 milkweed plants within a couple of miles! My husband and I removed all of the Monarch eggs and caterpillars and donated them to our local elementary schools to rear out and release. I began reaching out to MDOT to suggest alternative mowing regimes that would allow Monarchs to utilize the milkweed and migrate on before it was mowed. About a month ago, I realized I was unsuccessful as the spring vegetation instantly turned to brown after being sprayed. I was again disheartened and followed up with MDOT. It was suggested to me by a native plant specialist that there were people all across the state that have been petitioning for the same changes in roadside management. I began reaching out to these individuals and formed the *Mississippi Roadside Vegetation Action Group*. Participants in this group include our very own MS Native Plant Society President, professors from our major universities, NGOs, federal agencies, concerned citizens, and students like myself. It is a powerful group of people, and we are quickly changing some minds about roadside vegetation.

With a few calls to our Transportation Commissioners, and an ongoing list of roadside stretches to protect, we are well on our way to changing the way our roadside vegetation is managed statewide. There is still work to do and this is where we need your help. If you're interested, here's what you can do:

- Join our group! Email me at audreybharrison@gmail.com and I'll add you to our list.
- Call your Transportation Commissioner!
 - Northern MS – Mike Tagert (662) 680-3323
 - Central MS – Dick Hall (601) 359-7035
 - Southern MS – Tom King (601) 583-0859
- Suggest areas of highway to protect! This goes beyond milkweed. Know of areas that have flowering native plants? Let us know!!
- Fill in the gaps! Plant milkweeds and other natives in your own green spaces!

Finally, remember that you have a voice and that the only thing preventing change is you.

***Tiptoeing through the Sarraceniaceae, Drosera, Utricularia and other Carnivorous Plants* by Dr. John Guyton**

Pitcher plants are springing from the ground just as their favorite insects arrive, and they are accompanied by sundews and bladderworts with their hungry young pseudo-mouths. I just returned to my office from the studio after photographing the blooming terrestrial bladderworts, which dine underground, that Terry Johnson sent me via Pat Drackett. At the Southeastern Branch of the Entomology Society of America meeting in Biloxi this past spring, we offered bog walks to discuss carnivorous plants. And this spring I am feeling a little homesick and am looking forward to the upcoming MNPS meeting at the Crosby Arboretum!



The bladderwort blooms allow grass to visually claim them as theirs.

The beautiful delicate yellow sundew blooms remind me of early spring walks through the coastal pitcher plant bogs. These are the small, scattered daubs of yellow the artist uses to fill in spaces on the canvas in the shadows of the more grand pitchers: Easter eggs for the knowledgeable viewer that elicit memories of the smells of the bogs. Carnivorous plants produce prodigious amounts of nectar and give the bogs a sweet earthy fragrance. I strive to discern the sweet fragrance of pitcher plants' nectar mingling with so many other smells while others easily recognize it. The cycle-of-life sound of the bog is alive as insects succumb to the allure of the nectar and dare to go a little too far and find themselves as sustenance for a plant.

The buzzing, vibrating sounds of the bog in spring announce the ecosystem interactions of insects with plants, the dying insects vibrating in the pitchers passing on their accumulation of nitrogen to the young plants. The bright sun, the vibrant colors, the smell of nectars, and the characteristic sounds comingling reminding me that the cycle of life is more easily understood on a field trip than the pages of a textbook.

Fieldtrips to the bog may be more enjoyable than living in it. In my experience, nectar, the “junk food of the plant kingdom,”¹ is responsible for the attraction of a great many more insects than the plants can consume. I maintained two carnivorous bog plantings that included pitcher plants and sundews on my patios throughout graduate school that my friends and I both enjoyed, and later noted the insects that had been a nuisance to begin with had become steadily worse to the point that I had to develop new pest control strategies.

The putrefying detritus in the pitchers is thought by some to be the attractant. However, younger leaves, and pitchers that are actually highly modified leaves, seem to collect the most insects,² and the watery nectar has supporting properties. Red plants also collect more insects than the green.³ Nectar is secreted by flowers around the lip of the pitcher and from within, reminding me of trail pheromones, in this case attracting them to their death and the plants satiation. Then, as environmental educator and storyteller Matthew Miller would say, “and that ain't all,” Schnell noted that a drop of nectar from a tropical genus *Nepenthes* had a sweet taste and left the portion of his tongue numb for minutes after tasting it.⁴ D'Amato noticed ants on a pitcher plant (*Sarracenia flava*) he had left tipped over on his potting bench the day before were attracted to its nectar and died. Watching the newly attracted ants, he reported they lost control of their legs first and fell followed by their loss of antenna and mandible control.⁵ The extremely toxic liquid alkaloid, coniine, that was first isolated from hemlock seed and that was the active principle in Socrates' final beverage, was also extracted from the American Pitcher plant (*Sarracenia flava*).⁴

Not finished – tiptoeing into the waters of the bog fearing a toe-biter while small aquatic organisms, if they could, would tiptoe around the aquatic bladderworts!

References

¹Juniper, B.E., R. J. Robins, and D. M. Joel. 1989. *The Carnivorous Plants*. London: Academic Press.

²Wolfe, L. M. 1981/ Feeding behavior of a plant: different prey capture in old and new leaves of the pitcher plant (*Sarracenia purpurea*). *American Midland Naturalist* 106: 352-359.

³Fish, D. and D. H. Hall. 1978. Succession and stratification of aquatic insects inhabiting the leaves of the insectivorous pitcher plant, *Sarracenia purpurea*. *American Midland Naturalist* 99: 172-183.

⁴Schnell, D. E. 2002. *Carnivorous plants of the United States and Canada*. P 27.

⁵D'Amato, P. 1999. Dine on coniine and die. *Carnivorous Plant Newsletter* 28: 117-118.

The Crosby Arboretum is as Home as Home Gets for MNPS and MEEA by John Guyton

Dave Thompson and I have been discussing a fall “homecoming” for MNPS and MEEA. The MNPS conference will continue to be held in the spring and MEEA’s will remain in the fall. The arboretum’s largest event is a BugFest in September which could become a grand MNPS and MEEA homecoming. This has great potential as a recruiting event for both organizations. Talks will be open, and advertised with BugFest. Plants and bugs just go together in the environment.

The 2nd MNPS (organized in 1980) field trip was led by Dr. Sidney McDaniel, Professor of Botany at MSU, in 1981 to the site of the Crosby Arboretum. The second MNPS newsletter records, “We will meet at 9 A.M. at the visitor center approximately one mile south of Picayune on Interstate 59. From there, we’ll caravan a couple of miles to an arboretum that is currently being developed under the guidance of Dr. McDaniel. When completed, the arboretum will display the diverse native flora of Pearl River County. Please remember to bring a lunch. From the arboretum, we’ll follow Dr. McDaniel on a 30 to 40 minute drive south to a savannah, one of the most floristically distinct type of plant communities in Mississippi. Savannahs are open, virtually treeless communities restricted to the southern part of the state. They consist primarily of a diverse and prominent herbaceous flora. Many of the wildflowers, insectivorous plants, and other noteworthy species that will be seen are restricted to savannahs and a few other closely related coastal plant communities. There is little shade on a savannah, and soils are often saturated in low areas where the water table is near the surface, so dress appropriately.” Many MNPS field trips to the arboretum later it qualifies as “home.”

When I initiated MSU’s acquisition of the Crosby Arboretum, it was to be a place for 4-H environmental education and MEEA’s home base. MEEA’s largest event to date, besides hosting the international North American Association for Environmental Education’s annual conference in Biloxi, was an Environmental Education Field Day at the Crosby. This field day for area schools featured 50 stations and was funded by Keep Mississippi Beautiful. It was planned and managed by teacher Eva Jenkins, then director of Project CARE (Children About Reshaping the Earth; a MEEA Special Interest Group). Many partners made this the Crosby’s largest event by a wide margin including: Master Gardeners, personnel from the Mississippi Department of Environmental Quality, the Mississippi Wildlife Federation, Lynn Meadows Discovery Center, the Department of Marine Resources, the Mississippi Museum of Natural Science, the Extension Service, the arboretum staff and many others. The arboretum was not prepared for the 500 attendees, and Terry Johnson earned his keep parking busses in the mud! Over a gumbo lunch cooked on-site, staff talk was about what a perfect place the arboretum is for environmental education - home!

Last fall the Mississippi Environmental Education Alliance joined us at BugFest and it just felt natural! This led to discussions about inviting the MNPS to join in the fun. Over the next few issues of the MNP&EE newsletter we will be running articles about the arboretum.

Carnivorous Plants have the Most Incredible Leaf Factories Imaginable! By Dr. John Guyton

My fascination by pitcher plants began when I dissected one over 40 years ago and sorted out its diet. Recently a youngster was showing me his Venus fly trap and when I asked him how it ate its food, he responded, “It chews it like we do,” pointing to its “teeth.” He went on to say his dad was getting them hamburgers for lunch so he could feed his fly trap.

I love the question, are carnivorous plants autotrophs? Carnivorous plant leaves, or pitchers, pads, tendrils, etc. may be the most sophisticated factories on the planet. They perform normal autotrophic functions as well as the digestion of insects for nutrients that are not plentiful in the soil. Their leaves use sunlight, water, carbon dioxide, and nutrients from the soil to produce the sugar and starches they need to live, grow and reproduce. Carnivorous plants live in nitrogen-poor soil so their leaves contain digestive enzymes to break down the bodies of insects and other animals and extract the nitrogen and phosphorus. They can live without insects and even reproduce but they grow larger and more prolific with an insect diet.

Research has revealed that leaf feeding enhances the absorption of nutrients by the roots. And, detritus and other materials that fall onto carnivorous traps have been shown to have a positive effect on plant growth. Harder and Zemlin¹ sprinkled pine pollen on some carnivorous plants and noted they responded with more growth and better flowering. Mississippi’s carnivorous plants are common in coastal pine savannas.

Before plants can take advantage of their insect prey they need to digest them. Enzymes in a watery solution make this possible. Enzymes are relatively unstable proteins that expedite chemical reactions. These enzymes work with ambient heat and without caustic chemicals or a long process time. The suffix on an enzyme’s name, -ase, indicates it assist in breaking down the compound in the enzyme’s prefix. The enzyme “protease” breaks down protein into simpler nitrogenous compounds. Similarly lipase reduces fats or lipids, etc.² As evident from the scanning electron microscope picture above of fire ant exoskeleton components, the enzyme chitinase was not so efficient. As you likely have surmised, the connective tissue between the exoskeleton sections that allows it to flex are the Achilles’ heels of the fire ants’ exoskeletons and are more easily digested. And once this connective tissue is breached the enzymes are off to the races.



Fire ant exoskeleton pieces in pitcher plant (*Sarracenia alata*). Note plant tissue and down pointing trapping hairs on left side.

Now, where do these enzymes come from? Lindquist³ mentions that pitchers and the leaf surface of bladderworts are “teaming” with microorganisms. Schnell² discusses possible external and plant sources. Microorganisms such as bacteria and fungi often secrete enzymes to break down materials they will use for food. And, microorganisms are found in the intestinal tracks of insects. Various arthropods are adapted to living in or on carnivorous plants such as the pitcher plant including moths and caterpillars, assassin bugs and midge larvae that contribute bacteria-loaded poop in a mutualistic arrangement. Many carnivorous plants also make their own digestive enzymes as well. So we could call them autotrophs with a heterotrophic penchant!

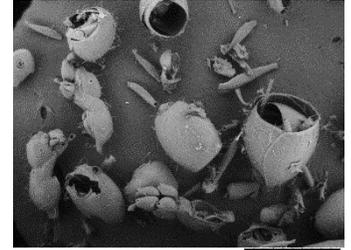
References

¹Harder, R. and I. Zemlin, 1968. Blütenbildung von *Pinguicula lusitanica* in vitro durch fütterung mit pollen. *Planta* 78: 72-78.

²Schnell, D. E. 2002. Carnivorous plants of the United States and Canada. P 33-37.

³Lindquist, J. A. 1975. Bacteriological and ecological observations on the northern pitcher plant, *Sarracenia purpurea* L. Masters of Science Thesis, University of Wisconsin, Madison.

Thanks to the Mississippi State University Institute for Imaging & Analytical Technologies (I²AT) for use of SEM.



Carnivorous Plants were doing “The Entomologist” Before there was a Band to Play our Song by John Guyton

You can identify entomologists by how they carry their nets. They approach the insects with the cool confidence that years of collecting have imprinted on their hands and minds. The bugs’ only chance is to produce huge colonies. There is a net or trap for every situation and insect. Carnivorous plants likewise have adaptations, from eons of adaptation that give them the same capabilities of collecting insects, lots of insects!

The carnivorous plants in the *Byblis* genus, native to Australia, is a rainbow plant, and the shrub sized *Roridula* genus from Africa uses sticky traps similar to sticky pest traps we use. Plants in this genus have an unusual twist from our carnivorous plants, they do not have digestive enzymes and depend on symbiotic bugs to digest them! I have even seen predators stuck to these traps trying to eat their prey. We do not digest insects we catch. Our sundews (*Drosera brevifolia*, *D. intermedia*, and *D. tracyi* and *Pinguicula planifolia*) produce digestive enzymes on the surfaces of their leaves.

Entomologists use pitfall traps to collect ground insects. And carnivorous plants such as the purple pitcher plant (*Sarracenia purpurea*) were using this kind of trap long before there were entomologists. Just as the bottom of pitcher plants contain a fluid, so to do our pitfall traps. The nectar glands, down pointing hairs, slippery sides, and liquids from which escape is difficult are complimented by nectar guides; entomologists sometimes place vertical boards over pitfall traps to guide crawling insects into the trap. We also place “roofs” over our traps to prevent them from filling with water, and some pitcher plants (*Sarracenia alata*) have a lip, or sugar spoon, over their top to prevent their being filled by rainwater. The lid also contains nectar glands similar to bait we often place in our traps.

The so called lobster pot trap works by enticing a lobster into the “kitchen,” or through the funnel into the interior of the trap, baited with a herring or other fish. Parrots’ beak pitcher plants (*Sarracenia psittacina*) entice ants into a small hole with the promise of sweet nectar. Directional hairs guide the ants deeper into the trap and to their doom. We use similar suspended traps for yellow jackets that consist of a jar with a couple holes in its top and fruity broth within. Once yellow jackets crawl through the hole they cannot find their way back out.

The terrestrial and aquatic bladderworts use suction traps on their roots that build up a negative pressure, and when a hair is triggered a door opens sucking in their prey. The common bladderwort (*Utricularia macrorhiza*), piedmont bladderwort (*U. olivacea*) and the arctic bladderwort (*U. stygia*) use this strategy reminiscent of varmint traps in which the animal triggers a door after reaching the bait and trigger.

Reference: <http://www.sarracenia.com/faq/faq1330.html>

Mississippi Native Plant Society Application

The Mississippi organization dedicated to the study and appreciation of native wildflowers, grasses, shrubs and trees. Renew or Join Today!

Name _____ New _____ Renewing

Address _____

PO or Street Address City Zip Code

Email _____ Phone _____ Cell _____

Individual or Family \$10 Student \$7.50 Sustaining \$15

Contributing \$35 Life \$125

Newsletter preference Email or Regular mail (USPS)

Return form to Dr. Debora Mann, 114 Auburn Dr., Clinton, MS 39056-6002

Mississippi Environmental Education Alliance Application

The state affiliate of the NAAEE

Name _____ New _____ Renewing

Address _____

PO or Street Address City Zip Code

Email _____ Phone _____ Cell _____

Individual \$15 Student \$5 Family \$25 Institution or Business \$50

Life \$150 Patron > \$150

Committee interest: Strategic Planning NCLI Conference

Awards Communication Climate Change MEEA Board

Return application with check made out to MEEA, c/o Peggy Guyton, PO Box 43, Mayhew, MS 39753

Join MNPS, MEEA or both!

MS Native Plant Society
mississippinativeplantsociety.org

MS Environmental Education Alliance
eeinmississippi.org

The Mississippi Environmental Education Alliance conducts an annual fall conference and occasional workshops.

MNP&EE

Mississippi Native Plants & Environmental Education is the quarterly newsletter of the Mississippi Native Plant Society & the Mississippi Environmental Education Alliance.

Deadlines for Articles:

Winter – November 10

Spring – February 10

Summer – May 10

Fall – August 10

**MNPS Annual Meeting April 22, 2016 Crosby Arboretum; Mississippinativeplantsociety.org
MEEA Conference November 11 and 12, 2016 Follow us on Facebook: [Meea4ms](https://www.facebook.com/Meea4ms)**

The MISSISSIPPI NATIVE PLANT SOCIETY

C/O Dr. Debora Mann

Millsaps College

Box 150307

Jackson, MS 39210

RETURN SERVICE REQUESTED

MS Native
Plant Society &
Mississippi
Environmental
Education
Alliance

