Time to Take a Walk on the Wild Side
By Ellen Mahany

On a cloudy October day at Brooker Creek Preserve, I was one of nine fortunate participants in a five-hour advanced plant identification class taught by James Stevenson, extension specialist. What a wonderful day. If you have not yet joined James on one of his Brooker Creek walks or in one of his plant identification classes, you should take this opportunity soon.

Trudging two hours through wetlands, we cooled off in a heavy shower, tramped on penny royal to release a pungent fragrance, viewed newborn rattle snakes, shot a close-up of a dewy spider and gazed at great variety of wild plants, collecting several for possible identification.

Back in the classroom we began the serious work of plant identification. We consulted books, looked under the round microscope and, as much as possible, hounded James. Eventually, James and his nine disciples sat together at a large table with reference books, magnifying glasses, the specimens and nine puzzled expressions. In a harmoniously cooperative venture, punctuated by James’ advice, we slowly identified wild flowers and a fern here and on the following page. Continued...
Time to Take a Walk on the Wild Side Continued...

**Virginia Chain Fern* Woodwardia virginica** (Blechnaceae family)  
Photo by ©Betty Wargo

**St. Peter’s Wort* Hypericum tetrapetalum** (Clusiceae or St. John’s Wort family) Image courtesy of SoutheasternFlora.com

**Blazing-star* Liatris tenuifolia**  
(Asteraceae family) Image ©Shirley Denton courtesy of Florida Native Plant Society.

**Seaside Goldenrod* Solidago sempervirens** (Asteraceae or Sunflower family) Image courtesy of Wikipedi.org.
Fragrant White Water Lilies in Florida Ponds
Linda Smock, Master Gardener Trainee 2015

Water lilies have floating leaves and are often seen in shallow water around a pond or lakes edges. The ones in many retention ponds throughout Pinellas County are known as the fragrant water lily (*Nymphaea odorata*), and occur throughout Florida and the continental United States. There are many subspecies and varieties, which may be seen in ponds, lakes and sluggish streams throughout North America.

As a native Florida plant, water lilies help provide cover for many native fish, turtles, frogs, insects and other things that help create a healthy environment for a pond and related pond life. Otters and large fish like to hide among them also.

Water lily *leaves* are circular shaped and are notched to the center. The leaf *lobes* are pointed and leaves arise on stalks from long rhizomes in the mud, which means they are only in shallow water.

The *flowers* are white and very aromatic. If water lilies are found in the middle, not just the edge of the pond, this is an indication that the pond has become filled with sediment, and is no longer a balanced pond that provides health for water life at several levels of water depth. As long as the lilies are just at the edge of the pond, you can be assured that the pond is maintaining a degree of health.

*More information can be found at http://plants.ifas.ufl.edu/plant-directory/nymphaea-odorata/*
It’s All About the Dirt

By Sherry Dodson

Would you like to produce more veggies and fruits on your plants? It could be as simple as adding compost to your sandy soil. Organic and conventional fruit and vegetable growers, whether dooryard or commercial, have a powerful ally in compost.

Compost is basically deteriorating, organic material such as yard waste, kitchen waste, manures, and chemicals.

Composting is the biological breakdown of these organic materials by microorganisms into a stable humus product.

All About Compost

• Compost must be mature, sterile, and pathogen-free.
• Compost does wonderful things in our soil, by improving the soil’s water-holding capacity thereby reducing our need for irrigation, and improving the soil’s structure thereby reducing erosion.
• Compost is effectively a slow-release fertilizer thereby restructuring our fertilizer program, as well as, providing a buffer for fertilizer imbalances.
• Compost can improve plant root health, and aid in the suppression of plant diseases.

Although all these benefits affect our financial and environmental overhead, those last two benefits (root health and disease suppression) are of great interest to the grower today. For example, citrus growers are looking to increase plant and root health to combat HLB. It appears compost may aid in that fight.

Making Compost

“Hot” composting is only one method of producing compost, and it’s the method presently focused on by Florida growers today. The compost recipe is both complicated and simple:

1. Oxygen
2. Optimum organic particle size,
3. Proper carbon: nitrogen ratio, and water

Each component and application is fine-tuned to make the final product: compost. Note that just shredding organics and screening the particles does not produce a quality compost product.

Many backyard compost piles have limited success primarily due to the compost pile’s core temperature not reaching and sustaining high enough temperatures. Federal laws require bio solid compost to average a core temperature of 55°C for the first 15 days. In addition, the compost pile is to be turned five (5) times within that timeframe. This stipulation allows the compost to be used as an organic amendment to soil. Compost can be pelletized in order to be used in organic systems.

Approximately 400,000 environmental laws and regulations exist in the U.S. with Florida being one of the top five states hardest impacted by these rulings. To make sure you are working with a quality compost product, check for certifications passing health and safety regulations. Compost with the STA (Seal of Testing Assurance) label meets these certifications.

Adding Compost to Your Beds

Before planting new crops/trees, fully cured and good quality compost is recommended to be mixed directly into the planting beds during site preparation. Continued...
It’s All About the Dirt Continued...

Compost application for established crops/groves is between the rows. Compost for existing, edible crops, such as citrus and blueberries, is applied annually after crop harvest. The compost replenishes the soil for next growing season. This application timing alleviates a concern about the health or safety of the crop from uptake of compost elements, such as metals.

Addition of quality compost changes the soil’s chemical and moisture profile. Florida’s soils average 1% compost. Soil composition with 2% compost is recommended for good growing conditions. Both fertilizer and irrigation will need to be adjusted based on the new profiles.

The resulting improved root and tree growth prompts increased plant flushes. Although the increased tree and root health improves disease resistance, increased flushing also attracts increased insect populations such as leafminer and psyllids. More research needs to be done on the relationship of the increased insect activity with increased tree and root health.

The Bottom Line

Compost definitely increases plant and root health, as well as soil health. Consequently, the different components of the environment are found to be intricately integrated.

Reference: Citrus and Compost Production and Utilization Workshop by Dr. Monica Ozores-Hampton September 22, 2015

Pomegranates As Viable FL Crop

By Sherry Dodson

I attended the 4th Annual Florida Pomegranate Association Meeting co-hosted by the University of Florida, Lake Alfred on October 23rd. Dr. John Preece from the National Clonal Germplasm Repository in California, Dr. Glenn Wright from the University of Arizona, Dr. Gary Vallad from University of Florida/GCREC, Mr. Will Lovett from University of Georgia, and Mr. Richard Bonsteel from PomNatural LLC were the main speakers. California, Arizona, George, and Florida are all working together to research and promote pomegranates as a viable alternative crop.

Pomegranates are traditionally considered to be native to Iran. Pomegranates were propagated as long ago as 3450 BCE in Jericho.

Pomegranates grow very well in California. Although Florida has similar temperature ranges, California is a Mediterranean climate versus Florida’s subtropical climate. The two climates present totally different challenges in growing pomegranates, as well as all plants in general. One major challenge Florida has is growing red-colored pomegranates. Unlike California, Florida’s nights do not get significantly cooler. Cooler temperatures cause the fruit’s starches to turn to sugar and sugar is needed for anthocyanin (red coloration).

In addition to supplementing each region’s primary crop (citrus in Florida), pomegranates make great alternative crops for the following reasons:

• Pomegranates, both the edible and the ornamental varieties, can be used in landscaping designs
• Locally grown food is an increasingly popular trend in agriculture and pomegranates easily fit into this scenario

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Pomegranates As Viable FL Crop Continued...

Pomegranates, although easy to grow and resistant to drought, with an incredible array of flavors and colors still have quite the list of problems to overcome. Florida’s difficulties in growing “pretty” fruit will more than likely lend to an aril and juice crop rather than fresh fruit.

(Note: Most people have only seen and eaten the large California-grown Wonderful or Angel Red pomegranates. There is a tremendous range of white/yellow to pink/red colored fruit and aril combinations, as well as well-balanced tart to sweet-tart to mild to very sweet arils with inedible to edible seeds combinations.)

Sunburned fruit, wind, low temperatures (high teens is considered too low), too much heat, pathogens, leaf-footed bug, animals, birds, fruit splitting, fruit drop, lack of flowering, lack of interior color, and lack of exterior color are issues being researched for resolutions.

Pathogens are a major concern for the success of the Florida pomegranate crop. Pathogens are always present and fungicide-resistant pathogens presently exist in the pomegranate crops. Resistant pathogens will completely take over the pomegranate groves unless research discovers new methods to control these resistant pathogens. At this time, it appears most pathogens in pomegranates are specific to pomegranates although further research is needed to conclusively confirm this finding.

A combination of cultural practices and rotation of fungicides is very crucial in disease management of pomegranates. Cultural practices include (1) pruning diseased limbs and (2) orchard hygiene; i.e., removing all cuttings, debris, dropped leaves and fruit.

Amazingly, Florida has living dooryard pomegranates that are over 60 years old! PomNatural LLC tries to locate these old-time trees/shrubs and propagate them in order to incorporate them into future breeding programs. These pomegranates are considered to be Florida’s very own heirloom varieties.
Soil... Let’s Stop Treating It Like Dirt
By Melinda Moreschi, Master Gardener Trainee

Soil, although an extremely precious resource, is completely under-appreciated.

Paved over, trampled upon and saturated with chemical fertilizers and pesticides, this magical substance is not given much thought. Essential for life on earth, soil has the ability to transform materials into nutrient-available foods in order for plants to thrive. Technically, soil is the mineral and organic matter found on the upper layer of the earth’s crust.

Only about ten percent of this earth’s surface is covered by land that has the potential to support life – a small percentage, considering the world’s populations of six billion people depend on it. Classic soil science focuses on soil’s physical texture (sand, silt or clay), and porosity, in addition to its chemical properties, soil’s pH and cation exchange. NPK (Nitrogen-Phosphorus-Potassium) fertilizers are considered the solution for many problems. We often are instructed to just add these soil amendments with a myriad of NPK combinations (10-10-10, 25-9-9...) in varying amounts and all will be well. However, soil is more than just dirt with an added chemical mix of nitrogen, phosphorus and potassium. Healthy soil is a biological and microbiological marvel. Using electron microscopes, scientists around the world have uncovered the extraordinary life that resides within the soil.

They have found that healthy soil is teeming with life, connected in a magnificent soil food web, where different life forms interrelate and interact. Earthworms, ants, fungi, mites, beetles, bacteria, algae, yeasts, protozoa, nematodes and other microscopic insects are all present and have the mighty job of turning organic matter into food for plants.

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“Humankind, despite its artistic abilities, sophistication and accomplishments, owes its existence to a six-inch layer of farmable soil – and the fact that it rains.” Anonymous


“Teaming with Microbes,” Jeff Lowenfels and Wayne Lewis
Soil...Let’s Stop Treating It Like Dirt Continued...

What is most astonishing about the soil food web is the notion that plants are in control. Not only do plants take up nutrients through their roots to feed their leaves, they also secrete chemicals, called exudates, through their roots and into the soil, which then attract specific bacteria and fungi.

Plants can control the numbers and kinds of bacteria and fungi attracted to their root zone (rhizosphere) depending on the nutrients they need and the exudates they produce. Then the smorgasbord begins. Bacteria and fungi eat the root exudates; in turn, nematodes and protozoa eat the bacteria and fungi. The wastes that are produced by these organisms are then absorbed as nutrients by the plant’s roots.

Scientists have found that commercial fertilizers disrupt this balance of microorganisms in the soil food web. Plowing and tilling have also been called into question as it disturbs soil’s structure, chops up earthworms and beneficial insects, and contributes to soil erosion and the loss of carbon in the soil.

Dr. Elaine Ingham, a soil microbiologist at Oregon State University, recommends taking a preventative approach to gardening. She addresses the ‘causes’ of disease, pests and poor fertility instead of simply suppressing the symptoms by using toxic, chemical fertilizers and pesticides. Good soil is a proper mixture of minerals, organic matter, air and water. Good soil life produces its own good soil nutrients. Dr. Ingham explains that bacteria and fungi tie-up nutrients in their bodies becoming like little sacs of fertilizer that don’t leach out when water passes through, as chemical fertilizers tend to do. Then these bacteria and fungi are eaten by protozoa and nematodes, which release the nutrients in a plant-available form.

Dr. Ingham goes on to emphasize that the correct microbes need to be present. For instance, there are beneficial nematodes that eat bacteria and fungi and there are also parasitic nematodes that cause plant disease by eating plant roots. Dr. Ingham explains, “the beneficial species of bacteria, fungi, protozoa, nematodes and micro arthropods are naturally found in healthy growing systems, not the disease species.”

So, how do we restore a diverse and whole soil food web – compost, mulch and compost tea (and sometimes mycorrhizal fungi). Feed the microbes that feed the plants. The recipe for Dr. Inham’s actively aerated compost tea can be found on her website: www.soilfoodweb.com

Some of Dr. Ingham’s key takeaways:

- Organic matter holds 10 times its weight in water
- Bacterial secretions provide a glue to help hold soil together
- **80% of inorganic fertilizers leach out of soil (**not reflected in UF/IFAS tests on FL soils)
- Look at perennial deep rooted, short plants as cover crops that put more bio-mass in the ground via roots versus above ground bio-mass
- Rainfall can compact bare soil. Keep bare soil surfaces covered. One option is a biological cover that feeds the microbial soil life

Continued on next page...
Soil...Let’s Stop Treating It Like Dirt Continued...

The workings of these complex and vast soil food web interactions are not completely understood. However, in the book, “Teaming with Microbes,” authors Jeff Lowenfels and Wayne Lewis present a fascinating visual connection between healthy soil and beneficial organisms. The authors show an electron microscope image of a nematode trapped in the loop of a fungal strand known as a hypha. The fungi are helping to protect the plant’s roots from the invading nematode.

A fungus is killing a nematode... remarkable!

The authors show a second image, this one of a nematode penetrating and feeding on the root of a tomato plant unstopped by the fungal hyphae. Once inside, the nematode robs the plant of nutrients and creates a gall on the roots.

We later find out that the loop fungi in the first image protected the plant’s roots by capturing the parasitic nematode. In the second image, the nematode penetrated the tomato root and was not stopped because chemicals had been added to the soil, killing the protective fungi. Had the natural fungi been present, the tomato plant might have been spared.

These images show the complexity of the soil food web and the importance of using organic practices. It reinforces the notion that everything is connected to everything else.

Healthy soil creates good soil structure in the garden, provides soil nutrients for plants and helps suppress plant disease. Feeding your microbes will help them work for you. Your soil will need less water and no fertilizer. You will have fewer plant health problems and won’t have to till or turn your garden soils ever again. As a bonus, there will be no dangerous chemicals leaching into the water table.

If that isn’t enough, Rattan Lal, professor of soil science at Ohio State University and an authority in his field, contends that good soil practices can do even more. He suggests that they can reverse global warming. Plants, through the process of photosynthesis, have the ability to draw carbon from the air and form carbon compounds in the ground, where they can remain for thousands of years. He contends that sequestering carbon in agricultural soils is a win-win strategy. Continued on next page...
Soil...Let’s Stop Treating It Like Dirt Continued...

We need to think differently about soil. We need to think of it as an ecosystem that we ourselves are part of. If we shift the focus and view the garden as an entire system, we can concentrate on ‘growing our soil,’ and our plants will grow themselves.

Are you a “Soil Health Scholar?” Take the quiz:


This article is dedicated to Master Gardener, Dorothy Hall, a wonderful, sweet lady who had the gift of gardening in her soul. Rest in peace, dear friend.

“Upon this handful of soil our survival depends. Husband it and it will grow our food, our fuel and our shelter and surround us with beauty. Abuse it and the soil will collapse and die, taking humanity with it.” 
Sanskrit text written 1500BC

Life Underground

By Dianne L. Fecteau

Soil swarms with life. According to the Audubon Society, a tablespoon of soil can have more organisms than there are people on earth. Jason Weller, chief of USDA's Natural Resources Conservation Service, wrote, "Most people don't realize that just beneath our feet lies a diverse, complex, life-giving ecosystem that sustains our entire existence."

It's easy to see the organisms that live above ground but not so easy to see the ones below. Bacteria, fungi, protozoa, nematodes, and arthropods contribute to the web of life within the soil.

Bacteria are single-celled microorganisms. They form complex communities that decompose organic matter, cycle nitrogen, sulfur, and carbon, and biodegrade toxic chemicals (Scalera, 2015).

Fungi that live in soil are multi-cellular organisms, growing as long strands. Mycorrhizae form a relationship with plant roots, helping them to improve nutrient uptake, stabilize soil, and increase plant tolerance to drought, salts, heavy metals, and pathogens (Scalera, 2015). More amazing is that those mycorrhizal filaments appear to allow plants to communicate with each other and set up defense systems (Amaranthus & Allyn, 2013). In one study, a broad bean plant, under attack by aphids, sent a signal through these filaments to other broad bean plants nearby. The plants receiving this signal produced a chemical that repelled aphids and attracted wasps, a predator of aphids (Babikova, et al, 2013). Another study showed that blight infested tomato plants communicating to other tomato plants, reduced the impact of the blight on the plants receiving the signal (Stone, 2013).

Protozoa, single-celled microbes that primarily eat bacteria, release excess nitrogen to plants in addition to assisting with preventing pathogen formation.

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Life Underground Continued...

Nematodes, small, round worms, can be either beneficial or destructive. While root-feeding nematodes cause disease and are undesirable in the garden soil, the beneficial ones eat bacteria and fungi, distributing it through the soil. This plays a role in suppressing disease.

Arthropods—insects, spiders, and mites—improve soil quality in a variety of ways. They control disease-causing organisms and stimulate microbial activity.

Good soil means insects. As Doug Tallumy says, many insects equal a healthy garden. The insects munch away and insect predators, parasites, and diseases keep the insect population in check. Birds, amphibians, and other small mammals then eat the predators.

Florida sand has low amounts of organic material and low moisture-holding ability. Most gardeners will want to improve it in order to produce healthy plants. In her presentation at the Florida State Master Gardeners Conference in October 2015, Sally Scalera UF/IFAS Horticulture Agent Brevard, provided the following tips for building up the soil:

- Add organic matter as mulch around plants or on turf.
- Use organic fertilizers—research has shown that synthetic fertilizers do not build soil organic matter.
- Use bio stimulants on plants and soil, for example, liquid seaweed, milk, molasses, and humic acids.
- Re-mineralize the soil, using sea minerals and rock powder.
- Minimize soil disturbance.
- Cover the soil with cover crops or mulch.
- Increase biodiversity above ground.
- Amend the soil with bio char.
- Add soil organisms such as worms and soil microbes.

Improving and conserving the life below the ground contributes to the life above the ground. Healthy soil means healthy plants. Healthy soil also often means reducing or eliminating the need for pesticides, herbicides, and other toxic substances that may leach into the soil and disrupt the valuable life that teems below.
Dear Readers: The following article presents a provocative viewpoint on invasive plants. We all know the destruction that exotic and invasive plants and animals bring to ecosystems worldwide, and this is not meant to distract us from that fact. On the contrary, it is critical to view important topics from every angle and appreciate the discussions that result from this. Enjoy the angle on this but continue to fight against the spread of invasive exotics! Furthermore, National Invasive Species Awareness Week (NISAW) is coming up: Feb. 21-27, 2016, http://www.nisaw.org/. Look for a week of classes, blog posts, and a photo contest from us here at UF/IFAS Extension, Pinellas County. Thank you!

Invasives: Nature’s Dizzy Balancing Act
By Jude Bagatti, Master Gardener

I know, I know. This will sound controversial, heretical even, but please do not kill the messenger.

Recently, I was startled to read an article, which dismissed what most of us believe about invasive species. Whether plant or animal, invasives replace natives and we do not abide them. We lament the proliferation of kudzu, zebra mussels, giant snails and water hyacinth. Our ecological organizations and government agencies go to great expense in time, money and labor trying to eradicate alien species. We conduct lionfish tournaments, hold contests for the biggest, smallest or ugliest air potato uprooted, and publicize warnings of what should not be sold, planted, propagated or imported. Any responsible gardener knows the common horticultural villains: carrotwood, Brazilian pepper, Australian pine, Mexican petunia, etc. The invasive list goes and grows. We want, rightfully, to preserve the beauty, health and status quo of our natural, native ecology.

YET...there is a contrary voice, more than one, urging us to relax, back off and let nature take its unpredictable, erratic course. Nature knows, these voices say, how to maintain balance without our meddling.

Fred Pearce, a London environmental journalist, has released his latest book: The New Wild: Why Invasive Species Will Be Nature’s Salvation. In it, he compels us to accept change as a natural constant, and he criticizes overzealous conservation work for trying too hard to preserve the past instead of celebrating nature’s dynamism and adaptability. If an alien species suddenly overtakes natives, he says, look to the root cause; it will likely be due to the weakened mess of the ecosystem that humans, nature’s greatest invaders, have created. Embrace invasive species as part of the solution, not the problem, he admonishes.

This guy is no kook. He has the chops to know what he’s talking about. A writer for The Guardian newspaper and the prestigious Yale University e360 website, he has reported from 85 countries over 25 years on environmental, science and development issues. He was named UK Journalist of the Year in 2001 and won a lifetime achievement award from the Assn. of British Science Writers in 2011.

Continued on next page...
Invasives: Nature’s Dizzy Balancing Act Continued...

Still, it's not easy to do an about-face and tolerate, if not welcome, invasive species to our familiar and beloved landscapes. But that's what we should do, according to Pearce. "Always question the assumption that there is something intrinsically bad about an alien species."

He gives examples. In Puerto Rico "invasive" African tulip trees are "re-wilding" the island after farmers destroyed native forests and abandoned their fields. The tulips are reviving soils, and providing habitat for another case involving water politics, suggests deliberate misguidance regarding a so-called invasive. Mining interests in the American West demonized tamarisks (salt cedars) as water guzzling, desert creators so they could justify killing them and claim water "saved." But tamarisks consume no more water than local cottonwoods. Plus, they offer valuable wildlife and bird-nesting habitat, and actually hold back desert formation.

The idea of not burning, poisoning or otherwise trashing invasive species is foreign to us. Passively accepting them goes against our grain. But with open minds, we should take a long, serious look to see what, if any, benefits to the environment at least some of our local invasives are granting. No, I am not about to allow any of our notoriously aggressive aliens to overwhelm the natives in my yard. However, just as human migrants inject vitality into a static populace, enriching it with cultural diversity, it is reasonable to hope that plant and animal migrants may somehow likewise reboot a stagnant eco-population with a hardier, more sustainable biodiversity.

Worldwide movement of life forms will inevitably continue, no matter what we do.

Contact Jude at: 727-322-6211 or heyjudebagatti@gmail.com
Invasive Species Are Everywhere
By Jane Morse, Commercial Horticulture, UF/IFAS Extension Pinellas County

Is there a serious threat to Florida’s landscape living in your yard? Would you know a Brazilian peppertree, a carrotwood or a Cuban tree frog if you saw one? If not, read on.

According to the Florida Fish and Wildlife Commission, 1180 nonnative plant species and more than 500 nonnative fish and wildlife species have been documented in the state. While not all of them present a threat to native species, some have become invasive by causing harm to native species, posing a threat to humans, or causing economic damage.

Invasive species are defined as non-native or exotic organisms, which cause environmental or economic harm, or negatively affect human health in an environment where they were not historically found. An invasive species can be a plant, animal, or other type of organism. Because invasive species’ natural predators and parasites usually are not present in the new environment, their populations can grow unchecked, causing major impacts.

Damage caused by invasive species can take different forms and in extreme cases can lead to the extinction of native species, harm the environment, destroy crops, or ruin recreational sites. Other impacts can include decreased land value and decreased tourism. Invasive weeds can produce skin irritation, trigger allergies and poison pets and livestock. They can clog waterways, kill native trees, and shade out crops, ornamentals and prized native flora. Invasive species are found in every imaginable habitat, including oceans, lakes, streams, wetlands, croplands, rangelands, natural areas, parks, forests, urban environments, yards and gardens (from National Invasive Species Awareness Week website).

Feb. 20-28 is National Invasive Species Awareness Week (NISAW). The University of Florida in Pinellas County is joining in this nationwide – and year round – effort to promote knowledge and understanding of invasive species to help stop their spread

Carrotwood fruits. Image courtesy of edis.ifas.ufl.edu.

Lantana camara. Image courtesy of edis.ifas.ufl.edu Credit: J. Ferrell
Invasive Species Are Everywhere Continued...

Some of the most abundant, widespread, and harmful invasive species in Florida include citrus canker, citrus greening, Brazilian pepper, melaleuca, hydrilla, Chinese tallow tree, cane toad, Cogongrass, Japanese climbing fern, chinaberry and water hyacinth. Everyone knows about the Burmese pythons that have been spreading across the Everglades since 1996.

Financial Impact

A few invasive species can have enormous economic and environmental impact. For example, the state spent more than $300 million to control citrus canker. Agricultural losses due to invasive plants, animals, and diseases, are estimated at $179 million annually in Florida.

What’s in Your Backyard?

You may even have some of these invasive plants or animals in your own yard. *Lantana camara*, Mexican petunia, tuberous sword fern, wedelia, schefflera, asparagus fern, wax begonia, and calico vine are all invasive, yet many are still sold by nurseries. Most invasive species are introduced and spread by human activities. Ships, wood products, ornamental plants, and pet trade often carry uninvited and potential invasives into the U.S. It is our responsibility to know invasive species and not give them a home. For a list of invasive plants you can Google the Florida Exotic Pest Plant Council, or visit [www.fleppc.org](http://www.fleppc.org). It will be an eye-opening experience.

Spread the Word

We can help stop the spread of invasives by becoming aware of the problem, learning how to identify them, not inadvertently planting them and quickly removing them if they do show up. Better yet, if you stick with native plants you won’t have to worry about them becoming invasive. Also, always be sure to clean hiking boots, waders, boats and trailers, off-road vehicles and other gear to stop invasive species from hitching a ride to a new location. Never transport firewood, or release exotic animals or plants into the environment.

You can also help by sharing this information with your family, friends and neighbors. Volunteer to help remove invasives from natural areas, public lands or even your neighbors’ property (with permission). This might be an excellent project for Girl Scout or Boy Scout troops. Remember that each one of us can make a difference in our community and environment by knowing invasive species and acting properly to prevent their spread.

To learn more, visit [http://www.nisaw.org/](http://www.nisaw.org/) or Google: National Invasive Species Awareness Week.
Fabulous Fading Florida  
By Jane Morse, University of Florida/IFAS Extension Agent, Pinellas County

Do you long to see more birds and butterflies flying about your garden? Do you want to help Florida’s wild critters survive? Are you tired of spending money and time watering, fertilizing, pruning and mowing your landscape? By knowing and understanding your yard’s native ecosystem you can choose plants that are almost maintenance-free while also attracting birds, butterflies and other pollinators.

Florida is the third most diverse state in the U.S., with 69 distinct ecosystems including forests, prairies, swamps, marshes, bogs, streams, ponds, estuaries, sandhills, flatwoods and sand scrubs. Our ecosystems — distinct collections of populations of living things that are naturally linked with each other and occur on the landscape wherever certain physical conditions exist - are surprisingly complex, intricate, ancient and connected. The more we learn about them, the more we value their uniqueness, which can bring great pleasure and wonder into our lives.

Unfortunately, many of these ecosystems have been drastically reduced in size or are in dire need of renewal.

Today more than 130 animals are listed as endangered, threatened or of special concern in the state. The good news is that concerned and caring Florida residents have the power to help bring back many of the plant communities necessary to support our endangered species.

Just by knowing what type of habitat our yards would normally support, we can start to get Florida back to being Florida, and hopefully bring back many of the species that are now endangered or threatened. In Pinellas County we have, or had, four major ecosystems: coastal upland, sandhill, flatwoods and salt marsh.

Coastal Upland Ecosystem

The far west side of the county is a coastal strand, which occurs parallel and next to coastal beaches. These are the dunes, an extremely harsh environment for plants. In Florida, only a few patchy bits and pieces remain. Continued on next page...
Fabulous Fading Florida Continued...

Plants in the coastal strand must be tolerant of salt, wind and blowing sand and most plants and shrubs are stunted and “pruned’ by these actions. Plants that characterize this community include beach panic grass, sea oats, blanket flower, beach sunflower, sea purslane, beach morning glory, sea grape, cocoplum, inkberry, saw-palmetto, bay cedar, live oak and cabbage palm. These plants support many threatened shorebirds (including plovers), terns (including least and roseate species), gulls, endangered beach mice, endangered sea turtles, lizards, snakes, gopher tortoise, the threatened scrub jay and the threatened kestrel.

The coastal strand also reduces the impact of storm surge from hurricanes by reducing wave action, and thus helps to protect Florida’s more interior areas.

Sandhill Ecosystem

The sandhill ecosystem is inland of the coastal strand. This area is high, very dry, and low in nutrients and has loose, well-drained soils that allow for rapid aquifer recharge. Longleaf pine and turkey oak are the most common trees in this ecosystem. Other plants include wiregrass, butterfly pea, gopher apple, bracken fern, American beautyberry, Yaupon holly and coontie. In a natural setting this type of ecosystem would burn every three to five years to maintain the longleaf pine and keep turkey oaks from shading out shrubs and other species. We can mimic these burns mechanically and with herbicides. Most sandhill habitats have been cleared and developed, leaving only three percent of this ecosystem intact nationwide. The southeastern American kestrel, red-cockaded woodpecker, blue-tailed mole skink, eastern indigo snake, Florida mouse and short-tailed snake are all in jeopardy of extinction because of this loss of habitat.

Flatwoods Ecosystem

Florida’s most widespread ecosystem, and a large part of Pinellas County, is the flatwoods. They occur on level land with very gradual movement of water to swamps, ponds and marshes. During the rainy season conditions are very wet, with the water table on or near the surface. The most common plants of this community are slash pine, live oak, saw-palmetto, wiregrass, lopsided indiangrass, wax myrtle, blackberry, gallberry and many others. Wildlife linked with this community, including gray squirrels, gray fox, white-tailed deer, Bachman’s sparrows and sandhill cranes, are all in danger of extinction due to change of flatwoods.

Salt Marsh Ecosystem

A small portion of Pinellas was once salt marsh. This is another harsh environment for plants, with conditions varying between extremes of salt and fresh water, wet and dry, hot and cold. Only a few plants can stand these extremes, including sand cordgrass, needle rush, saltwort, bushy seaside oxeye, saltgrass
Fabulous Fading Florida Continued...

and saltwort. Animals found in this community include the fiddler crab, periwinkle snail, killifishes and other minnows, salt marsh snake, green treefrog, southern leopard frog and three bird species – the clapper rail, marsh wren and seaside sparrow (which can only live in this habitat).

We may not be able to fully bring back these plant and animal communities in our small yards, but we can certainly help, especially if we get our neighbors to do the same. Look around your yard. I’m sure you will find mostly exotic (non-native) plants from other parts of the world that are not part of this ecosystem and do little to nothing to support its unique community of plants and animals. Start replacing these exotics or begin adding to your yard native species that will help to restore lost habitat. Native plants in the right place are low maintenance, usually don’t require lots of resources to grow and are good for the environment.

There are many resources to help you find plants for each of these ecosystems and to learn more about our incredibly diverse and beautiful Florida.

- One excellent way is to join like-minded folks in your local Native Plant Society.
- In addition, there are some very good, Florida-specific books such as: *Priceless Florida – Natural Ecosystems and Native Species* by Ellie Whitney, D. Bruce Means, and Anne Rudloe; *Landscaping for Florida’s Wildlife – Re-creating Native Ecosystems in Your Yard* by Joe Schaefer and George Tanner; and *Florida’s Best Native Landscape Plants – 200 Readily Available Species for Homeowners and Professionals* by Gil Nelson.

For more information or help with selecting plants, visit your local University of Florida/IFAS Extension at 12520 Ulmerton Road, Largo. The Lawn and Garden Help Desk is open from 8 a.m. to 5 p.m. Monday through Friday. To speak with a horticulturist, call 727-582-2110 on Monday, Tuesday or Thursday from 9 a.m. to noon or 1 to 4 p.m. You can also visit our website at www.pinellascountyextension.org
Controlling Weeds in Lawns

By Jane Morse, Extension Agent, University of Florida/Institute of Food and Agricultural Sciences, Pinellas County

It may be surprising to learn that a lawn, which is properly watered, fertilized and mowed usually doesn’t have many, if any, weeds. Factors such as shade, insects, diseases and improper watering, mowing, and fertilizing can all lead to a weak, sparse, weed-filled lawn. Any bare spot is an invitation for weeds to take over. Relying on herbicides to control weeds is just a temporary fix if the true causes of a weakened lawn are not corrected.

Follow these steps to have a healthy, thick lawn that will out-compete most weeds:

Start off with the right grass. Bahiagrass is best suited for sandy, acidic soils that are subjected to drought. St. Augustinegrass is better suited for mildly acidic to alkaline soils that are subjected to salty conditions. Also choose grasses based on the amount of care you are willing to provide. Bahiagrass has a low maintenance level; St. Augustinegrass a moderate level, while Zoysiagrass and Bermudagrass have a high maintenance level. Choose shade-tolerant ground covers, shrubs or mulch for areas that receive less than 5 hours of sun.

Mow at the right height. Set mower height adjustments high (3 1/2 to 4 inches) for standard St. Augustinegrass varieties (Floratam, Bitterblue, Classic, Palmetto). Bahiagrass should be mowed at a height of 3 to 4 inches. Dwarf St. Augustinegrass varieties (Captiva, Delmar, Sapphire, Seville) are mowed at 2 to 2 1/2 inches. Bermudagrass is mowed at 1/2 to 1 1/2 inches and Zoysiagrass 1 to 2 inches. Proper mowing height and frequency will get rid of many annual weeds, and taller grass blades also help to shade out weeds.

Mow often. Only 1/3 of the leaf blade should be removed each time the lawn is mowed. The shorter it is mowed, the more often it needs to be mowed. Repeatedly removing too much of the grass blade (more than 1/3) will greatly weaken and can eventually kill the grass. Weakened grass allows weeds to take root. Keep the mower blades sharp for the best cut and mow when the grass is dry.

Continued on next page...
**Controlling Weeds in Lawns Continued...**

**Water only when it needs it.** In the morning or late evening check the lawn for wilt. When 30% of the lawn starts to show symptoms of wilt (i.e. leaf blades are closed, bluish-gray color, foot-prints that last for more than 10-15 minutes and dry soil), water the grass (unless rain is expected in the next day). Apply ½ to ¾ inch of water and then wait for symptoms of wilt before watering again. Overly wet lawns promote sedges, spurges and dollar weed, as well as root rot. When watered and mowed correctly the grass will develop a deep root system and will not require water as often. It is best to water lawns in the early morning when dew is still present. Watering late in the evening promotes disease development.

**Fertilize correctly.** Lawns that have been over-fertilized are more prone to having chinch bugs, brown patch, grey leaf spot, pythium blight, powdery mildew and thatch. Under-fertilized lawns are prone to take-all root rot, dollar spot and rust. If the lawn gets attacked by these insects and diseases large areas can die leaving a perfect place for weeds to sprout.

Fertilize lawns in the spring as soon as it begins to grow using a complete fertilizer containing slow-release nitrogen. Apply 1 pound of nitrogen to 1000 square feet of lawn (divide 100 by the first number on the fertilizer bag to get the pounds of fertilizer to apply over 1000 sq. ft.). You may want to apply fertilizer again just before June 1st; between June 1st and September 31st nitrogen and phosphorus fertilization is banned. Apply ferrous sulfate or a chelated iron source in July.

**Scout.** Watch the lawn closely for symptoms of disease or insect damage. Keep track of any problems on a calendar and note the location where symptoms first appeared. Knowing when to expect a certain disease or insect (i.e., chinch bugs, brown patch, etc.) will help to catch problems early before much damage is done. Pest problems (insects, weeds, diseases) should be greatly lessened or non-existent when proper grass selection and maintenance practices (mowing, watering, fertilizing) are used. Using these practices will lessen the need for insecticides, fungicides and herbicides and help to keep our water and environment free of chemicals.

**Protect our water and environment.** Florida has very porous sandy soil. Chemicals and fertilizers easily pass beyond plant roots and go directly into our ground water, especially in over-watered lawns. Applying more water than is needed (1/2 to 3/4 inch) is wasteful and promotes water pollution. Always correctly identify a pest before treating the lawn (no guessing) and keep all pesticides and fertilizers at least 10 feet away from any water body. All grass clippings, chemicals or fertilizers that end up on a hard surface (driveway, sidewalk, or road) should be swept back onto the lawn; otherwise they are carried to storm drains and then directly to a water body.

**Resources:** [http://hort.ufl.edu/yourfloridalawn/](http://hort.ufl.edu/yourfloridalawn/)

For free information or help identifying pests and problems with your lawn, visit your local University of Florida Extension at 12520 Ulmerton Road, Largo. The Lawn and Garden Help Desk is open from 8 a.m. to 5 p.m. Monday through Friday. To speak with a horticulturist, call 727-582-2110 on Monday, Tuesday or Thursday from 9 a.m. to noon or 1 to 4 p.m. You can also visit our website at [www.pinellascountyextension.org](http://www.pinellascountyextension.org).
Next Issue of The Dirt is April 2016
Deadline for Articles is March 10

We are pleased to announce that Dianne Fecteau is the new Editor of The Dirt, and Shannon Palmer is the new co-Editor. Congrats to them both!

All articles are still reviewed and approved before published by Theresa Badurek, Urban Horticulture Extension Agent and Master Gardener Coordinator.

To submit an article or two, please email Diane at dianne@kendiacorp.com.

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