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LOUISIANA NATIVE PLANT SOCIETY

LNPS NEWSLETTER

Growing and Gardening with Mountain Mints in Louisiana by Marc Pastorek

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- To preserve and study native plants and their habitats
- To educate people on the value of native plants and the need to preserve and protect rare and endangered species
- To promote the propagation and use of native plants in the landscape
- To educate people on the relationship between our native flora and wildlife

Mountain mints are attractive and useful plants for Gulf Coastal gardens. In Louisiana, Mountain Mints are not your everyday roadside wildflowers. They are typically found on unplowed ground and are indicators of ancient vegetation - the prairies and Pine-Bluestem plant communities - which once covered a large portion of the state.

The absence of *Pycnanthemum* from our landscape is likely largely due to man-made circumstances including farming, overgrazing, fire suppression, and other forms of ecological disturbance. Fire is a key part of the natural history for Mountain Mints and their associates.

Pycnanthemum is an important genus to consider when restoring natural lands since all three species are valuable wildlife plants and are easy to establish

and maintain in the landscape. They can be recommended for use in the home garden for ornamental purposes since they are very dependable and long-lived flowering plants. They are able to rebound from extreme environmental stress conditions, like we have in the central Gulf coast - drought, extended rain events, heat and cold - with relative ease.

All Mountain Mints make excellent cut flowers - adding local botanical flair to flower arrangements. flowering stalks of *Pycnanthemum tenuifolium*, for instance, lasts many days in a vase.

I will leave the technical descriptions of the plants to the botanists and say a little about their use in the landscape and in the garden - gardening with these species and their cultivated varieties.

In general, a small amount of

seed will typically produce a good crop of seedlings, so a few seed heads collected can go a long way.

Pycnanthemum tenuifolium - Narrow Leaf Mountain Mint

Pycnanthemum tenuifolium is arguably the most common of the three species of Mountain Mint found in Louisiana. It is often



Pycnanthemum tenuifolium at Meadowmakers' Farm, Pearl River County Mississippi, June 2, 2018

NOTE FROM THE PRESIDENT: Check out this: https://www.lib.teiep.org/images/stories/acta/Acta%20643/643_7.pdf. It is an article titled **Creating Prairie Meadow Ecosystems as the New American Lawn** by Neil Diboll Prairie Nursery, P.O. Box 306, Westfield, WI 53964, USA. diboll@prairienursery.com



Pycnanthemum tenuifolium at Meadonmakers' Farm, Pearl River County Mississippi, June 2, 2018



Pycnanthemum muticum at Allen Acres, Vernon Parish, Louisiana, May 29, 2018

among the last vestiges of the flora in a disturbed site. It hangs on after disturbance when many prairie species do not. This is likely due to its innate ability to reseed itself. A single plant can produce many viable seed. Seed are tiny, smaller than a fine granule of salt. Narrow Leaf Mountain Mint is an easy plant to grow and is considered an excellent garden plant, establishing a dense, matted ground cover over time.

As winter arrives, the mature plant is frosted and dies back to the ground, leaving a carpet of dense dark green needle like foliage that is just a few inches tall that carries on through winter. In spring, growth reaches skyward, eventually topped with flowering-scapes in June. Generally the height of the flowers is about two feet tall though they can grow taller if they receive a bit of shade. Like many prairie species, Mountain Mints become old and their root systems become restricted by a competitive root zone. This causes the plants to become restricted somewhat in height. The flowers are a clear white, delicate, and create a lace-like effect - very pretty, and highly attractive to pollinating (and predator) insects - and also very attractive to humans! Plants planted by seed and from nursery grown plants that I planted twenty year ago in my fields at my seed farm have become rather impressive visually.

Over time, seedlings will pop up around the mother plant. Watch for seedlings and nurture them, move them, or share them with a friend. In

the garden, in late summer or fall the flower stalks can be burnt, cut back with a weed trimmer, or just left to provide cover for wintering insects. Stalks are usually more narrow than a toothpick and erect/vertical, producing as many than twenty stalks per square foot.

On a scale of 1-10, ten being best on a landscape rating value scale, I would give *P. tenuifolium* a 10.

***Pycnanthemum muticum* - Lowland Mountain Mint**



Pycnanthemum muticum at Allen Acres, Vernon Parish, Louisiana, May 29, 2018

Pycnanthemum muticum is marvelous perennial plant, however it is one I am careful about sharing since it runs by underground runners and is aggressive to the point of being invasive. Be careful when you receive it and be careful when you share it. Handle with care. As my friend of mine often says about an aggressive plant, "Plant it and RUN!!!!".

It is wise to use Lowland Mountain Mint in large landscapes only. You can keep it in bounds by cutting it off, by planting it in an area surrounded by concrete or a wide band

of regularly mowed lawn (three + times per year) -it doesn't seem to like to grow where regular mowing of the lawn is done. But realize that it will generally grow everywhere within that barrier. Oddly enough, Lowland Mountain mint is a rare plant, only found in a few places in Louisiana (verbal communication via Charles Allen).

Lowland Mountain Mint flowers stand at about two feet to three feet tall. The plant spreads by underground runners, colonizing an area and rapidly spreading in every direction. An interesting thing about *P. muticum* in restorations is that it eventually succumbs to heavy pressure from more aggressive prairie species and moves to the "edges" over time, taking advantage of space where pressure is less. There it thrives. The flowers are on the terminals of the plant and form roundish clusters. The leaves surrounding the flowers are colored white, and because of this, flowering time can be very showy indeed with visually striking masses of white and green foliage, topped with lavender and white flowers. The insect activity is so intense on a hot summer day you can actually hear the many bees and insects looking for nectar and buzzing about.

***Pycnanthemum albescens* - White Leafed Mountain Mint**

Of the Mountain Mints in Louisiana, my favorite perhaps to find in the wild is *Pycnanthemum albescens* or White leafed Mountain Mint - maybe because it is so uncommon - and maybe

because when you find it you never see many plants - just a few here and there.

This species is a very erect in habit, a perennial herb that stands about three to five feet tall and a foot or two in width. Generally associated with pine understory (via Charles Allen). This very dependable plant is a joy to have in the garden and is generally very long lived. White Leafed Mountain Mint is a tightly suckering perennial with the habit of producing new plants next to the Momma plant, so you can dig divisions in winter and pot them up or move them around in the garden. The plant casts seeds and in my twenty year plantings, many seedlings has matured and have created some substantial populations. The leaves of this species are entire and elongated. The flowering terminals have white clustered flowers and white leaves surrounding the flowering tip. All parts of the plant are aromatic with a sweet camphor-minty smell. Charles Allen, in his book "Edible Plants of the Gulf South", states that the dried leaves are used "to spice up the infamous brown gravy of the south". He says his Grandmother commonly called the plant 'sage' and "....the 'sage' smell was associated with sausage...".

I will give a landscape rating value for *P. albescens* a 10.

***Pycnanthemum albescens* variety "Malcolm's Mint"**

P. albescens variety "Malcolm's Mint" is a cultivar of the typical White Leafed Mountain Mint, having a distinctly spearmint scented aroma. It's a very

unique clone that was found by Dr. Malcolm Vidrine in a Cajun Prairie remnant in southwestern Louisiana. He passed a rooted cutting on to me in the mid-1990's and I grew it in my garden, eventually propagating it and introducing it into my prairie seed fields in 1997-8. It is well preserved today with more than 50 mature plants growing in my field today. I have a large plant planted by my front door and walk by it and pinch it to smell the delightful scent. It always brings a smile to my heart. An unscientific estimation of seedlings generated by Malcolm's Mint, about fifty percent of the seedlings of Malcolm's Mint have typical aroma and about fifty percent have the spearmint scented aroma.

The leaves of Malcolm's Mint steeped in water make a particularly delicious tea, though all Mountain Mints can be steeped and use to flavor water. I will give Malcolm's Mint a 10+. It is a plant for all gardens.

All three Louisiana native Mountain Mints are excellent garden plants that adapt well to the typical home landscape. They are especially good to have around when considering pollinator attracting plants. Numerous species of insects use the plants for nectar and predatory hunting. All three are attractive and useful, however they aren't generally available in the trade.

All are relatively easy to grow from seed, from root division and from taking stem cuttings to root in mist et al - take cuttings when the flowering stalks become firm and/ or as they

are bolting to flower. For all three species and their cultivars, collect ripened seed heads by cutting them when they turn from green to brown - in August or there about. Store these in a dry container (a paper bag?), and put them in a dry place until it's planting time in early winter, about October or November. Keeping the seed cool and the dry the seed recommended. 40 degrees temperature and 60% humidity is an ideal condition. Clean seed by turning seed heads upside down and crushing between your fingers. The seed are generally distinguishable by being dark and uniform. Sow seed (with a little chaff) onto the propagation medium and do not cover the seed. If you must cover the seed - only use a slight dusting. Seeds are so small, they can easily be buried too deeply. Expose seed trays to cold with a bit of protection from the extreme northwestern exposure (a tree canopy or building to the northwest) (or frost cloth, etc.). Exposing seed trays to cold and wet will help naturally stratify your seed. Seedlings will germinate in early to late spring after frosts stop, and as night time temperatures turn warmer. All three species come up pretty readily via seed. Save your seed trays after you've harvested seedlings, as you might get gifted a new crop of seedlings thereafter.



White Leafed Mountain Mint flowers



White Leafed Mountain Mint growing in a container at my house garden, St Tammany Parish, Louisiana



Pycnanthemum albescens var Malcolm's Mint, Meadow-makers' Farm, Pearl River County, Ms., June 2018

What is "O. E."? by Linda Auld, "BugLady"



The Monarch butterfly is our national insect and it is in trouble. Habitat destruction, neonicotinoid chemicals and weed killers, mixed with a heaping helping of parasites, and diseases spell a disastrous recipe for certain doom. It's a wonder that any could live amidst this array of life challenges. And yet, these tiny, fragile creatures have persevered and continue to amaze us with their beauty and their unique ability to migrate over two thousand miles from as far as Canada all the way to Mexican forests to overwinter.

Monarch caterpillars are very picky eaters! They will only eat leaves of the milkweed plant. For decades Monarch caterpillars growing up in our state of Louisiana have been eating Tropical Milkweed, *Asclepias curassavica*, also called Mexican Milkweed, Scarlet Milkweed, or Silky Gold. This species of milkweed has naturalized itself in our state and has become the Monarch caterpillars' mainstay diet over our Louisiana native milkweeds because it is very easy to grow, sprouts and grows quickly, plus Monarch caterpillars love to consume it! Tropical milkweed contains high levels of toxins that make the Monarch caterpillar distasteful to predators such as lizards, wasps, birds, etc. In the insect world, the caterpillar's yellow, black and white stripes it sports are a signal to predators that "I taste bad!"

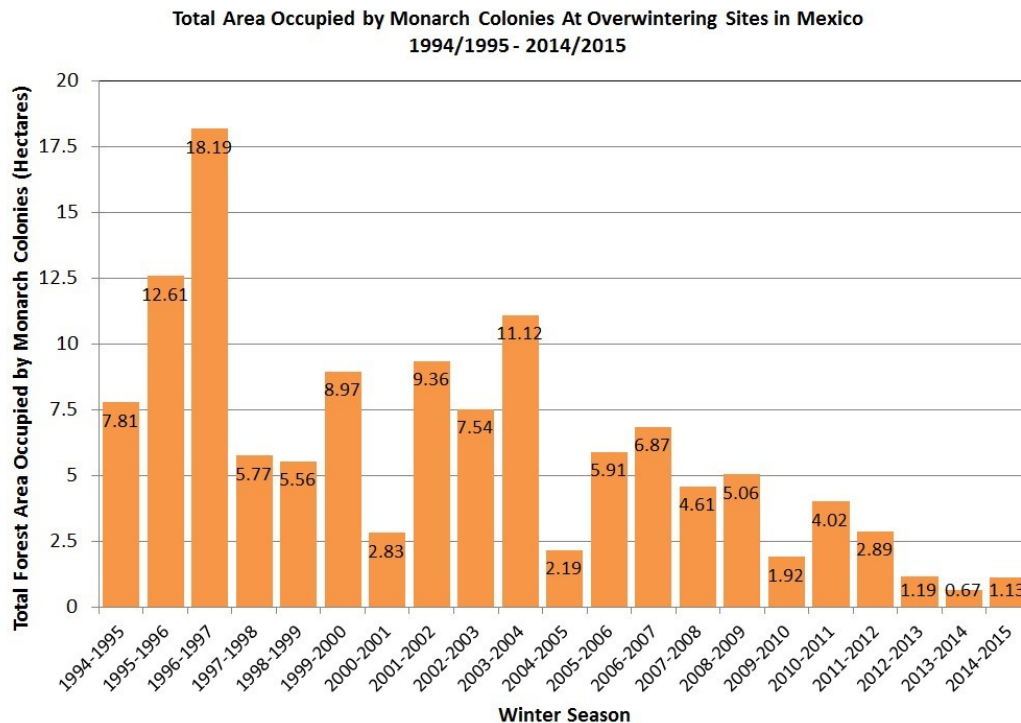
For years, the national conservation group Monarch Watch has sponsored the Monarch Tagging Program which studies the Monarch butterflies' migration habits. Interesting graphs and other findings can be viewed on their website, which shows all of the overwintering population areas and their annual migration routes. Their sister website, Journey North, allows citizen scientists to post their Monarch sightings online to share with other interested folks who like to follow their annual flights.

I personally can report that my raising Monarchs records go as far back as 1983 when I was participating in the Monarch tagging program started by Dr. Fred Urquhart in Toronto, Canada. (Dr. Urquhart is the person whose tagging program helped North Americans discover the Mexican overwintering grounds back in 1975.) Raising Monarchs year round, from January through December, has been and still is common here in New Orleans, using tropical milkweed. In fact, for as long as I can remember, tropical milkweed seeds and plants have been the only milkweed variety readily available in our local garden centers and plant nurseries. My mentor, Frances Welden, has raised Monarch caterpillars on tropical milkweed since the mid 1950's, also using tropical milkweed. These many years, well-meaning gardeners have created an unnatural situation

in which the resident Monarch butterfly population does not migrate. Our tropical climate allows the tropical milkweed plants to grow year round and the female butterflies continue to lay eggs as long as they can locate the plants. This year-round activity is interrupted only occasionally by hard freezing winters that none of the Monarchs can survive, as happened last winter 2017-2018.

In the Spring of 2014 NBC's bleak report that overwintering Monarch populations had reached an all-time low shocked and alarmed the nation. Was this caused by global warming? Or was it the new array of neonicotinoid pesticides that caused colony collapse in honey bees? Or was it the destruction of habitat due to cutting of the special Mexican forests? In response to the crisis, butterfly specialists, citizen scientists and naturalists from all over the world rushed to give their ideas and theories to help figure out why this was happening.

When the headline that we might lose our Monarch migration hit the evening news, gardeners and naturalists over the entire United States were spurred into action, questioning "What must we do to remedy this?" The answer was, "Plant milkweed--use native whenever you can--but, plant milkweed." We all immediately trotted over to the garden cen-



data from 1994-2003 were collected by personnel of the Monarch Butterfly Biosphere Reserve (MBBR) of the National Commission of Protected Natural Areas (CONANP) in Mexico. Data from 2004-2015 were collected by the WWF-Telcel Alliance, in coordination with the Directorate of the MBBR. 2000-01 population number as reported by García-Serrano et al. (The Monarch Butterfly: Biology and Conservation, 2004)

ter, and what plants were available? The tropical milkweed!

Before we go any further, let's discuss the dreaded parasite and its relationship to the tropical milkweed. O.E.

(*Ophryocystis elektroscirrha*) is a protozoan parasite that is spread from one Monarch butterfly's body to another during mating. Males and females can be carriers of the spores without becoming infected, shedding spores on other butterflies and also onto plants they touch. When the female lays her eggs, she unknowingly transfers the spores onto the eggshell and surrounding leaf. When the caterpillar hatches, it always eats the eggshell as its first meal. This is how the caterpillar becomes infected. The spores activate when they reach the caterpillar's gut. The spores multiply, and then it's pretty much a sure thing that the creature will not finish its cycle properly. How long the spores are multiplying in the gut determines how serious an OE infection will be. A fifth instar caterpillar that eats a few spores on a leaf just before forming a chrysalis will have a minor infection compared to a caterpillar that ate spores on its eggshell and is bursting with them by the time it is ready to pupate.

What really clarified the severity of this issue for me was a conversation I had with Christen Steele, a Tulane researcher working locally on the O.E. issue. Christen told me that last fall she monitored 40 gardens in the Uptown-Carrollton-Garden District of New Orleans. Her data showed that our

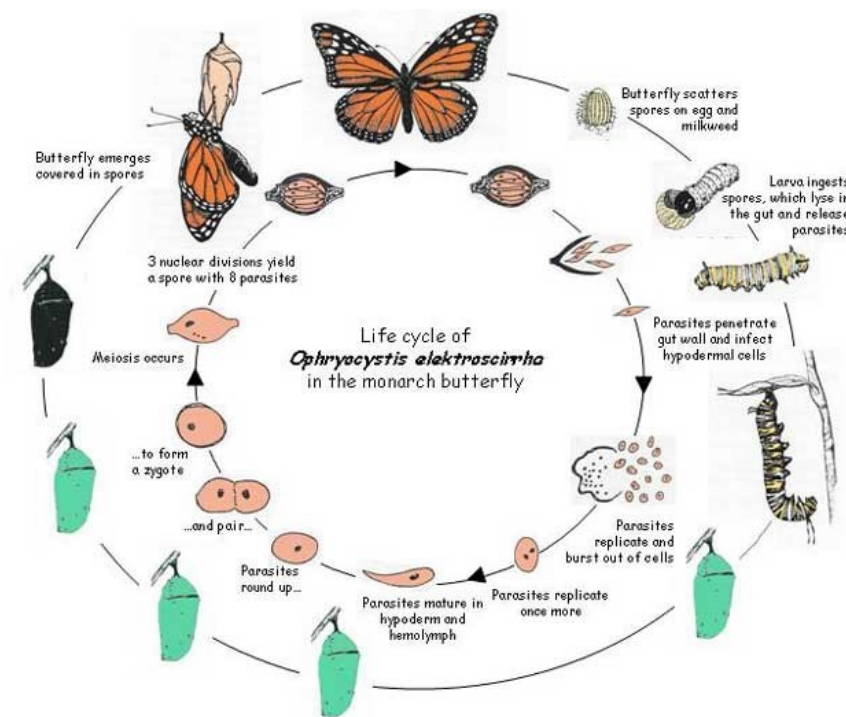
Monarch population was 97.37% sick with O.E. I was totally shocked. I was always in the opinion that, if we did lose our main Monarch migration, wouldn't it be good that we have a separate resident population overwintering here in New Orleans? Well, if 97.37% is sick with O.E., how could this be good?

Many folks who have raised Monarchs have witnessed the different stages of O.E. infection but were unaware of what it was or what it meant.

Christen invited me to her Tulane laboratory and showed me how to test the Monarch butterfly for O.E. infection. Holding the live adult butterfly with its abdomen and legs pointing up toward you and the wings pointing down, gently and softly press a piece of



Christen Steele in Tulane laboratory



Life cycle of O.E. in the Monarch butterfly

clear tape to the abdomen then peel it off. Under a microscope the long oblong objects are the butterfly scales. Dots that look like pepper are the O.E. spores. At high magnification, the spores are shaped like footballs. Any butterfly that tests positive for O.E. should not be released into nature.



The four symptoms of serious O. E. infection are:

1) When the caterpillar begins its "J" formation to pupate, only the head turns green and

it does not completely form a chrysalis,

2) The chrysalis has black spots, is all black and/or does not hatch, 3) A hatchling butterfly is stuck inside the pupal casing, cannot emerge properly and/or its wings are deformed, 4) A newly hatched butterfly does not have enough strength to hang onto its pupal casing and then falls to the ground in a mangled mess. Any of these four signs would confirm that the caterpillar or butterfly is infected with O.E. and should not be released into nature. Personally, I have placed the hatched butterflies with mildly deformed wings into a designated container filled with flowers and fruit so they can live out their lives contained until they die.

Those of us living in the New Orleans metropolitan area are in a transition period now with

understanding the link between Monarch butterflies, O.E. and varieties of milkweed. Acting as citizen scientists, we can contribute scientific study to investigate whether tropical milkweed is sheltering and fostering the O.E. parasite by keeping it alive and well through the winter months, thus causing the Monarchs to stay year round in our area instead of migrating to Mexico.

Three years also, I purchased nine different Louisiana native milkweeds and began experimenting in growing them. I discovered that each one requires different site-specific growing conditions. For instance, the "Butterflyweed", *Asclepias tuberosa*, prefers a sunny spot with very good drainage. By trial and error, growers have found that pine bark and sand is its perfect mixture. Aquatic milkweed, *Asclepias*



Digital picture of scales and spores obtained from an infected monarch. OE spores look like dust particles in this picture



Same picture after digitally removing scales. Computer then does the rest. There are approximately 3600 spores in this picture!

perennis, as well as the Swamp milkweed, *Asclepias incarnata*, prefer wet roots. I have seen the Aquatic actually growing in standing water during field trips to the Bonnet Carre Spillway and at Honey Island Swamp. This past winter's frigid temperatures did not faze the Aquatic milkweed plants, whereas the tropical froze to the ground.

As gardeners, many of us have a bed of tropical milkweed and no native milkweed plants. As we transition to the more desirable native plants, what are our options in regards to our established tropical milkweed? My recommendations, like so much in nature, are evolving, but here is what I currently think are the best options:

- 1) Keep it but cut it down to the ground in June and October,
- 2) To prevent "egg-bombing", get tomato cages and cover the tropical plants with netting so that Monarchs cannot overload the plants with eggs
- 3) Remove and replace tropical with native milkweed.

Cutting down the tropical milkweed in June and October



forces it to grow on the same cycle as the native milkweeds and the Monarch migration. Personally, after much contemplation, I have chosen to dig up the tropical milkweed and replace it with multiple patches of Aquatic and Butterflyweed at both my home and work gardens. I potted up the tropical milkweed plants and quarantined them in my greenhouse to see if the Monarchs will use the native plants. Most of these tropical plants died back with this past winter's freezes. The new growth in spring was free of spores since our resident population was killed by the 22-degree temperatures and the migration had not flown through our area yet. Many of my friends are using the net-

ting process to either stop Monarchs from using the existing tropical milkweed plants--keeping leaves uncontaminated for use in raising caterpillars--or controlling the number of eggs laid on the plants in their gardens.

Because of the high rate of O.E. found in our area and the fact that the spores are extremely easy to spread in home Monarch raising operations, I am personally recommending, this year, that my "Caterpillar Mamas" join me to leave their Monarch caterpillars in the yard and not bring them indoors to raise. Only the strong shall survive! I admit it influenced me when I realized the work it would take to make indoor raising hygienic. O.E. spores cannot be controlled by ordinary cleaning agents and the spore life is longer than one year. Winter doesn't kill it. Anyone who feels they must raise Monarchs indoors should be willing to run a sterile operation and should follow specific guidelines set by Monarch Watch to avoid contributing to the Monarch demise.

- 1) First, caterpillars must be raised singly, only one caterpil-



An infected pupa may develop dark spots or blotches two or three days before the butterfly emerges. These abnormal dark areas are parasite spores. Spores form on the eyes, antennae, wing veins, but mostly on the abdomen. You can see the spores through the outside layer of the pupa a day or two before the pigments that color the butterfly normally darken the pupa. Before a butterfly emerges from the chrysalis, pigments are laid down coloring the scales that cover the butterfly. The normal change in the color of the pupa is symmetrical. The color change of an infected monarch happens earlier and does not create a balanced pattern on the pupa. From MonarchHealth

lar per container, because one infected caterpillar will infect all of the rest. Wooden containers are difficult to keep sterile--glass or plastic is better.

2) All milkweed plant material fed to caterpillars must be sprayed with a 10% Clorox bleach solution, then triple rinsed and thoroughly dried before offering it as food to your caterpillar.

3) Clean all raising containers at least once daily--twice is better--of frass and uneaten plant material.

4) Each container and all equipment and surfaces must be thoroughly cleaned after each caterpillar completes its chrysalis--20 minutes soaking in the 10% Clorox bleach solution, triple rinse and dry--before housing another critter.

Now that you have read all of this information, think it over and decide how you will attack this issue in your own garden. Here are some positive steps you can take:

1) Replace your tropical milkweed with native plants. I sell the Aquatic milkweed at my retail store -- Barber Laboratories located at 6444 Jefferson Highway in Harahan. (504-739-5715 --call me with any questions) You can ask your local garden center to order the native milkweed plants for you. Plants are available through Monarch Watch Milkweed Market online.

2) Participate in the Monarch butterfly monitoring process to help prove or disprove the link between O.E. and the tropical milkweed.

3) Talk to your friends, rela-

tives and neighbors who raise Monarchs to inform them of this issue.

4) Raise other butterfly species that do not have these parasites and issues. There are about 135 species of butterflies in Louisiana that are equally as amazing and exciting to watch as they go through their metamorphosis.

In closing, I ask each of you to accept the gardening challenge to grow Louisiana native milkweeds which will not only strengthen your yard's ecosystem by providing a fuel stop of nectar for a variety of insects but will also help provide the proper diet Monarchs need to survive. If the tropical milkweed is the cause of this O.E. issue, we have the power to change the situation. You won't see tropical milkweed growing out in the wild when you are hiking our local forest trails. Tropical milkweed exists in our gardens where we planted it. If we will join together to choose your method(s) by cutting it down in June and October, covering the plants with netting to prevent "egg-bombing", replacing the tropical milkweed with Louisiana native milkweeds, and leaving the Monarch caterpillars in the garden, we can make a difference to ***Help Bring Back the Monarchs!***

Appendix 1: Various Scientists Currently Studying OE in Monarchs and their websites

Dr. Sonia Altizer, University of Georgia:

<https://www.altizerlab.org/>

Has studied OE since 2000 (during her PhD). Worked

with Dr. Karen Oberhauser

Runs citizen science project "Monarch Health" which teaches citizens to catch and sample butterflies for OE: <http://www.monarchparasites.org/>

Dr. Jacobus de Roode, Emory University:

<http://deroodelab.org/>

Primarily studies the evolution of OE and how it may become more lethal when butterflies are fed tropical milkweed

Dr. Dara Satterfield, recently completed PhD with Dr. Sonia Altizer at UGA and now working at the Smithsonian National Zoo

<https://nationalzoo.si.edu/conservation/dara-satterfield>

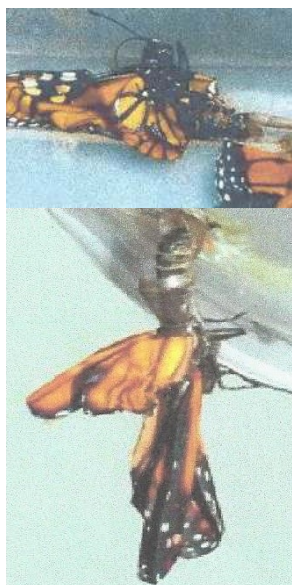
Christen Steele, current PhD student at Tulane University working with Dr. Sonia Altizer and Dr. Caroline Taylor

Studying the effect of tropical milkweed and OE on the ability of monarchs to end migration, break diapause and remain along the Gulf Coast through winter

Also tracking the prevalence of OE in New Orleans throughout the year

Appendix 2: The results of Christen Steele's monitoring in uptown New Orleans:

In total, 79 caterpillars were sampled between October 17, 2017 and December 22, 2017. Some of these were caught in the field as adults and sampled for OE, and some were reared in the lab and sampled for OE upon emergence from pupa. This data is extremely preliminary and further sampling may reveal lower infection rates



Adults that are heavily infected with OE are weak and often have difficulty emerging from the chrysalis. Some monarchs die before emerging. Others emerge, but are too weak to cling to the pupal case. They fall to the ground before fully expanding their wings. These severely deformed monarchs do not survive long.
From MonarchHealth

Infection Prevalence in Monarchs in New Orleans, LA from October 17th - December 22nd 2017	
Total Number of Monarchs Surveyed	Percent with Any OE Infection
78	97.37

during spring, summer and fall when uninfected migratory butterflies move into the Gulf Coast region. It is expected that infection rates are highest

in the winter months (November – February) when the amount of milkweed is limited to relatively isolated patches of tropical milkweed (*Asclepias curassavica*). These few patches in primarily urban and suburban areas would cause butterfly and caterpillar density

to increase on milkweed patches in comparison to densities during the breeding season when ample native milkweed patches are available.

Thanks to the following for their help in gathering information, pictures, and/or editing: Ginna Hoff, Christen



“Butterflyweed” - *Asclepias tuberosa* - Native



“Swamp” - *Asclepias incarnata* - Native



“Aquatic” - *Asclepias perennis* - The Best Native



“Silky Gold”

Asclepias curassavica - Not Native



“Scarlet”



August 1968. Doby's Seven Sisters Live Oak in Mandeville, Louisiana. Written on photo: "Champion Live Oak." Young girl standing next to the tree.



Forest scene documenting size of base of tree Forests and forestry, Louisiana, Photographs 1895, 1905 Lytle, Andrew David, 1834-1917



1960's. Two men standing beside pecan tree in Assumption Parish Louisiana. The man on the right is Pierre Joseph Noe (Noah) Blanchard. Pecan tree was the oldest and largest in circumference in the United States until it fell in the late Fall of 1971

Trivia - What Trees Recorded in Louisiana are on the Champion Trees National Register? by Dawn McMillian

Assimina parviflora, Smallflower Pawpaw - Fort Polk, La on 10/27/2014. Circumference: 2". Height: 8'. Spread: 11.5'.

Cornus drummondii, Roughleaf Dogwood - Vernon Parish on 2011. Circumference: 1'8". Height: 49'. Spread: 20'.

Crataegus spatulata, Littlehip Hawthorn - Vernon Parish on 2011. Circumference: 1'11". Height: 30'. Spread: 27'.

Ilex ambigua, Carolina Holly - Fort Polk, La on 4/20/2015. Circumference: 3.5'. Height: 16'. Spread: 8.5'.

Ilex coriacea, Large Gallberry - Vernon Parish on 2004. Circumference: 1'4". Height: 35'. Spread: 23'.

Pinus glabra, Spruce Pine - East Feliciana Parish on 8/15/2017.

Circumference: 14'11". Height: 122'. Spread: 76'.

Quercus incana, Bluejack Oak - Vernon Parish on 2010. Circumference: 8'1". Height: 58'. Spread: 61'.

Quercus virginiana, Live Oak - St. Tammany Parish on 1976. Circumference: 36' 7". Height: 55'. Spread: 132'.

Taxodium distichum, Common Bald Cypress - Cat Island National Wildlife Refuge. Crowned on 8/15/2017. Circumference: 53'11". Height: 96'. Spread: 74'.

Ulmus americana, American Elm - Iberville Parish on 2010. Circumference: 27'. Height: 111'. Spread: 79'.



National Champion Bald Cypress Tree

Plant Identification; the 80%-20% Idea

by Charles Allen

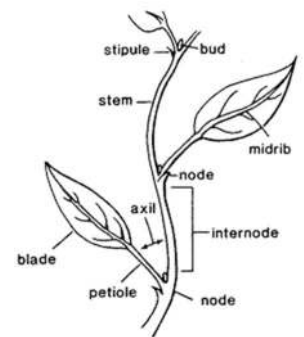
Most people, me included, do a lot of identification using the “gestalt” method. We recognize organisms (plants, animals, etc.) by the overall appearance of the organism. This plant is plant X just because it looks like plant X. The gestalt method works fine but can become a problem if we can’t justify why it is plant X and not plant Y or plant Z. This could just as easily be animal X, Y, and Z or any other organism. Using the gestalt method for identification may result in the combining or blending of two or more species into a single species and thus a reduction in the total number of species. This is not good news for those of you, like me that are on a continual Easter egg hunt. I am always looking to add a new species to my list of observed organisms and/or add a new distribution record for a species. I keep a running list of organisms (plants, birds, butterflies, moths, etc.) from Allen Acres. Bioblitz is an awesome word in my limited vocabulary (How is that for a 25 cent word?).

The identification of any of nature’s wonders: birds, butterflies, moths, beetles, bees, fungi, lichens, mosses, algae, and even plants requires that first you learn the words (glossary) used to describe and identify the organisms of that particular group. I can remember and now know why one of my plant id teachers (the late Dr. William Reese) testing students

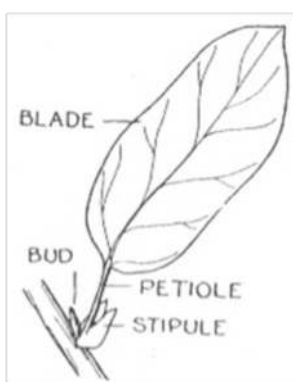
on words in the glossary. He would announce at the beginning of the course that the first third of words in the glossary could be on the first exam, the second third on the second exam, and the last third on the third (final) exam. In many (perhaps a better word most) cases, a person stumbles into the identification of a group of organisms blindly. I raise my hand as that is what I did with moths, a very large group of insects. Now, I know what the costa, AM and PM lines, and a few other terms used in moth identification mean. I still have a long way to go before I feel confident in my moth id. During one of my recent plant id classes at Allen Acres, we were also sheeting (checking out the sheets and mercury vapor lights for moths at night). I saw a moth but was not sure of which species and one of the students said “I am glad to hear you say that because I feel the same way with some plants”.

You are beginning to wonder why the title plant identification; the 80%/20% idea; patience grasshopper, we are coming to that. If you are looking at a plant that is alive and either has evergreen leaves or the calendar says that it is sometime between March and November in most of Louisiana, the leaves are very important in its identification. Note: many of the plants of extreme south Louisiana especially along the coast often

have leaves throughout the year and of course evergreen plants do also. I will include line drawings of most of the terms that I use in the following discussion and you should google and get additional images of these terms. The two most important leaf characteristics are the kind of leaf and the arrangement of the leaves. There are two major kinds of leaves, the simple and the compound. In order to explain the difference between simple and compound, we must first list the parts of a leaf. The blade is the green flattened part of the leaf and is connected back to the stem by the stalk called the petiole. In a few leaves, the petiole is absent and this leaf is said to be sessile. A leaf with a very short petiole is often termed sub-sessile. There are two plants that have edible petioles, celery and rhubarb. Some plants have a third part to the leaf, the stipules. Stipules are paired structures (always two of them) that are located on the stem at the base of the leaf (petiole). Many plants do not have stipules and the stipules in some plants fall off the plant quickly but often leave a stipule scar behind. Magnolia and yellow poplar (both in the Magnoliaceae, Magnolia family) have stipular ring scars on the stem and the garden or green or English pea plant has large green ear like stipules. Members of the smartweed family (Polygonaceae) have stipules that are fused into a structure



called the ocrea. In some plants (example black locust), the stipules are modified into pointed prickly structures called spines. Now back to what is a simple leaf? A simple leaf is one where the blade is not divided into smaller segments. The contrast to a simple leaf is a compound leaf where the blade is divided into smaller segments, each called a leaflet. A simple leaf evolved into a compound leaf and this can be demonstrated with a pair of scissors where you can cut up a simple leaf into a compound leaf with leaflets. How do I recognize a compound leaf? First, I need to point out that the point on a stem where the leaf is produced is called the node and at every node there is a leaf and a lateral bud. More about the number of leaves per node later. Each lateral bud has the potential of growing into a branch or lateral stem but not all do. There will be a lateral bud at the base of the leaf whether it is simple leaf or a compound leaf. Leaflets do not have lateral buds so that is one way to recognize a



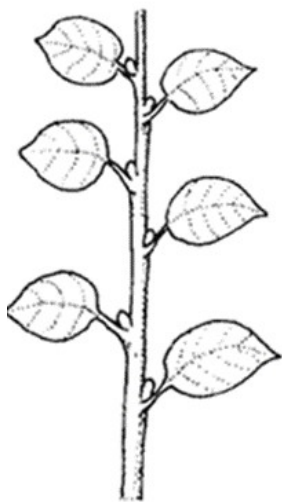
Simple Leaf

compound leaf; a compound leaf will have several green structures (leaflets) above the lateral bud but a simple leaf will have only one green structure, the blade above the lateral bud. The other way is that all the leaflets of a compound leaf will be or can be flattened in the same plane. Remember that simple leaves changed into compound leaves and you could make a compound leaf from a simple leaf by cutting it into leaflets. Thus leaflets should be flattenable (I just made that word up) in the same plane.

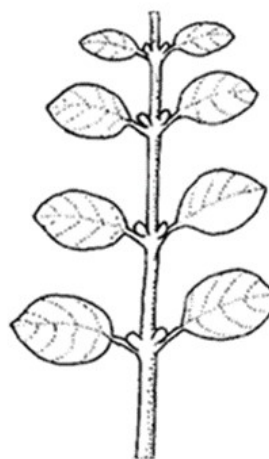
Now, we will talk 80%/20%. Most (80%) of plants have simple leaves and 20% have compound leaves. So, if you have a plant with compound leaves, your choices for identification are much smaller than one with simple leaves. More about compound leaves after the next paragraph. I will attach a list of woody plants with compound leaves that is taken from our book on "Trees, Shrubs, and Woody Vines of Louisiana". The idea of a list (chart) of 20%ers to facilitate id was presented to me by Dr.

Harry Winters. I began in botany learning to use keys and keys are still useful but are hard to learn to use. I think it was Dr. Reese who once said that keys only work for the person who wrote them. So, I now agree with Dr. Harry Winters that a chart is the way to go. Another factor that has changed since I began in botany, is the availability thru the internet of many, many pictures of plants and animals for identification. So, a chart will get you close and you can quickly google pictures of plants to choose from, thus identifying your plant without a key. Keys have gone the way of pay phones, typewriters, and floppy disks.

Remember the node mentioned earlier; the number of leaves at a node is called the arrangement. Most plants (80%) have one leaf per node and this is called alternate. The leaves do alternate from one side of the twig to the other. A few plants produce more than one leaf per node and this would fall into a 20% category. The most common of the more than one leaf per node is with two leaves and this is called opposite. Three common trees are noted for having opposite leaves; maples (*Acer*), dogwoods (*Cornus*), and Viburnum. A very few plants have more than two leaves per



Leaf Arrangement - Alternate



Leaf Arrangement - Opposite



Leaf Arrangement - Whorled

node and this is termed whorled. Catalpa and buttonbush (*Cephalanthus occidentalis*) are two examples of whorled leaved woodies and bedstraw (*Galium*) is an herbaceous plant with whorled leaves. A list of woody plants from Louisiana with opposite or whorled leaves is attached.

Another important leaf characteristic is the number of major veins located at the base of the blade or leaflets. The most common (80%) category is the pinnate with one major vein. That major vein is called the midrib (more later). The other category (the 20% one) is palmate, defined as more than one major vein and usually an odd number, especially three or five. Again, a list from our woody book of palmate major veined woody plants is attached. Maples are noted for having palmate major veins and hackberry or sugarberry (*Celtis*) is noted for being the narrowest blade with palmate major veins. A note before we go back to compound leaves and that is it seems to me that all leaflets (compound leaves) have pinnate major veins. Remember that simple leaves evolve into compound leaves; there are two major kinds of compound leaves, the pinnate

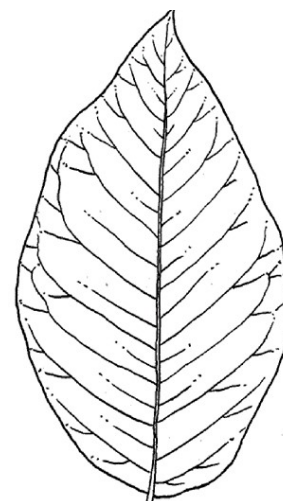
compound and the palmate compound. Thus, a pinnate compound leaf originates from a simple leaf with pinnate major veins and a palmate compound from one with palmate major veins. The leaflets in a palmate compound leaf all arise at the same point and there is no rachis (see below). The leaflets in a pinnate compound leaf are scattered along the rachis. The petiole is still present in a compound leaf and is the stalk that runs from the stem to the first leaflet(s). The stalk of a leaflet is termed a petiolule.

The midrib from the simple leaf becomes the rachis in a pinnate compound leaf and thus the leaflets are attached to it via the petiolule. Palmate compound leaves do not have a rachis and the petiolules of the leaflets are attached to the end of the petiole. Buckeye is a good example of a woody plant with palmate compound leaves. There are more variations possible in the pinnate compound leaf; some plants have pinnate compound leaves with a terminal leaflet thus having an odd number of leaflets and others do not have the terminal leaflet and thus an even number of leaflets. Ash and hickory have odd pinnate

compound leaves and black walnut has even pinnate compound leaves. The leaflets of pinnate compound leaves can be cut up into leaflets to create a two-pinnate (bi-pinnate) compound leaf or these leaflets could be cut up also and create a three-pinnate compound leaf. Some woody plants with more two or three pinnate (tri-pinnate) compound leaves include devil's walking stick and peppervine. Also note that poison ivy is a compound leaf with three leaflets and botanists wish that the saying "leaves of three, leave it be" were more accurate and educational "leaflets of three, leave it be".

Three other characteristics can be useful in the identification of a plant such as evergreen (20%) vs deciduous leaves (80%), odor when leaf is crushed (20%) vs no odor (80%), armed (20%) vs unarmed (80%), and woody vines (20%) vs tree or shrub (80%).

There are many other characteristics used in identifying of plants such as the margins of the blade or leaflet, shape of leaf, base of blade or leaflet, apex (tip) of blade or leaflet etc.



Pinnate Major Veins



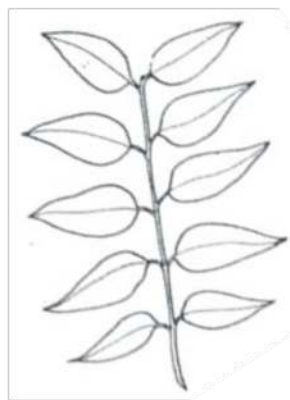
Palmate Major Veins



Palmate Compound Leaf



Odd Pinnate Compound Leaf



Even Pinnate Compound Leaf



Bi-pinnate Odd Compound Leaf

The bark, twigs, habitat and many other factors go into the iding of a plant. For me, the color of the leaves is important, I know that leaves are green but there are different shades of green and my color blindness seems to allow me to see the shades of green better than normal color vision people. There are five trees/shrubs in Louisiana with chambered pith in the twigs (black walnut (*Juglans nigra*), Virginia willow (*Itea virginica*), horseshoe (*Symplocos tinctoria*), and pawpaw (*Asimina triloba* and *parviflora*) and this fact can be used to verify your id. Most of these other characteristics do not fit into 80-20% categories as there are multiple (more than two) choices for these. But if you learn how to recognize the basic three 80-20% categories (simple or com-

pound leaves, alternate or opposite-whorled leaves, pinnate or palmate major veins), the identification of plants will be a lot simpler for you.

A good example of using the arrangement to identify plants is the native yaupon (*Ilex vomitoria*) and the non-native, Chinese privet (*Ligustrum sinense*). Both have dark green small evergreen leaves with pinnate major veins. Several people have pointed to yaupon and called it privet or pointed to privet and thought it was yaupon. The point to remember is that privet is opposite and yaupon is alternate. I have also been asked the difference between two coastal plants, salt bush aka groundsel aka baccharis (*Baccharis halimifolia*) and marsh elder (*Iva frutescens*). Again the answer lies in ar-

range, *Baccharis* is alternate and marsh elder is opposite. Of course habitat could come into play as marsh elder is restricted to the coast so all those plants at Allen Acres are *Baccharis*. I would like to grow marsh elder here side beside with *Baccharis* so I could show the classes the difference. That is one of my objectives this year is to try to grow marsh elder at Allen Acres as I keep the other resolution of not eating anchovy ice cream.

I also hope to develop charts for herbaceous plants but that will be awhile as there are so many herbaceous species and so much variation. Those charts would have to include flowers and there are a few already in the Louisiana Wildflower Guide.

Table 1. List of woody genera with opposite or whorled leaves. The * indicates that not all species in the genus and/or not all plants share this characteristic.

Acer	Cornus	Macfadyena
Aesculus	Decodon	Nerium
Avicennia	Decumaria	Osmanthus
Batis	Euonymus	Paulownia
Bignonia	Forestiera	Philadelphus
Borrichia	Forsythia	Phoradendron
Broussonetia*	Fraxinus	Ptelea*
Calamintha	Gelsemium	Punica*
Callicarpa	Hydrangea	Sambucus
Calycanthus	Hypericum	Scaevola
Campsis	Iva*	Staphylea
Catalpa	Jasminum	Symphoricarpos
Cephalanthus	Lagerstroemia*	Trachelospermum
Chionanthus	Lantana	Viburnum
Clematis	Ligustrum	Vinca
Clerodendrum	Lonicera	Vitex

Table 2. List of woody genera with compound leaves. The * indicates that not all species in the genus and/or not all plants share this characteristic.

Acacia	Erythrina	Pterocarya
Acer*	Fraxinus	Rhus
Aesculus	Gleditsia	Robinia
Ailanthus	Indigofera	Rosa
Albizia	Jasminum	Rubus
Amorpha	Juglans	Sambucus
Ampelopsis*	Koelreuteria	Sapindus
Aralia	Lespedeza	Sesbania
Bignonia	Macfadyena	Sophora
Campsis	Melia	Staphylea
Carya	Nandina	Toxicodendron
Cayratia	Parkinsonia	Vitex
Cissus	Parthenocissus	Wisteria
Cladrastis	Poncirus	Xanthorhiza
Clematis	Prosopis	Zanthoxylum
Desmanthus	Ptelea	

Table 3. List of woody genera with palmate major veins. The * indicates that not all species in the genus and/or not all plants share this characteristic.

Acer*	Ginkgo	Ribes
Ampelopsis*	Hedera	Ricinus
Aristolochia	Hibiscus	Sabal
Broussonetia	Liquidambar	Serenoa
Calyccarpum	Liriodendron	Smilax
Catalpa	Malvaviscus	Spiraea*
Celtis	Manihot	Tilia
Cercis	Morus	Vernicia
Clerodendrum*	Pachysandra	Vitis
Cocculus	Paulownia	Ziziphus
Ficus	Platanus	
Firmiana	Populus	

Table 4. List of armed (thorns, spines, or prickles or stems and/or leaves) woody genera. The * indicates that not all species in the genus and/or not all plants share this characteristic.

Acacia	Malus*	Rosa
Aralia	Opuntia	Rubus
Chaenomeles	Parkinsonia	Serenoa
Crataegus*	Pinus	Sideroxylon*
Elaeagnus*	Poncirus	Smilax
Erythrina	Prosopis	Yucca
Gleditsia	Punica	Zanthoxylum
Ilex*	Pyracantha	Ziziphus
Lycium	Ribes	
Maclura	Robinia	

Table 5. List of woody genera with strong odor to crushed leaves and/or stem. The * indicates that not all species in the genus and/or not all plants share this characteristic.

Acer*	Cryptomeria	Persea
Ailanthus	Cunninghamia	Pinus
Asimina	Halesia	Poncirus
Batis	Illicium	Prunus*
Calamintha	Juglans	Ptelea
Callicarpa	Juniperus	Rhus
Calycanthus	Lantana	Sassafras
Carya*	Lindera	Vitex
Catalpa*	Liquidambar	Zanthoxylum
Cinnamomum	Liriodendron	
Clerodendrum	Magnolia*	
Croton	Morella*	

Table 6. List of woody genera with evergreen leaves. The * indicates that not all species in the genus and/or not all plants share this characteristic.

Ardisia	Ilex*	Photinia*
Arundinaria	Illicium	Phyllostachys
Avicennia	Jasminum	Pinus
Baccharis*	Juniperus	Prunus*
Batis	Kalmia	Pyracantha*
Bignonia*	Lantana	Quercus*
Borrchia	Leucothoe	Ricinus
Cayratia?	Licania	Rosa*
Chionanthus*	Ligustrum	Sabal
Cinnamomum	Lonicera*	Salicornia
Cliftonia	Lyonia	Scaevola
Croton	Macfadyena	Sebastiania*
Cryptomeria	Magnolia*	Serenoa
Cunninghamia	Morella	Smilax*
Cyrilla*	Nandina	Symphoricarpos
Elaeagnus*	Nerium	Symplocos*
Eriobotrya	Opuntia	Tamarix
Euonymus*	Osmanthus	Vaccinium*
Gelsemium	Pachysandra	Vinca
Hedera	Persea	Yucca
Hypericum	Phoradendron	

Table 7. List of woody genera that are vines. The * indicates that not all species in the genus and/or not all plants share this characteristic.

Ampelopsis	Cissus	Rosa*
Aristolochia	Clematis	Rubus*
Berchemia	Cocculus	Schisandra
Bignonia	Decumaria	Smilax*
Borrchia	Gelsemium	Trachelospermum
Brunnichia	Hedera	Vinca
Calycocarpum	Lonicera*	Vitis
Campsis	Macfadyena*	Wisteria
Cayratia	Parthenocissus	
Celastrus	Pachysandra	

Table 8. List of woody genera that do have any of the unusual characteristics. These plants have alternate, simple deciduous leaves with pinnate major veins. The leaf and/or stem does not have an odor, the plants are not armed and are shrubs or trees, not vines. The 1,2,3,4,5,6, or 7 indicates that some species or some plants do have one or more of the unusual characteristics and the number indicates the appropriate Table number.

Alnus	Amelanchier	Baccharis - 6
Betula	Carpinus	Castanea
Ceanothus	Clethra	Corylus
Crataegus - 4	Cyrilla - 6	Diospyros
Dirca	Fagus	Frangula
Gaylussacia	Hamamelis	Ilex - 4, 6
Itea	Iva - 1	Lagerstroemia - 1
Licania	Magnolia - 5, 6	Malus - 4
Nyssa	Ostrya	Oxydendrum
Photinia - 6	Planera	Polygonella
Prunus - 5, 6	Pyrus	Quercus - 6
Rhamnus	Rhododendron	Salix
Sideroxylon	Solanum	Spiraea - 3
Stewartia	Styrax	Symplocos - 6
Taxodium	Triadica	Ulmus
Vaccinium - 6		

Louisiana Native Plant Society Group in Facebook by Bonnie LaBorde Johnson

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The word is spreading about the benefits of using and appreciating native plants in our Louisiana landscapes. Gardeners are hungry to learn more. Young people just starting their gardens are excited about gardening in a more efficient and sustainable way. Over the last few years, extremes in weather have hastened the movement toward the use of native plants. Native plants are survivors.

This group has been expanding over the years as native plant enthusiasts have shared the knowledge passed on by Charles Allen, Bill Fontenot, Charlotte Seidenberg, and Marc Pastorek to name a few. Many of these founding "fathers" and "mothers" of the Louisiana native plant movement are the very individuals who respond to many questions posed in this group. Master Gardeners have joined the

movement and are trying to synthesize the data, sources, methods, and lessons learned by many experts in the field, to strengthen the value and use of native plants in landscapes within each Region.

With so many new members, we have asked you to help us help you more by following simple guidelines. We understand this is not going to be black or white in all cases. If you don't know the name of a plant, there is a "plant I.D." group that will identify the latin name of the plant. All you have to do is post a photo after being accepted as a member in that group, and your location. There are over 30,000 members in that group and many Administrators so you will likely get a quick response. Then, by entering the latin name identified into the "plants.usda.gov website," as described by the Administrator

of this group, a map will depict whether or not the plant includes the State of Louisiana. You will then be able to fine tune the question that you have for this group already knowing the name of the plant and its native status.

We are a small group and our single Administrator is responsible for multiple groups. However, an enormous amount of valuable data is being gained and shared in our group by everyone from our new enthusiasts to seasoned and expert enthusiasts. We are receiving very enthusiastic responses from people who love the group. We are happy to report that we have had very few instances where anyone has had to be muted or blocked from the group. Of course we want all of our communication to be as positive and informative as possible and we are open to constructive feedback



<https://www.facebook.com/groups/louisiananativeplantsocietygroup/>

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Mark Your Calendars!!

- Next Louisiana Native Plant Society Newsletter will be September 22, 2018. Send in your articles by September 15, 2018.
- Next Louisiana Native Plant Society Meeting is February 1-3, 2019

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