

La Florida

LAND OF FLOWERS



SUSTAINABLE AND RESILIENT ORNAMENTAL HORTICULTURE
WITH FLORIDA NATIVE PLANTS

SUSTAINABILITY AND RESILIENCY

SUSTAINABILITY: A method of harvesting or using a resource so that the resource is not depleted or permanently damaged.

- Merriam-Webster Dictionary

"Sustainability, in short, can be described as 'the human capacity to endure as a species' for that purpose, sustainability does not concern with 'command and control strategies' or 'finger pointing,' but rather, with 'unity, harmony and the broader sense of spirituality connecting everything and anything in our world.' We want to ensure that every possible effort counts, as minimal as it could be. Just like an integral is the summary of all parts through integration, for us in the realm of sustainability, we also believe that the 'whole it is always bigger than its parts.'"

- Hillsborough Community College Sustainability Council

"Sustainable means to perpetuate existence as well as to provide sustenance and nourishment. The term is most often associated with the environment and specifically to landscapes and gardens. While growing plants and maintaining a garden are inherently 'green' activities, sustainable gardening is about growing a greener future."

- American Horticulture Society

RESILIENCY: The ability to adapt to changing conditions and withstand/recover quickly from disruption.

- American Planning Association Florida Chapter

"Planning for resilience must, by its nature, encompass a wide array of issues (economic vitality, water resources, housing stock, transportation facilities, natural resources, land use patterns, etc.). Given the geography of Florida, a key focus for planners in this state is incorporating the goal of resilience into challenges that are presented by natural hazards (hurricanes, floods, tornadoes, etc.) and the effects of climate change, such as sea level rise. This goes much deeper than hazard mitigation, which is the effort to reduce loss of life and property by lessening the impact of disasters. Rather than preparing for a specific disaster or event, a resilient community is one that can face an array of unpredictable challenges and disturbances with minimal long-term impacts."

- American Planning Association Florida Chapter

Preserving Florida's ecology

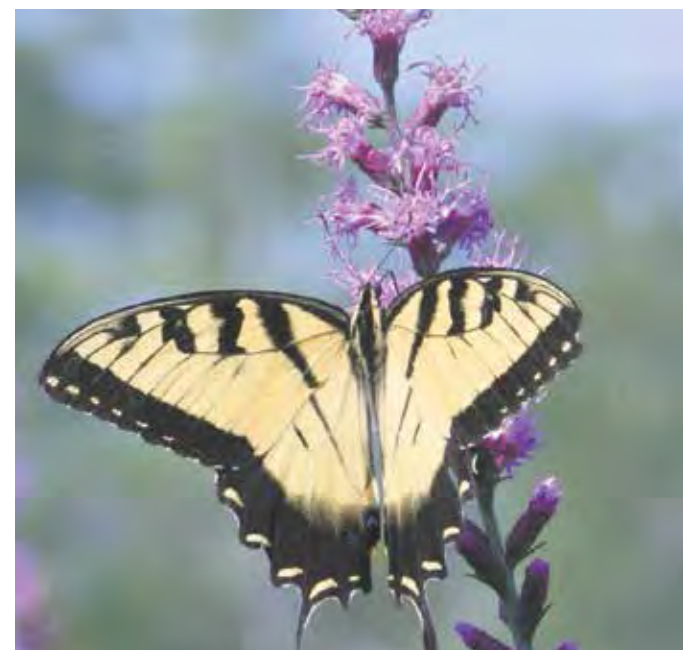
As the global climate changes, coastal communities such as the Tampa Bay region of Florida face the prospect of rising seas, more frequent and intensive storm events, and changing precipitation patterns. The landscape damage from Hurricane Irma, which hit Florida in September 2017, was so extensive that it could be seen from space.

Native plants are far more ecologically resilient, better able to withstand and recover from storms, floods, droughts, wildfires and other catastrophic events. Drought-resistant, fire-resistant and salt-tolerant Florida native plants are key tools in reducing the damaging ecological and landscape impacts of ever-hotter summers, increased wildfire risk, storm surge flooding and saltwater intrusion.

By educating community members about the advantages of using Florida Native plants in their ornamental landscaping and encouraging property

owners to create sustainable and resilient ornamental landscapes, this project will help to:

- Strengthen our region's ability to plan and prepare for the changing climate.
- Protect Tampa Bay communities, property and economies by creating more sustainable and resilient landscapes.
- Protect Florida's native habitats and ecosystems by discouraging the use of nonnative and invasive species.
- Preserve Florida's limited water supply by reducing water used for landscape irrigation.
- Preserve native species by creating wildlife habitat.
- Reduce pesticide and fertilizer usage, helping to keep nitrogen and phosphorous out of waterways.
- Reduce the economic impact of catastrophic weather events to property owners and municipalities by minimizing landscape damage.



Shirley Denton, Florida Native Plant Society

La Florida: The Land of Flowers

While there may be some controversy regarding the intent of the name of Florida, Land of Flowers, there is no mistaking the abundance of beautiful native flora in the state. Energized by Florida sunshine, wildflowers bloom abundantly all year long.

Whether Juan Ponce deLeon actually landed on the state on Easter Sunday, 1513, or the first thing the explorer saw was an abundance of flowers, the state remains a land of flowers. Florida claims about 3,300 native species of plants, says Thomas Chesnes, professor of biology at Palm Beach Atlantic University.

Science writer Lina Zeldovich writes that “Native plants are adapted to the local climate and soil conditions where they naturally occur. These important plant species provide nectar, pollen, and seeds that serve as food for native butterflies, insects, birds and other animals. Unlike natives, common horticultural plants do not provide energetic rewards for their visitors and often require insect pest control to survive.”

Native plants are the “ecological basis upon which life depends, including birds and people,” notes the Florida Native Plant Society. Without native plants, insects and birds

THINK ABOUT IT

According to the American Horticulture Society, “Sustainable gardening combines organic gardening practices with resource conservation.” Generally, sustainable gardening:

- is forward-thinking
- values ecosystem support over aesthetics
- makes as little negative impact on the earth as possible
- works with nature instead of against it

cannot survive. According to entomologist Doug Tallamy, “native oak trees support over 500 species of caterpillars whereas ginkgos, a commonly planted landscape tree from Asia, host only 5 species of caterpillars. When it takes over 6,000 caterpillars to raise one brood of chickadees, that is a significant difference.”

Sources: Florida Native Plant Society; Florida Audubon Society; JSTOR, digital library

Monarch Caterpillar, Luis Santana,
Tampa Bay Times

GOING BEYOND THE TEXT

Working together

Protecting our environment takes teamwork. By understanding how the actions of humans affect and influence the environment, we can make better choices for our communities. Look for articles in the *Tampa Bay Times* that show examples of people, groups or organizations that are working to protect the environment. Make a list of those involved and the actions they are taking. Select one of the environmental groups or issues you have read about and do some research about it. Then think about what actions you can take to protect the environment. Share your ideas with others by writing a blog post or short essay that incorporates the information you have learned.

What is a native plant?

Native plants are those that occur naturally in a region in which they evolved. The Florida Native Plant Society defines a Florida native plant as a species “occurring within the state boundaries prior to European contact. Florida native plants include those species understood as indigenous, occurring in natural associations in habitats that existed prior to significant human impacts and alterations of the landscape.”

Native habitats are resilient

Native plants are ecologically resilient. In other words, plants and flowers native to Florida are able to withstand and recover from natural and man-made catastrophic events. These plants are able to thrive with minimal water and the ever-changing Florida weather. Drought-resistant, fire-resistant and salt-tolerant Florida Native plants are key tools in reducing the damaging ecological and landscape impacts of hot summers, increased wildfire risk, storm surge flooding and saltwater intrusion.

Restoring native plants to the Florida landscape is important to not only preserving biodiversity, but also enhancing the beautiful Florida landscape. In a native plant habitat, each portion of that habitat becomes part of a collective effort to “nurture and sustain the living landscape for birds and other animals,” according to the National Audubon Society.

Sources: Florida Native Plant Society; Florida Audubon Society



Orange Coneflower (*Rudbeckia fulgida*).
Shirley Denton

Sustainable and Resilient Landscapes CONSERVE OUR WATER

Florida's water climate

Although Florida receives approximately 58 inches of rain each year, drought is an important part of Florida's climate, just like hurricanes, thunderstorms, wildfires and tornadoes. Droughts can impact large areas and last for months, even years.

The Florida Climate Center notes that drought is defined as "a prolonged period when there is a precipitation deficit from normal values. But what's important in defining a drought are the duration of these below normal precipitation amounts and their impacts on the state. Drought can affect water supplies, agriculture and fire danger levels and is measured on the basis of the severity of these impacts."

Source: Florida State University Florida Climate Center



American beautyberry (*Callicarpa americana*).



Muhly grass (*Muhlenbergia capillaris*).



Tropical sage (Salvia) (*Salvia coccinea*).



Black-eyed Susan (*Rudbeckia hirta*).



Firebush (*Hamelia patens*).



Passionvine (*Passiflora incarnata*).



Beach Dune Sunflower (*Helianthus debilis*).

Photo credit: Shirley Denton, Florida Native Plant Society

THINK ABOUT IT

With more than 328 million people, the population of the United States has doubled over the past 50 years, while our thirst for water has tripled, according to the Environmental Protection Agency. With nearly 21.5 million residents, Florida's population is on the rise as well. At least 40 states, including Florida, anticipate water shortages by 2024, making the need to conserve water very important.

Sources: U.S. Environmental Protection Agency; U.S. Census Bureau

Plant Society



Drought-tolerant plants = less water

Selecting drought-tolerant plants for your yard will ensure a beautiful landscape that can survive dry periods in the spring and fall, according to Tia Silvasy, Florida-Friendly Landscaping extension agent.

While drought-tolerant plants need regular water until they are established, these plants require less water and can survive during the dry seasons of Florida. That means humans do not have to water plants during the time that conservation of water resources is imperative.

Silvasy notes that there are quite a few

annuals, perennials, shrubs and trees that can be used for Florida-Friendly landscaping.

- Drought-tolerant plants include aloe, blue daze, bush daisy, coontie, cardboard plant, lantana, rosemary, passionvine, shore juniper, butterfly milkweed, coreopsis, black-eyed Susan, purple coneflower, beach dune sunflower, blanketflower, portulaca, salvia, lavender, gaura, gazania, spider lily, plumbago, society garlic and vinca.
- Many native grasses have very high drought tolerance, including

cordgrass, muhly grass, fakahatchee grass, lovegrass and wiregrass.

- Shrubs are great for low-maintenance landscapes. Once established, drought-tolerant shrubs can survive off rainfall alone in many Florida landscapes. Walter's viburnum, Simpson's stopper, podocarpus, sweet almond bush, Texas sage, yucca, agave, beautyberry, golden dewdrop, coral bean, firebush, jatropha, lyonia, oleander, pittosporum, chaste tree, Indian hawthorn and bougainvillea are drought tolerant.

Source: UF/IFAS



Blanketflower Carnathan

GOING BEYOND THE TEXT

Jane's garden

Read "Drought-tolerant plants in Florida," written by Jane Weber for the *Citrus County Chronicle*: chronicleonline.com/lifestyle/home/drought-tolerant-plants-in-florida/article_e452ab1c-c594-11eb-b6f3-73f3c6a14356.html. Identify the main points of the article and answer the following questions:

- Who is the author and what are her credentials?
- What is the main point of the article?
- Where does the author focus her planting?
- When is rainy season and why is that significant?
- Why is it important to consider drought-tolerant plants?
- How are nurseries and developers creating inconsistencies in the ecosystem?

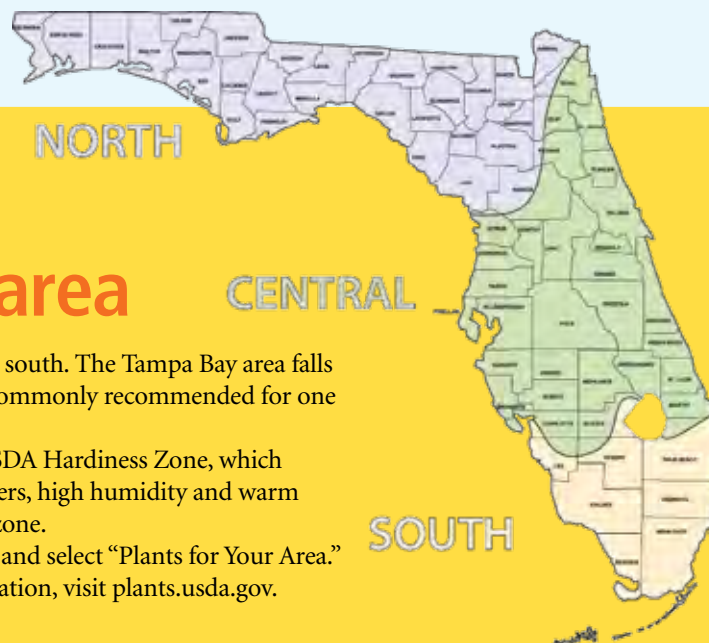


Selecting the right plant

Creating a healthy ecosystem for your home involves more than just selecting native species. It is important to put the right plant in the right place to create a healthy and successful low-maintenance landscape. Drought-tolerant plants are essential, as is the practice of putting the right plant species in the right location, depending on soil type and shade.

Be aware that even the most drought-tolerant plants require watering during the planting process. According to the University of Florida Institute of Food and Agricultural Sciences, "the term 'low-maintenance' refers to a plant that does not require frequent maintenance — such as regular watering, pruning, or spraying — to remain healthy and to maintain an acceptable aesthetic quality. A low-maintenance plant has low fertilizer requirements and few pest and disease problems."

Sources: University of Florida, Institute of Food and Agricultural Sciences



Selecting the right native plants for your area

Florida is divided into three gardening regions: north, central and south. The Tampa Bay area falls into the Central region. Florida native plants for landscape use are commonly recommended for one or more of these three climate zones.

Another way to tell where a plant can be grown is to look at its USDA Hardiness Zone, which indicates how much cold tolerance a plant has. Florida's long summers, high humidity and warm nights can affect a plant's ability to survive, even in the appropriate zone.

For information about plants suitable for your area, visit fnps.org and select "Plants for Your Area." For fact sheets on individual plant species and growing zone information, visit plants.usda.gov.



Native Plants Matter



To preserve biodiversity, it is paramount that we restore native plant habits. As Doug Tallamy of the University of Delaware notes, “By creating a native plant garden, each patch of habitat becomes part of a collective effort to nurture and sustain the living landscape for birds and other animals.”

Not only has urbanization caused erosion to natural habitats, but it also has brought non-native species of plants and animals into the Florida ecosystem.

Tallamy writes, “Over the past century, urbanization has taken intact, ecologically productive land and fragmented and transformed it with lawns and exotic ornamental plants. The continental U.S. lost a staggering 150 million acres of habitat and farmland to urban sprawl, and that trend isn’t slowing. The modern obsession with highly manicured ‘perfect’ lawns alone has created a green, monoculture carpet across the country that covers over 40 million acres.”

The bottom line is that returning native plants to landscapes at home, offices and schools would benefit the ecosystem and the wildlife in the region. Since most of the landscaping plants available in nurseries are not native to Florida or the United States, people need to make a special effort to retain the Florida ecosystem. Exotic plants not only split the food web, but many have become invasive, outcompeting native species and destroying habitat in remaining natural areas.

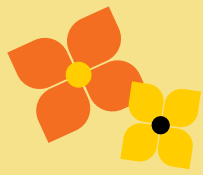
Sources: Florida Native Plant Society; Audubon Florida

The perks of being a native plant

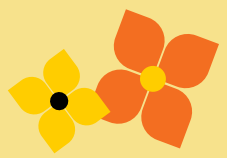
- Reducing turfgrass lawn by growing native groundcovers or mixed-species meadows can reduce the need for supplemental water.
- Deep-rooted plants such as drought tolerant natives increase the soil’s capacity to store water, reduce water runoff and reduce flooding.
- Native trees, shrubs and groundcovers reduce air pollution caused by mowing.
- Native plants provide habitat and food to native insects such as honeybees, which are critical to agricultural crops including most fruits and vegetables.
- Wildlife, including birds, rely on native plants for nesting and food.
- Almost all native butterflies need native plants as food for their larvae.
- Planting natives provides stewardship for our native heritage.
- Native plants increase scenic values, thus increasing property values and supporting Florida’s ecotourism industry.

Sources: Florida Native Plant Society, United States Forest Service





Native Wildflowers



Using Florida native wildflowers in your landscape is one way to create a beautiful garden that is environmentally sound and inexpensive. In most settings, Florida native wildflowers do not need the intensive watering or fertilization that nonnative ornamental plants may require. These wildflowers provide food and habitats for wildlife such as bees, butterflies and hummingbirds. There are hundreds of Florida native wildflowers, but here are six easy-to-grow Florida native wildflowers recommended by the Florida Wildflower Foundation:



Blanketflower (*Gaillardia pulchella*). Shirley Denton, Florida Native Plant Society

BLANKETFLOWER (*Gaillardia pulchella*) is a brightly colored, drought- and salt-tolerant wildflower that flourishes in open, sandy, sunny spots. It is an excellent nectar plant for butterflies and bees.



Liatris (*Liatris aspera*). Shirley Denton, Florida Native Plant Society

LIATRIS (*Liatris spp.*), also known as blazing stars, are tall, perennial wildflowers that are nectar plants for butterflies, bees and hummingbirds. Liatris grows well with full sun and well-drained soil.



Spotted beebalm (*Monarda punctata*). Shirley Denton, Florida Native Plant Society

SPOTTED BEEBALM, (*Monarda punctata*) also known as dotted horsemint, is one of the best Florida wildflowers for attracting butterflies, bees and hummingbirds. It grows well in sandy, well-drained soil with full sun.



Beach sunflower (*Helianthus debilis*). Skip O'Rourke, *Tampa Bay Times*

SUNFLOWERS, (*Helianthus spp.*) which are nectar plants, thrive in full sun. There are 17 native sunflower species in the Sunshine State. Each plant requires a different soil type.



Leavenworth's tickseed (*Coreopsis leavenworthii*). Shirley Denton, Florida Native Plant Society

TICKSEED, which are part of the *Coreopsis* species, also are excellent nectar plants for sunny locations. There are two species that are commonly available for landscape use: Leavenworth's tickseed (*Coreopsis leavenworthii*), which prefers moist, loamy soil and lanceleaf tickseed (*Coreopsis lanceolata*), which prefers drier conditions. *Coreopsis* is Florida's state wildflower.



Tropical sage, Shirley Denton, Florida Native Plant Society

TROPICAL SAGE (*Salvia coccinea*) is easy to grow, readily reseeds and comes in a variety of colors, including red, pink, salmon and white. It is adaptable to full sun, partial sun and many different types of soils.

Source: Florida Native Plant Society



Lance-leaved tickseed (*Coreopsis lanceolata*). Shirley Denton, Florida Native Plant Society



GOING BEYOND THE TEXT

What comes around goes around

Everything in the natural world is connected. An ecosystem is a biological community of interacting organisms and their physical environment. In other words, an ecosystem is a community of plants, animals and microorganisms that have co-evolved and are dependent on each other. Think about all the different parts of your ecosystem. Make a list of all the components of your ecosystem. Next, look for articles, photos and advertisements in the *Tampa Bay Times* about your community. Choose some of the most important parts and create a cartoon depicting your personal ecosystem.



Florida-friendly

Florida-Friendly Landscaping includes “best management practices supporting water conservation, sensible use of fertilizer, planting plants appropriate to the sites they are being grown in, and avoidance of invasive species.”

Florida-Friendly Landscapes protect Florida’s unique natural resources by conserving water, reducing waste and pollution, creating wildlife habitat, and preventing erosion. Any landscape can be Florida Friendly if it is designed and cared for according to the nine Florida-Friendly Landscaping principles, which encourage individual expression of landscape beauty.

Sources: National Geographic, UF/IFAS Extension

NINE PRINCIPLES OF FLORIDA-FRIENDLY LANDSCAPES

1 RIGHT PLANT, RIGHT PLACE:

Achieving a healthy, low-maintenance home landscape starts with putting the right plant in the right place based on type of soil and light.

2 WATER EFFICIENTLY:

An efficient irrigation system conserves water and helps to ensure that pollution doesn’t flow into nearby water bodies.

3 FERTILIZE APPROPRIATELY:

Proper fertilization enhances growth. Improper fertilization can damage plants and the environment.

4 MULCH:

Mulch helps hold soil moisture, protects plants and inhibits weed growth.

5 ATTRACT WILDLIFE:

Selecting plants with seeds, fruit, foliage, flowers or berries draws in butterflies, bees and birds.

6 MANAGE YARD PESTS RESPONSIBLY:

You can prevent disease and insect outbreaks by selecting pest-resistant plants and putting them in suitable locations.

7 RECYCLE YARD WASTE:

Composting is a sustainable way of creating organic fertilizer.

8 REDUCE STORMWATER RUNOFF:

It is important to retain and use as much of the rainfall and irrigation water that lands on our home landscapes as possible.

9 PROTECT THE WATERFRONT:

Florida has more than 10,000 miles of rivers and streams, about 7,800 lakes, more than 700 freshwater springs, and the country’s second-longest coastline.

Source: UF/IFAS

MAKING LANDSCAPES MORE RESILIENT

2019



2020



2021



Before and after photos from the city of Safety Harbor show the old concrete seawall along Waterfront Park which was replaced with rugged new living shorelines to reduce erosion and adapt to increasing storm surge and rising seas. Tom Ries, Ecosphere Restoration Institute (ERI), (2019, 2020, 2021)

BEFORE



AFTER



Before and after photos show a homeowner's replacement of turfgrass with mulch and Florida native plants. This new landscaping will require no mowing and much less water.
Nettle Greenman

BEFORE



AFTER



Before and after photos show a homeowner's replacement of turfgrass with Florida native groundcover and permeable surfaces.
Deb and Dan Rothenberger

Native, Exotic and Invasive Plants

Native, exotic, naturalized and invasive species

The words native and indigenous mean the people, flora or fauna that live or grow naturally in a particular region. Native species are those found in Florida before European colonization began in the 16th century. In other words, these plants and animals were not brought to Florida by explorers or settlers.

Non-native, or exotic, species are those that have been introduced outside of their native area by humans, either intentionally or by accident.

A naturalized plant refers to a non-native species that is growing on its own in nature. This could be an exotic plant that has escaped from a garden or agricultural landscape, or a weed that was accidentally introduced to a new area. Naturalized plants often interfere with native species and natural ecosystem processes.

Invasive species are those plants and animals that are able to spread into and dominate an area due to a lack of natural predators and disease. Invasive species cause ecological damage and harm native ecosystems by displacing native plants, decreasing diversity and even causing the extinction of native species. They also can have negative economic effects and even be harmful to human health.

When invasive species take control of an area, it affects not only the native plants, but everything else in that habitat, including insects, animals and the land.

Sources: Florida Fish and Wildlife Conservation Commission, Florida Native Plant Society, University of Florida/IFAS Extension, U.S. Fish and Wildlife Service

Invasive species are harmful

Invasive species are harmful to Florida's natural resources, including overall ecosystem health. Invasive species disrupt natural communities and ecological processes. This causes harm to the native species in that ecosystem because the native species must compete with the new species for the same resources: food, water and shelter. When the new invasive species outcompetes the native species, the native species can become extinct. When the native species becomes extinct, the ecosystem will become less diverse. A less diverse ecosystem is more vulnerable to further disturbances such as diseases and natural disasters.

Source: U.S. Fish and Wildlife Service

Stopping the invasion

Once invasive species start taking over the yard, the native flora and fauna get pushed out of the landscape. Everyone can play a role in preventing the introduction and spread of invasive species. Here are some tips:

- Learn to identify invasive species found in your area. Remove invasive plants on your property.
- Whenever possible, use only native plants that are appropriate for your region. Use exotic ornamentals only if you cannot find a native alternative and you are sure the ornamental is noninvasive.
- Don't bring animals, plants or agricultural products such as fruits, vegetables or soil into the country illegally.
- Join a local group, such as your local chapter of the Florida Native Plant Society, to learn more about native and exotic species.
- Participate in exotic invasive removal work days at local parks and preserves.

Sources: Florida Native Plant Society, U.S. Fish and Wildlife Service, U.S. National Arboretum

GOING BEYOND THE TEXT

Controlling invasive species

A significant part of environmental management work includes invasive species control. Use the following resource to research invasive species that affect Florida ecosystems and investigate what local agencies are doing to combat them: floridainvasives.org. Look for articles in the *Tampa Bay Times* that focus on local ecosystems and invasive and threatened species. Pay special attention to the information about the effects of human activities and invasive species on ecosystems. Keep track in your journal of the articles you find. Choose one of the topics you have read about to do further research. Using the articles in the *Tampa Bay Times* as a model, write a feature-style newspaper article about what you have discovered. Share this article and what you have learned with your class.



Invasive plants in Tampa Bay

Here are some of the most common invasive plants in the Tampa Bay region.

Brazilian pepper tree

The Brazilian pepper tree (*Schinus terebinthifolius*) is one of the most aggressive and widespread invasive plants in the state of Florida. Brazilian pepper is an evergreen, shrub-like tree that produces small berries that ripen from green to bright red. Brazilian pepper trees have a dense canopy that shades out all other plants and forms a poor habitat for birds and other native wildlife. They also produce allergens that can cause respiratory difficulty and skin irritation.



Brazilian pepper tree (*Schinus terebinthifolius*). Southwest Florida Water Management District

Air potato vine

The air potato vine (*Dioscorea bulbifera*) is a herbaceous vine with heart-shaped leaves, often growing from an underground tuber. It forms dense canopies over native tree communities, overtopping and shading out native trees.



Air potato vine (*Dioscorea bulbifera*). Southwest Florida Water Management District

Japanese climbing fern and Old World climbing fern

Japanese climbing ferns (*Lygodium japonicum*) and Old World climbing ferns (*Lygodium microphyllum*) have twining, climbing stems and can ascend and cover vegetation. These ferns can smother entire habitats, blanketing trees and understory and preventing sunlight from reaching the forest floor.

Sources: Florida Fish and Wildlife Conservation Commission, UF/IFAS Extension, U.S. Fish and Wildlife Service



Old World climbing ferns (*Lygodium microphyllum*). Southwest Florida Water Management District

Sunshine mimosa (*Mimosa strigillosa*). UF/IFAS



THINK ABOUT IT

ALTERNATIVES TO TURFGRASS

Plants don't have to be invasive to be undesirable. The turfgrass so commonly seen in Florida home landscapes often needs intensive irrigation and fertilization to grow in the Florida climate. Not only does this put a strain on the delicate ecosystem, but it overtaxes our water supply. Non-native turfgrass provides little habitat or food for native wildlife and attracts turf-eating insects that require pesticides to control.

There are other options for an attractive lawn besides turfgrass that provide equal beauty, don't require difficult maintenance and avoid unnecessary expense.

- Reduce the size of your lawn: Turf in hard-to-mow or hard-to-grow areas can be replaced with alternatives such as shade-tolerant groundcovers or mulch.
- Substitute native low-growing native groundcovers such as sunshine mimosa (*Mimosa strigillosa*) for turfgrass.
- High-traffic areas can be replaced with sidewalks and outdoor patios constructed of permeable materials that allow rainwater to soak in, rather than run off.

Sources: UF/IFAS

Creating Sustainable and Resilient Wildlife Habitats



Ruby-throated hummingbird (*Archilochus colubris*).
Jim Damaske, *Tampa Bay Times*



Coral honeysuckle (*Lonicera sempervirens*). Shirley Denton, Florida Native Plant Society



Necklacepod (*Sophora tomentosa*). Shirley Denton, Florida Native Plant Society

Fueling acrobatic visitors

Another benefit of planting native gardens is native flowering plants attract tiny, brightly colored hummingbirds to your garden.

Three different species of hummingbirds live in Florida. The most common is the ruby-throated hummingbird (*Archilochus colubris*). This hummingbird is mainly seen during its spring and fall migrations.

According to the University of Florida IFAS, the ruby-throated hummingbird is about 3 inches long, and weighs as little as a penny. “Unlike other birds, hummingbirds can hover in midair and fly backward, upward and upside down. This is made possible by their unique wing design.”

The ruby-throated hummingbird must consume a lot of high-energy food to support its aerial acrobatics. Adult hummingbirds primarily eat nectar, using their long tongues to sip it from flowers.

The University of Florida IFAS recommends choosing plants with brightly colored flowers to attract hummingbirds to your garden. Hummingbirds prefer red, orange and pink flowers. Examples include necklacepod (*Sophora tomentosa*), tropical sage (*Salvia coccinea*), coral bean (*Erythrina herbacea*) and coral honeysuckle (*Lonicera sempervirens*). Visit edis.ifas.ufl.edu/uw059 to find a list of nectar plants attractive to hummingbirds.

Source: UF/IFAS



Magnolia (*Magnolia spp.*).
Shirley Denton, Florida Native Plant Society



Sabal or cabbage palm (*Sabal palmetto*). Shirley Denton, Florida Native Plant Society



Yaupon holly (*Ilex vomitoria*).
Shirley Denton, Florida Native Plant Society



Beautyberry (*Callicarpa americana*). Penny Carnathan, *Tampa Bay Times*



Simpson's stopper (*Myrcianthes fragrans*). Shirley Denton, Florida Native Plant Society



Wax myrtle (*Myrica cerifera*). Shirley Denton, Florida Native Plant Society

Creating wildlife habitat with native plants

Wildlife needs food, water and cover to live. To create an ideal landscape for wildlife, plant native plants to provide a year-round food supply, offer water and provide cover to allow wildlife to breed, nest, hide, sleep and feed.

Some Florida native shrubs and trees that are especially valuable to wildlife include Simpson's stopper (*Myrcianthes fragrans*), yaupon holly (*Ilex vomitoria*), magnolias (*Magnolia spp.*), wax myrtle (*Myrica cerifera*), beautyberry (*Callicarpa americana*) and sabal or cabbage palm (*Sabal palmetto*).



Left: A honey bee collects pollen from a fiddlewood blossom. Douglas R. Clifford, *Tampa Bay Times*



Right: Bee seeking pollen from a beach sunflower. Skip O'Rourke, *Tampa Bay Times*



Bee attracted to blanketflowers. Jim Damaske, *Tampa Bay Times*

GOING BEYOND THE TEXT

Native pollinators

Bumblebees are very efficient pollinators. There are five species of bumblebees living in Florida. According to the Florida Wildflower Foundation, bumblebee populations have been in decline for several decades because of habitat loss, pesticides and diseases.

Research bumblebee populations in Florida. Find out the who, what, where, when, why and how information about these species. Using the *Tampa Bay Times* and other reliable sources, such as the Florida Department of Agriculture and Consumer Services and the University of Florida Entomology and Nematology Department, find information about the dwindling population of these important members of our ecosystem. Find out what you can plant in your garden to help encourage the bumblebee population.

Create an infographic, graphic organizer or poster to illustrate what you have learned. Share this information with your class.





Monarch butterfly. Janet Bowers, Florida Native Plant Society

Monarchs and milkweed

One of the most widely recognized butterflies in the world is the monarch butterfly.

It is also the only North American butterfly species that carries out an annual long-distance roundtrip migration. Each fall, monarchs in the western United States migrate to spend the winter in California, while monarchs from the eastern U.S. and Canada migrate up to 3,000 miles to winter in Mexico.

Florida is unusual in hosting a permanent population of monarchs because of its warm climate and year-round growing season, which means that host plants for developing and adult butterflies are available all year.

Florida also hosts migratory monarchs from northeastern North America on their way to Mexico. The only host plant for monarch eggs and larvae is the milkweed.

Recently, the monarch butterfly population has declined due to the loss of milkweed plants throughout the U.S., caused by habitat



Monarch caterpillar. Janet Bowers, Florida Native Plant Society

destruction, climate change and pesticide use. You can help conserve this beautiful species by including Florida native milkweed in your garden and avoiding the use of insecticides and herbicides. Find local sources of Florida native milkweed at xerces.org/milkweed-seed-finder.

Sources: The Xerces Society, UF/IFAS



Monarch Caterpillar. Luis Santana, *Tampa Bay Times*

GOING BEYOND THE TEXT

Monarchs

Read "Florida monarch butterfly populations have dropped 80 percent since 2005" at the following link: floridamuseum.ufl.edu/science/florida-monarch/. Using the *Tampa Bay Times* and other reliable sources, do further research on the issues discussed in the article. Using the information you learn, write a letter to the editor of the *Times* explaining the plight of the monarch butterfly and how people in our community can help increase the population. Use the letters to the editor at tampabay.com/opinion/letters as models.

Butterfly gardens

Florida has more than 200 species of butterflies, some of which cannot be found anywhere else on Earth. Creating a butterfly garden will help you attract wildlife and bring butterflies into your garden for enjoyment, observation and photography.

But the most important reason is ecosystem/habitat conservation. According to the University of Florida Institute of Food and Agricultural Sciences (IFAS), "A well-planned butterfly garden becomes a small, but representative sample of the surrounding habitat and as such provides a safe haven for butterflies and other wildlife to gather, seek shelter, acquire food and water, reproduce and build populations; do not underestimate the importance of even a small garden."

To attract these delicate creatures, your butterfly garden must provide food for both the adult butterflies and their caterpillars. Research the importance of butterflies to the ecosystem around your school. Also, research the best drought-tolerant, native plants for butterflies. Create a blueprint or plan of where to plant the butterfly garden. Using the columns in the *Tampa Bay Times* as models, write an opinion column informing and persuading others to plant a butterfly garden.

GOING BEYOND THE TEXT

Nature is not optional

Judy Preston, outreach coordinator for the Environmental Protection Agency's Long Island Sound Study, writes, "there is a large and growing body of information that points to the importance of nature to people: everything from visual to physical access to nature has been shown to dampen anxiety, anger and depression as well as elevate feeling of satisfaction and pleasure."

The United Nations reports that 54 percent of the world's population lives in urban areas, and that number is expected to increase to 66 percent by 2050.

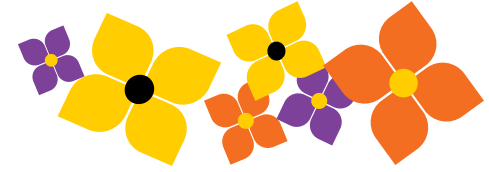
It is important to design your garden, no matter how large or small, through careful planning. According to the University of Florida IFAS Extension, humans must consider the type of soil as well as the future maintenance of the plants, grasses and trees.

To find inspiration for your design, visit demonstration gardens, botanical gardens and local nurseries and look through gardening magazines and books. Take a walk around your neighborhood and observe landscapes and gardens in your community. Study those that appeal to you and make a note of features, types of plants and design elements such as color, texture and form that you like.

Look through the articles and advertisements in the *Tampa Bay Times* for inspiration. Check and monitor the weather report posted in the newspaper during rainy season and times of drought. Visit ffl.ifas.ufl.edu/about-ffl/9-principles/principle-1-guidance to learn more about how to design a customized Florida-Friendly Landscape plan for your project.

To find retail nurseries carrying Florida native plants, visit plantrealfloida.org/.

DON'T PLANT THAT... PLANT THIS!



Mexican petunia (*Ruellia simplex*). Ann Murray, UF/IFAS Center for Aquatic and Invasive Plants

DON'T PLANT THAT: Mexican petunia (*Ruellia simplex*)

Although popular with gardeners and easily available from big box stores, Mexican petunia has been classified as a highly invasive plant in Florida. This means that it easily can escape from home gardens and spread into natural areas, where it crowds out native species.

PLANT THIS INSTEAD: Narrow-leaf ironweed (*Vernonia angustifolia*) or Tall ironweed (*Vernonia gigantea*)

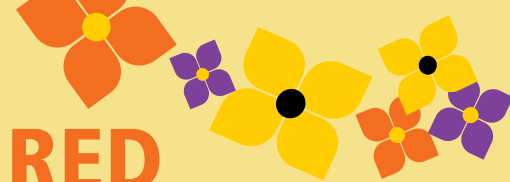
Narrow-leaf ironweed is a native wildflower that is a great pollinator plant and nectar source and will attract hummingbirds, native bees and butterflies. Tall ironweed is a native wildflower that serves as host to spring azure butterfly larvae. Its nectar attracts butterflies and native bees. For more information, visit fnps.org/plant/vernonia-angustifolia and fnps.org/plant/vernonia-gigantea.



Narrow-leaf ironweed (*Vernonia angustifolia*). Roger Hammer, Florida Native Plant Society



Tall ironweed (*Vernonia gigantea*). Roger Hammer, Florida Native Plant Society



GET INSPIRED

Check out these great botanical gardens to help inspire you.

Butterfly Conservatory of Tampa Bay
butterflytampa.com

Hammock Park Butterfly Garden
hammockpark.org/butterfly

Eureka Springs Conservation Park
hillsboroughcounty.org/en/locations/eureka-springs-conservation-park

Kiley Garden
tclf.org/landscapes/kiley-garden

Florida Botanical Gardens
flbgfoundation.org

Oldsmar Organic Community Garden
oocg.org

Folly Farm Nature Preserve
wanderflorida.net/folly-farm-nature-preserve

University of South Florida Botanical Gardens
usf.edu/arts-sciences/botanical-gardens/

GOING BEYOND THE TEXT

Scavenger Hunt

It is time to plant your virtual Florida native garden. Using the information on the Florida Native Plant Society website, you are going to create a virtual garden for your school or home that can be used as a blueprint for a natural garden.

Step 1: On a piece of paper in your notebook, create a representation of the area for your garden plot.

Step 2: Note the specifics about the land – soil, sunlight, human and animal traffic – on the sketch.

Step 3: Go to fnps.org. Click Native Plants for your area under the Native Plants tab

Step 4: Browse plants and read about the perfect spots for them to grow. For example, the Blue Waterhyssop grows best in full sun, and the plant has a low tolerance for salty water.

Step 5: Choose at least six different native plants for your virtual garden and place them in your sketch.

Step 6: In your notebook, explain why you are choosing these specific plants.

Step 7: Convert your notebook sketch to a virtual garden on the computer.

Step 8: Share what you have created and learned with your class.



Tropical milkweed (*Asclepias curassavica*). Edward F. Gilman, UF/IFAS

DON'T PLANT THAT: Tropical milkweed (*Asclepias curassavica*)

Although popular with butterfly gardeners, tropical milkweed has been an invasive species in Florida for many years. Its fast growth and re-seeding disrupt native ecosystems that both wildlife and humans rely on. It also is more likely to harbor *Ophryocystis elektroscirrha* (OE), a parasite that can kill monarch butterflies.

PLANT THIS INSTEAD: Rose milkweed (*Asclepias incarnata*) or Aquatic milkweed (*Asclepias perennis*)

These easy-to-grow native milkweed species are just as attractive to monarch butterflies and also serve as hosts to queen butterfly and soldier butterfly larvae. They also attract many pollinators, especially native bees. For more information, visit fnps.org/plant/asclepias-incarnata and fnps.org/plant/asclepias-perennis.



Rose milkweed (*Asclepias incarnata*). Shirley Denton, Florida Native Plant Society



Aquatic milkweed (*Asclepias perennis*). Shirley Denton, Florida Native Plant Society



Nandina (*Nandina domestica*). Vic Ramey, UF/IFAS Center for Aquatic and Invasive Plants

DON'T PLANT THAT: Nandina (also known as Sacred bamboo or Heavenly bamboo) (*Nandina domestica*)

Nandina was originally introduced as an ornamental shrub, but the U.S. Department of Agriculture classifies Nandina as a noxious, non-native, invasive weed that spreads easily, displacing native plant populations. According to Audubon, its berries are also extremely toxic to birds.

PLANT THIS INSTEAD: Rouge plant (*Rivina humilis*)

This shade-loving native shrub produces showy pink flowers and beautiful red berries that are adored by many different species of birds. For more information, visit fnps.org/plant/rivina-humilis.



Rouge plant (*Rivina humilis*). Shirley Denton, Florida Native Plant Society

Sources: Jan Allyn, Florida Native Plant Society; Audubon; University of Florida IFAS



Newspaper in Education

The Tampa Bay Times Newspaper in Education program (NIE) is a cooperative effort between schools and the Times Publishing Co. to encourage the use of newspapers in print and electronic form as educational resources – a “living textbook.”

Tampa Bay
Times
NIE
newspaper in education
tampabay.com/nie

Our educational resources fall into the category of informational text, a type of nonfiction text. The primary purpose of informational text is to convey information about the natural or social world.

NIE serves educators, students and families by providing schools with class sets of the Pulitzer Prize-winning *Tampa Bay Times* plus award-winning original educational publications, teacher guides, lesson plans, educator workshops and many more resources — all at no cost to schools, teachers or families. In 2019-2020, NIE provided more than 1.1 million print copies and 10 million digital editions of the *Times* to area classrooms.

For more information about NIE, visit tampabay.com/nie, call 727-893-8138 or email ordernie@tampabay.com. Follow us on Twitter at twitter.com/TBTimesNIE. Find us on Facebook at facebook.com/TBTNIE.

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Credits

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Florida Standards

This publication and the activities focus on the following Florida Standards for high school: BEST: ELA.912.C.1.4; ELA.912.C.2.1; ELA.912.C.3.1; ELA.912.C.4.1; ELA.912.C.5.1; ELA.912.R.2.1; ELA.912.R.3.2; ELA.912.R.3.4; ELA.912.V.1.1 Health: HE.912.B.4.1; HE.912.B.4.2; HE.912.C.1.3 Language Arts: LAFS.912.L.1.1; LAFS.912.L.1.2; LAFS.912.L.2.3; LAFS.912.L.3.4; LAFS.912.L.3.6; LAFS.912.RI.1.1; LAFS.912.RI.1.2; LAFS.912.RI.1.3; LAFS.912.RI.2.4; LAFS.912.RI.2.5; LAFS.912.RI.2.6; LAFS.912.RI.3.7; LAFS.912.RST.1.1; LAFS.912.RST.1.2; LAFS.912.RST.2.6; LAFS.912.RST.3.7; LAFS.912.SL.1.1; LAFS.912.SL.1.2; LAFS.912.SL.1.3; LAFS.912.SL.2.4; LAFS.912.SL.2.5; LAFS.912.W.1.1; LAFS.912.W.1.2; LAFS.912.W.2.4; LAFS.912.W.2.5; LAFS.912.W.2.6; LAFS.912.W.3.7; LAFS.912.W.3.8; LAFS.912.W.3.9; LAFS.912.W.4.10 Science: SC.912.CS-CC.1.4; SC.912.CS-CC.1.5; SC.912.E.6.4; SC.912.E.7.3; SC.912.L.14.6; SC.912.L.14.8; SC.912.L.15.3; SC.912.L.17.8; SC.912.L.17.17; SC.912.L.17.18; SC.912.L.17.20; SC.912.L.18.12; SC.912.N.1.1

Regional collaboration to increase resilience

Making our homes and neighborhoods more resilient is a top priority for local municipalities. To address these challenges, the Tampa Bay Regional Planning Council (TBRPC) is leading a new initiative called REACH (Resilience and Energy Assessment of Communities and Housing). REACH is bringing together housing, resilience, recovery planning experts and community leaders to assess risks and define new strategies and policies to increase resilience and other community issues.

In addition to REACH, the TBRPC coordinates other resilience and sustainability programs including the Tampa Bay Regional Resiliency Coalition. The Coalition includes 31 local governments and more than 90 partners from business groups, universities, nonprofits and advocacy organizations who share a commitment to increasing resilience.

The region is creating the first Regional Resilience Action Plan (RRAP) to coordinate efforts to reduce risks to people and property by preparing for sea level

rise, storms, flooding, extreme heat and other hazards. The RRAP will serve as a five-year road map and will define goals, objectives and actions that can be implemented locally and through regional cooperation.

The RRAP includes both short-term and long-term actions that support sustainability as well as social and racial equity goals. The RRAP also acknowledges the importance of conserving our natural resources and restoring habitats. Other recommended actions include:

- Developing neighborhood resilience programs and resources.
- Increasing the use of innovative green engineering strategies and landscape design to reduce flooding.
- Promoting “cool communities” to reduce heat with changes to pavement, roofs, planting trees, and installing shade devices.

The TBRPC is collecting input from community members between Oct. 1 and Nov. 30, 2021. Take the Resilience Survey and share your ideas. To access the survey, visit tbrpc.org.

Stanley Smith Horticultural Trust

The Stanley Smith Horticultural Trust was created in 1970 by May Smith in honor of her late husband. The Trust supports education and research in ornamental horticulture, primarily in North and South America.

For more information about the Stanley Smith Horticultural Trust, visit smithht.org/



TAKE THE RESILIENCE SURVEY AND SHARE YOUR IDEAS

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