



A quarterly online magazine published for Master Gardeners in support of the educational mission of UF/IFAS Extension Service.

Ants in Your Plants May Be Looking For A Sugar Fix

By Ellen Mahaney, Master Gardener

If you see ants in your plants, chances are they may be satisfying their sweet tooth. To do this, these annoying insects can participate in any one of three symbiotic relationships leading to sweet rewards. If they were human beings rather than ants, the terms of the mutual benefits would roughly translate into such words as, "Gimme your nectar and I'll protect ya."

For gardeners the most distressful symbiotic relationship choice for ants is with aphids, mealybugs or scale insects sucking the life out of treasured plants. While these insects feed on the vital leaf juices, they excrete honeydew, a combination of sap and waste products irresistible to ants. (This sticky mess also sets up the growth of sooty mold, a black fungus interfering with predator's photosynthesis.) In return for their rich desserts, ants protect their charges against beneficial insects who would otherwise eat them.

A distressful symbiotic relationship for butterfly gardeners occurs between ants and many plants with extra floral nectar glands (EFNs), filled with a mixture of glucose, sucrose, protein, amino acids and organic acids. Depending on the plant, EFNs are found in leaf margins, leaf axils, petioles, flower bracts, sepals, and flower stalks and stems. In return for nectar from EFNs, ants destroy nearby feeding insects.

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Ant is flanked by two extra floral nectar glands on elderberry bush Credit: IFAS

Unfortunately, among the long list of plants with EFNs are locally significant butterfly host plants: the wild cherry tree of the Prunus family, host for the Eastern Tiger Swallowtail caterpillar; purple passion vine, host for the Julia, Gulf Fritillary and Zebra Longwing caterpillars; senna species, host for the Cloudless Sulphur, Barred Sulphur and Sleepy Orange caterpillars; and willows, hosts for the Zebra Swallowtail and Viceroy caterpillars. So after ants sip their sodas from any of these larva plants, they may literally “carry out” a caterpillar or egg for their family back at the hill.

Yes, the ant is one of the main predators of butterflies in any of the four stages of metamorphosis. Yet several caterpillar species of the Gossamer Wing family benefit by a symbiotic relationship with ants. Ants protect these caterpillars in exchange for yet another variety of nectar. A dorsal nectary organ (DNO) in the caterpillar’s eighth abdominal section fills with a syrupy secretion of fructose, glucose, sucrose and trehalose, which ants retrieve by tickling or massaging the DNO. By guarding their food source, ants save caterpillars from a variety of predators.

Even birds back away from caterpillars covered with bitter tasting, biting ants. Depending on the symbiotic relationship in which ants involve themselves, gardeners may be spraying horticultural oil, decrying the death of caterpillars, or experiencing the miracle of seeing more caterpillars living to adulthood through the care of a known enemy. Wouldn’t it be wonderful if gardeners could make the choice for the ants?



Left: Ant sips from the dorsal nectary organ on a Ceraunus Blue caterpillar. Right: Ants prepare to drink a mealybug honeydew treat. Credit: Bugguide.net

Feed Our Bees

By Melinda Moreschi, Master Gardener

Pollinating our world for the past 130 million years, bees are indispensable to humankind. Bees pollinate 80% of flowering plants and one third of everything that we eat.

130 million years ago, there were no orchids, daisies, cherry blossoms, or buttercups. Flowers were typically dull in color, brown and green. Plants, because they could not move, relied on wind to get their pollen dispersed to the female reproductive parts of other plants. With the arrival of bees, however, flowers became colorful in their effort to appeal to bees. The landscape became clothed in brightly colored flowers.



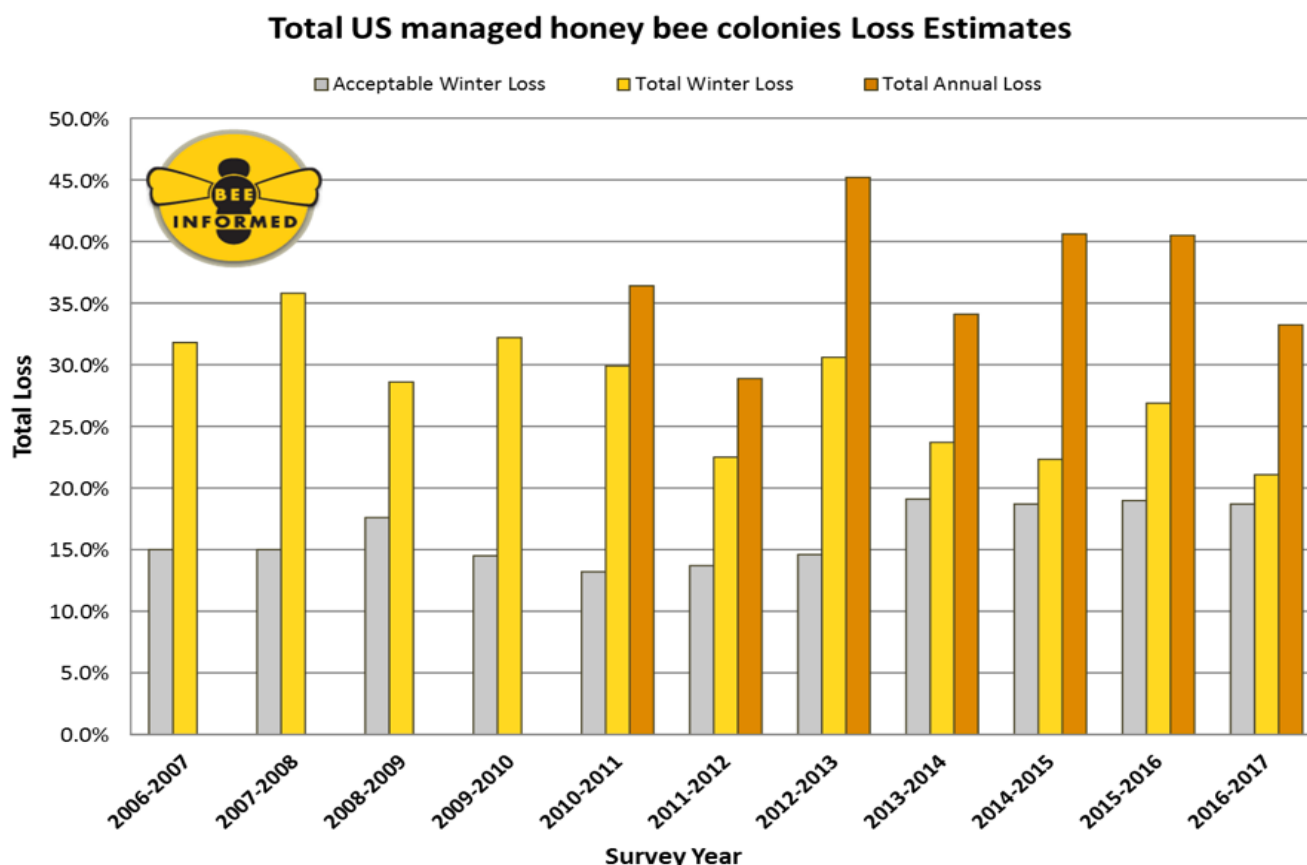
Female Honey Bee (*Halictus ligatus*)

https://commons.wikimedia.org/wiki/File:Halictus_ligatus_f.jpg

Among the approximately 25,000 species of bees on the planet, the honey bee is the one most people know. Honey bees are responsible for \$30 billion a year in agricultural crops. Unfortunately, their populations began declining about a decade ago. Much of the decline appeared to be the result of Colony Collapse Disorder (CCD), where worker bees would abruptly abandon the hive, leaving the queen and their offspring behind. Without worker bees, the hive would soon die. The causes for CCD are not yet clear. Possible causes of CCD include:

- Invasive varroa mites which live inside the beehives.
- Genetically modified crops and pesticide usage, specifically neonicotinoids. These systemic insecticides coat the seeds and penetrate all parts of the plant, showing up in the plant's nectar and pollen.
- Inadequate bee nutrition, affecting the bee's ability to fight pests and disease.
- Loss of biodiversity when farmers plant only one crop (monoculture).
- Traditional bee pests and diseases
- Air pollution
- Poor colony management by beekeepers (splitting hives, chemical use, swarm control)
- Lack of genetic diversity and lineage of Queen bees

Summary of the total overwinter colony losses (October 1 – April 1) of managed honey bee colonies in the United States across nine annual national surveys. The acceptable range is the average percentage of acceptable colony losses declared by the survey participants in each year of the survey. Used with permission from: The Bee Informed Partnership (<https://beeinformed.org/results/colony-loss-2015-2016-preliminary-results/>)



What can we do to help?

According to the USDA Forest Service and partners funded by the National Science Foundation, one way to increase bee abundance and diversity is to mow your lawn less often, allowing weeds to grow and therefore providing nectar and pollen for the bees. This, however, is only helpful if you do not use pesticides or herbicides.

Jay Williams from Williams Honey Farm in Tennessee suggested that we stop growing beautifully manicured front lawns, "beautiful wastelands," where there is no food for pollinators. He asks us to treat our yards as if they were our pets, creating gardens that feed our indispensable bees.

By avoiding the use of pesticides, buying regional and organic food, and planting bee-friendly organic flowers, we can help feed the bees.

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Tarpon Springs Community Garden

By Ryan Farley, Master Gardener

Tarpon Springs, at the north end of Pinellas County, has a lot going for it. In addition to its rich Mediterranean heritage reflected in the Sponge Docks, Epiphany celebration, and historical district, it has beaches from which to watch outstanding sunsets. Now, after two years of planning and preparation, it has something new. It is joining the growing list of cities that have a community garden. Jessie's Garden, also known as the Tarpon Springs Community Garden, is at 116 Ring Avenue, close to city hall and just east of the Pinellas trail.

Jessie Burke was a longtime resident of Tarpon Springs. When she passed away, she left her property to the city with her wish for it to become a community garden. The property is 150 feet long, running from east to west, and 60 feet wide, north to south. It is a perfect location for plants.

The City of Tarpon has played a huge part in the cultivation of Jessie's garden. It provided supplies to make the garden a reality. The City donated fencing, water main lines, water, and concrete walkways for ADA and shed access. Volunteers have donated time and effort.

Each garden plot will be 4 feet x 10 feet. Currently, the garden has 10 garden beds in place ready for soil and plantings. The ultimate goal is to have 30. On May 19, the soil delivery will arrive and the first beds will be ready for action.

Finally, after two years of effort, the volunteers of the Tarpon Springs Community Garden are ready to celebrate the results of that effort. Like many plants, we are resilient in our efforts to grow. As president of the garden, I am proud to be a part of Tarpon Springs' first community garden. For more information or any questions, please contact our Tarpon Springs Community Gardens Facebook page or email us at Tarponspringscommunitygarden@gmail.com



The author, Ryan Farley, with volunteer Jim Mannino.



Getting Wild in the Garden

By Theresa Badurak, Urban Horticulture Extension Agent and Master Gardener Coordinator

No, I'm not talking about spring break kind of wild! I am talking about encouraging native animals to live in your backyard. There are specific things you can do to make that happen. To begin, replace sections of turf with wildflowers and groundcovers; bonus points if they attract butterflies and other pollinators. Here are a few good choices (always match water and sunlight needs to your site conditions):

Coreopsis spp., tickseeds

Dyschoriste oblongifolia, twinflower

Gaillardia pulchella, blanketflower

Helianthus debilis, beach sunflower

Mimosa strigillosa, sunshine mimosa

Mitchella repens, partridgeberry

Phyla nodiflora, turkey tangle fog fruit (aka matchweed)



A male cardinal. Photo Credit: UF/IFAS

Plant small areas throughout the lawn with native plants of varying heights and textures. This will reduce the lawn and replace it with space for animals to hide, nest, and forage for food. Every little island counts; there is no need to tear up an entire lawn. Turf is not bad, but a monoculture of only one plant is bad. Native plants are best for native wildlife. Some good native "island" plants might include:

Tall:

Ardisia escallonioides, marlberry

Chrysobalanus icaco, cocoplum

Coccoloba uvifera, seagrape

Forestiera segregata, Florida privet

Hamelia patens, firebush

Ilex vomitoria, yaupon holly

Myrcianthes fragrans, Simpson's stopper

Viburnum obovatum, Walter's viburnum



Seagrape. Photo Credit: UF/IFAS

Medium:

Callicarpa americana, beautyberry
Lyonia lucida, fetterbush
Muhlenbergia capillaris, muhly grass
Psychotria nervosa, wild coffee
Rhapidophyllum hystrix, needle palm
Serenoa repens, saw palmetto

Short:

Asclepias spp., milkweeds
Eragrostis spp., lovegrasses
Pilobus rigida, Florida pennyroyal
Ruellia caroliniensis, wild petunia
Salvia coccinea, tropical sage
Stokesia laevis, Stokes' aster
Zamia floridana, coontie



Pinewoods Treefrogs. Photo used by permission of Dr. Steven A. Johnson.

Do not plant, propagate, or otherwise encourage non-native invasive plants. Growing them in pots is not safe; removing flowers to prevent fruiting is not enough. Tell your friends and neighbors. Better yet, offer to help them identify and remove invaders. Want to take it even further? Ask your local nursery to stop selling invasive plants in the first place.

Dead tree in the landscape? Don't rush to cut it down if it's not a hazard to life or property. Snags are dead trees left in place to decay, allowing for a rich diversity of insect, bird, and mammal habitat and forage. Once a tree dies, simply remove the top portion that might fall on people and property and leave the rest to the critters. A height of about 15' is typically good but if close to the house, play area, or driveway it might need to come down. In that case place the log on the ground. Many species will use it as it decays.



Left: Woodpecker hole in a snag.
 Right: Downy woodpecker. Photo
 Credits: UF/IFAS





Swallowtail: Photo Credit:
UF/IFAS

Brush piles work well as cover for small animals including reptiles, birds, mammals, and insects. Eventually they break down into compost. Just position any horizontal logs and brush piles in a location where the neighbors will not complain, or put them in plain sight and use it as an educational opportunity if you dare! (Note: author is not responsible for letters from code enforcement.)

Like us, animals need water to survive. This one seems easy, but there are details to get right. A birdbath is the easiest way to accomplish this, although it limits the use for wildlife species mainly to birds (others usually can't reach it). Refill and clean birdbaths every few days (no bleach or other chemicals) by scrubbing with a textured sponge to remove algae. Don't place the birdbath among shrubs or other cover where predators can sneak up on busy birds. Instead, place it near enough to cover for the birds to escape when a predator shows up but not close enough to allow for an ambush.

You can provide areas for butterflies to "puddle" by burying a birdbath, plant saucer, or other shallow tub, fill it with sand and a few rocks, and keep it moist. Butterflies will visit this spot to drink from the wet sand.

If your space and budget allow, install a pond—this is the "Cadillac" of water sources for animals in your garden. Ponds at ground level allow for a greater diversity of species to use them, including small mammals, birds, amphibians, etc. Keep the water moving or remember that all standing water needs to be flushed every few days or treated with *Bt* (mosquito dunks) to kill mosquito larvae. Be mindful of children and pets' safety near open water. Drowning can happen in only inches of water.

Birds and bats are best accommodated with food and cover the natural way—with plants. Those snags you provide will be useful as bat and bird habitat. However, if you feel that your garden does not adequately supply these things you can supplement with people-made structures. The key to successful bird and bat houses is finding the right design for the animals in your area. Research the birds and bats who might be in your 'hood and aim for their needs. Plans and specifications are online at <http://www.batcon.org/resources/getting-involved/bat-houses> for bat houses and <https://nestwatch.org/learn/all-about-birdhouses/> for birdhouses.

Some additional plants for providing food and habitat for wildlife are *Ilex* spp. (hollies), *Lonicera sempervirens* (coral honeysuckle), *Morus rubra* (mulberry), *Myrica cerifera* (wax myrtle), *Pinus palustris* (longleaf pine), *Quercus* spp. (oaks), and *Sabal palmetto* (cabbage palm).

Most cats and dogs are predators so keep them away from wildlife areas. This means keeping cats indoors all of the time. They are an invasive exotic species. It's safer for cats inside, too. Ask your veterinarian about this at your next visit. Dogs are not as much of a concern in most cases. However, many dogs will chase small birds and mammals so if your dog has strong predator behaviors, monitor them in your wildlife area or provide them with a separate dog run. For some wildlife, just the smell of your dog may scare them away, so it's best to concentrate wildlife features as far as possible from Fido's regular hangouts.

Pesticides, even organic and natural ones, kill insects and some are harmful to mammals, birds, fish, and reptiles. Insects are food for larger wildlife. Don't destroy the natural food supply present in your yard just to protect your petunias. Let the beneficial insects keep a natural order in your garden and you will see more wildlife in time. Tolerate tattered leaves and flowers. Hey, nobody's perfect. Serious infestation in the garden? It could be the wrong plant in the wrong place. Move it or spot treat with the least toxic pesticide possible.

The final tip is the most challenging of all. Expanding the scale of habitat requires us to convince others to act. Talk to friends, family, and neighbors. When they see the rich diversity of wildlife in your garden, it will be an easy sell. Talk to your homeowner or condominium association if you have one and ask them to add some of these features to shared spaces in your community. Feeling bold? Talk to your city and county officials and let them know that increasing wildlife habitat is important to you.

Learn more: <http://edis.ifas.ufl.edu/pdf/files/UW/UW17500.pdf>



Left: Beautyberry; Right: Stoke's Aster and Blanket Flower. Photo Credits: UF/IFAS



Where Am I?

By Jane Morse, University of Florida Extension, Pinellas County.

As I look around it would be impossible to know I am in Florida by looking at the landscape plants. Nearly all of the plants used in our old-style landscapes are from somewhere else such as China, Asia, India, Japan, Brazil, Mexico, Australia, Africa, South America, Europe, and Madagascar.

These old-style landscapes are very hard on Florida. They can use huge amounts of water. Depletion of our aquifers (water supply) is serious and worsening. Fertilizers, pesticides, and other chemicals runoff or seep into our water causing pollution. Lost are the critical living and breeding sites for our native plants and animals. The number of threatened and endangered plant and animal species are increasing due to pollution, predation, and loss of habitat. Use of exotic plants often leads to the introduction and establishment of destructive invasive species.

Meanwhile our native plant habitats provide many important functions. They clean our water and air, generate food, control erosion and sediment, decompose (break down) and treat waste, provide hazard (flood, drought, etc.) relief, and moderate the climate. They do not require equipment that uses fossil fuels, no pipes or pumps are necessary to deliver water, no fertilizer is required. They run on sunlight, soil, air, water and a network of living things. They provide food, housing, and the ability for all the plants and animals of this habitat to live and reproduce.

For our future landscapes to be maintainable without harm to Florida, they will need to thrive within their environmental limits. The underlying site conditions of the property will provide the information for selecting the right plants to thrive. In Pinellas County, we have three major types of habitats: coastal strand, sandhill, and flatwoods.



Florida habitats. Photo Credits: UF/IFAS

Understanding the types of native habitats and their different site conditions provides the basis for choosing plants that thrive in them. The coastal strand habitat is along the shoreline. Plants here need to be salt and wind tolerant, prefer alkaline soils, and most will need to be drought tolerant too. The sandhill habitat is high and dry with poor soils. Plants must be very drought tolerant to survive here. Flatwoods can go from very dry to sopping wet, so plants here must be adaptable and able to tolerate drought and flooding.

Once you know which habitat your property best mimics, it is easy to choose the right plants. There are “sets” of plants that work in their given habitat and some generalist plants that thrive in all of these habitats. Native plants are specialty plants so you may not find them in the big box stores. Ask your local plant nursery to order them for you.

What you plant, matters! Start replacing those old-style exotic plants with new native plants. Florida and all its animals will thank you, and so will I.

There are many resources available to help you find the right plants. The University of Florida Extension provides a free Lawn and Garden Help Desk Monday-Friday from 8 AM to 4:30 PM. It is located at 12520 Ulmerton Road, Largo, FL. The Florida Native Plant Society has an excellent website for information: <http://www.fnps.org/plants>. Some excellent books include: “Landscaping for Florida’s Wildlife – Re-creating Native Ecosystems in Your Yard” by Joe Schaefer and George Tanner; “Priceless Florida – Natural Ecosystems and Native Species” by Ellie Whitney, D. Bruce Means and Anne Rudloe; and Florida Wildflowers in their Natural Communities” by Walter Kingsley Taylor.

For classroom learning, attend my class “Right Plant, Right Place by Habitat” at 12520 Ulmerton Road, Largo, FL. For a listing of class dates visit: <http://pinellas.ifas.ufl.edu/> Under the Lawn and Garden heading, look for classes/events.



Left: Beach Morning Glory, a coastal plant. Photo Credit: Dianne L Fecteau; Right: Example of a well-designed Florida landscape. Photo Credit: UF/IFAS.

Plant Identification

By Dianne L. Fecteau, Master Gardener

Over three Saturdays in March, I attended James Stevenson's course, Advanced Plant Identification, at Brooker Creek Preserve. The goals of the course were to:

- Learn major plant groups.
- Observe the essential characteristics when examining an unknown specimen.
- Become familiar with plant identification tools.
- Have knowledge of resources available for help with plant identification.

Starting the course with a discussion of the plant kingdom, James first covered mosses, ferns, and gymnosperms. He made the point that if you're holding a red flower, unsure of what it is, you can immediately eliminate these first three groups. He then discussed the differences between monocots (parallel leaf veins, seeds in one part, floral parts in multiples of three) and dicots (branching leaf veins, seeds in two parts, floral parts in multiples of four or five).

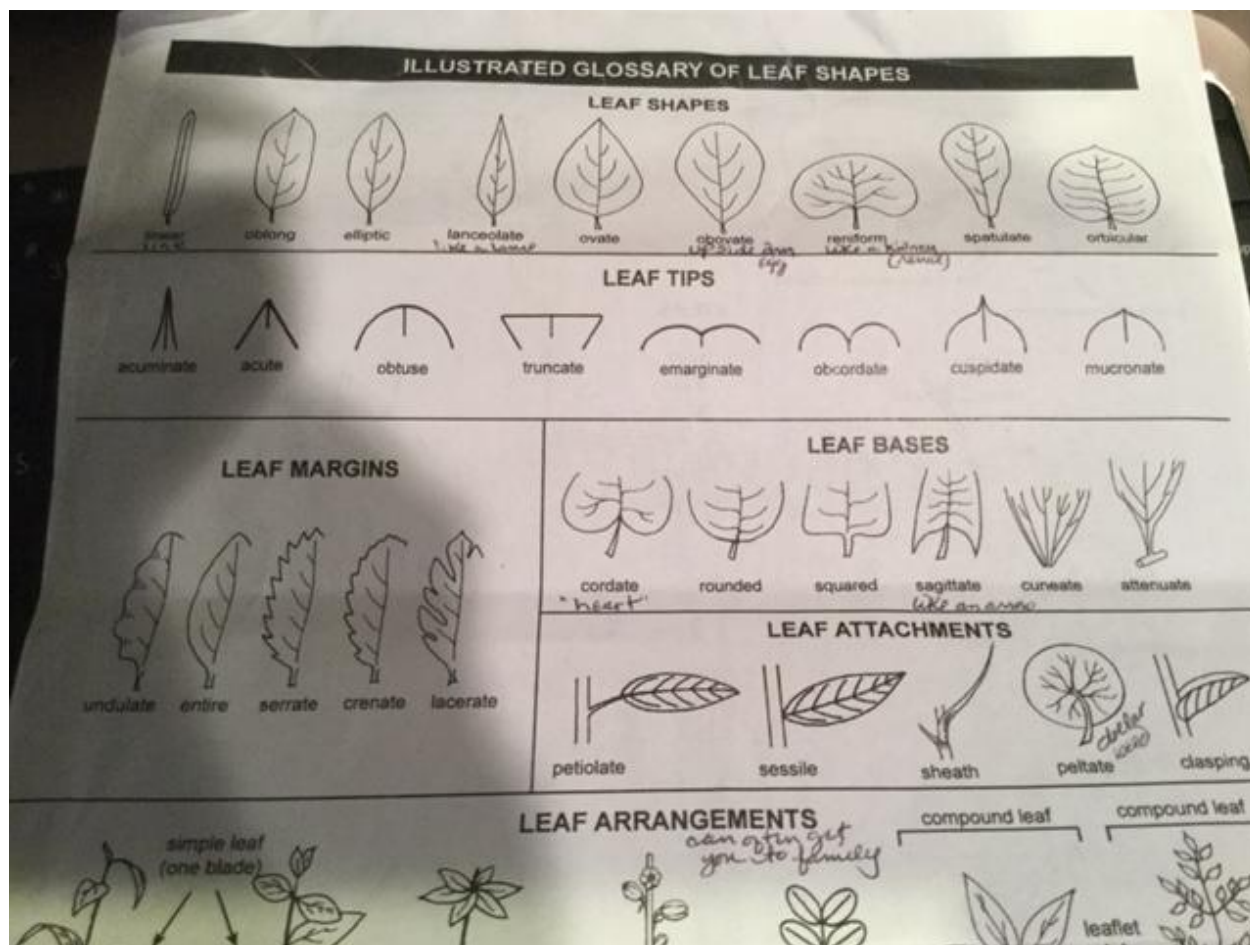
While I still find it challenging to identify an unknown wildflower, I no longer am reduced to aimlessly looking through pictures, hoping to discover what a plant is. The course provided an organized approach to plant identification.

What is that organized approach? Look at my photo of this flower:



Besides the pretty, purple flower, what do I observe when looking at this plant? It's a vine, growing near the ground, spreading outward.

Examining the leaves, I find they have a smooth texture. The margin (the outer edge) is entire, meaning that it doesn't have teeth or other indentations. Studying my glossary of leaf shapes, I decide first on elliptic. Maybe, though, its shape is spatulate (like a spatula). Leaf shape alone won't identify a plant so I keep both in mind. What else do I notice about the leaves? They're alternate, one of the more common arrangements. The leaf attachment is petiolate—the leaf has a stem.



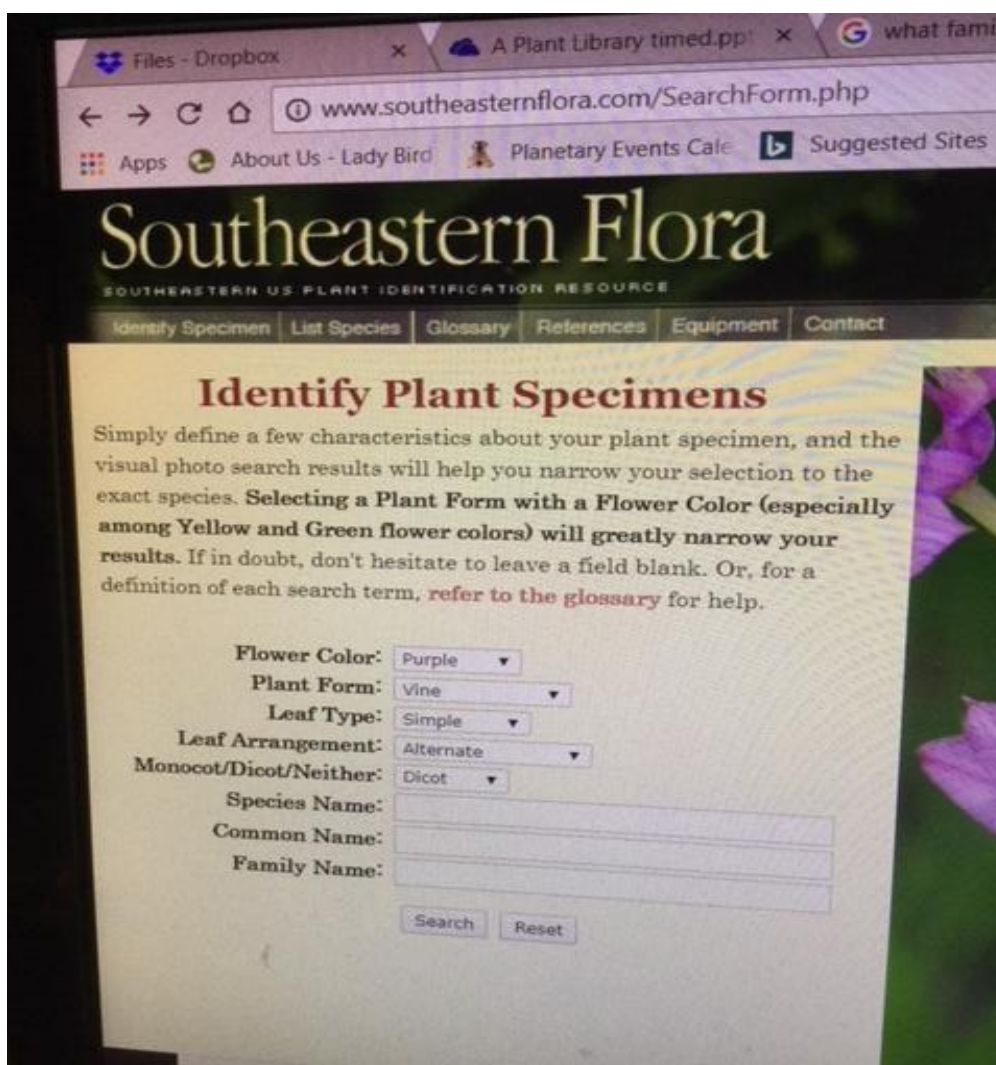
Leaf Glossary, 4th edition 3009. Copyright 1991 University of Florida, Center for Aquatic and Invasive Plants

What about the solitary flower? Its color, purple, is obvious. It has five petals so it's a dicot. I smell it but don't get a fragrance.

So what do I do now? I have pieces of the puzzle. I go home and begin leafing through "The Guide to

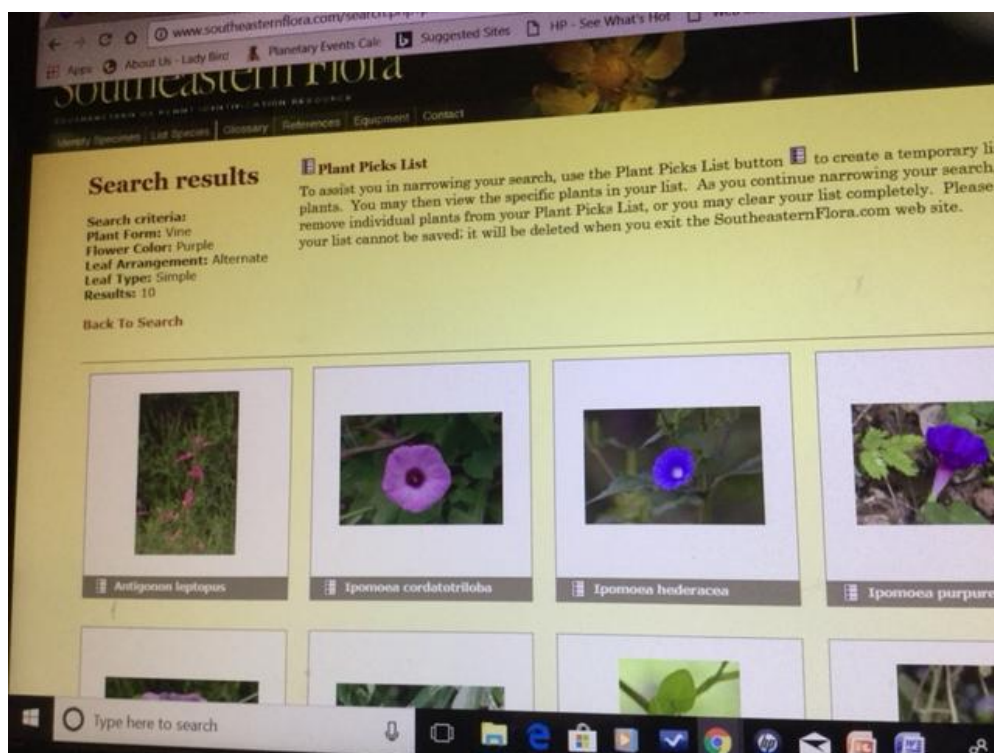
Florida Wildflowers" by Walter Kingsley Taylor. He also wrote, "Florida Wildflowers: A Comprehensive Guide". Kingsley separates the chapters by flower color so I begin at the section of purple flowers. Several pages in, I see similar flowers in pictures of various morning glories (the Convolvulaceae family). One, the railroad vine (*Ipomoea pes-caprae*), is identical to my picture. The description he includes matches the characteristics I observed. He identifies the plant's habitat as coastal beaches and dunes—exactly where I saw this specimen.

For an online query, I could have used the Southeastern Flora database (www.southeasternflora.com). The search page allows the user to enter flower color, plant form, leaf type, leaf arrangement, and whether it is a monocot, dicot, or neither.



The image shows a screenshot of a web browser displaying the Southeastern Flora website. The browser's address bar shows the URL www.southeasternflora.com/SearchForm.php. The website's header features the title "Southeastern Flora" and the subtitle "SOUTHEASTERN US PLANT IDENTIFICATION RESOURCE". Below the header is a navigation menu with links: "Identify Specimen", "List Species", "Glossary", "References", "Equipment", and "Contact". The main content area is titled "Identify Plant Specimens" and includes a paragraph of instructions. Below the text is a search form with several dropdown menus and text input fields. The form fields are: "Flower Color:" (set to "Purple"), "Plant Form:" (set to "Vine"), "Leaf Type:" (set to "Simple"), "Leaf Arrangement:" (set to "Alternate"), "Monocot/Dicot/Neither:" (set to "Dicot"), "Species Name:", "Common Name:", and "Family Name:". At the bottom of the form are "Search" and "Reset" buttons. A partial image of a purple flower is visible on the right side of the form.

After I enter these, I receive 10 results:



From these results, it appears my flower is in the morning glory family and while it did not display a picture of the railroad vine, I can then go to one of my books. I could also use the online Florida Plant Atlas (<http://florida.plantatlas.usf.edu/>). This comprehensive site allows you to search by common or scientific name.

James closed the course with several guidelines for going forward. The most important one is to practice. With Florida's abundance of plants, there is no shortage of specimens with which to practice.



Send your Articles and Photos

The next Issue of *The Dirt* is July 2018. The Deadline for articles is June 30. Share your passion for gardening with your fellow Master Gardeners by writing an article for *The Dirt*. Include images where possible. However, if you include images they must fall under one of the following guidelines:

- your own
- UF/IFAS image
- open access image, as in wiki-commons, where all rights are open and the photographer is credited
- used with the express permission of the photographer

When you do send images, please do not embed them within the article. Include them separately. Please send all files as Word files. I cannot edit .pdf files.

Do you like to photograph plants or trees but don't like to write? Send me your photos with a description, even without an accompanying article, and I'll publish them with the description as well as a credit to you, the photographer.

Send your articles, images, and your photos to Dianne Fecteau at dianne@kendiacorp.com. My phone number is 727.366.1392.

All articles are subject to editing. In addition, Theresa Badurek, Urban Horticulture Extension Agent and Master Gardener Coordinator, reviews and approves all articles prior to publication.

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