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# Palmetto



Native Plants are for Everyone! • Got Milkweeds? • Bee Friendly With Florida Native Plants



# Palmetto

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## The purpose of the Florida Native Plant Society

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For most purposes, the phrase Florida native plant refers to those species occurring within the state boundaries prior to European contact, according to the best available scientific and historical documentation. More specifically, it includes those species understood as indigenous, occurring in natural associations in habitats that existed prior to significant human impacts and alterations of the landscape.

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*Article by Leslie Nixon*



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A perplexing rotund resin bee (*Anthidiellum perplexum*) scraping pollen from blue-eyed grass (*Sisyrinchium angustifolium*). See article on page 8.  
 Photo by Laura Langlois-Zurro.

## Palmetto

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## Editorial Content

We welcome articles on native plant species and related conservation topics, as well as high-quality botanical illustrations and photographs. Contact the editor for guidelines, deadlines and other information.



# Bee Friendly Using Florida Native Plants

Article by Leslie Nixon

Photos by Laura Langlois-Zurro



Above: A native metallic green sweat bee (genus *Augochloropsis*) covered in pollen, on a flowering Hercules-club (*Zanthoxylum clava-herculis*).

In the current age of the Anthropocene, in which humans dominate the planet Earth, many species of plants and animals are struggling for survival. For the vast majority of these species, a single person can have little direct effect on their success. However, there is one group of animals that individuals can help conserve – native bees (Krueger, 2022). Bees are easy to support because they are so small. They require many fewer resources than, say, a Florida panther, so homeowners can make provisions for them in their own yards.

To be clear, we are talking about Florida's native bees, not honey bees, which were originally imported from England in the 17<sup>th</sup> century and are now managed as an agricultural commodity. There are more than 4,000 native bee species in the United States, and over 300 species are native to Florida, including 29 species that are endemic to the state (Krueger, 2022). Florida's native bees are diverse and come in a variety of sizes, shapes and colors – some even look more like wasps than bees.

Native bees such as bumble bees, mason bees, and sweat bees do not live in permanent hives and do not sting unless provoked. They are a vital part of Florida's ecosystems, but their numbers are dropping at an alarming rate. Recent research has shown that more than 50% of North America's native bee species are declining (Kopec & Burd, 2017). The reasons for this decline are many and include loss of habitat, overuse of pesticides, invasive species, climate change, and competition with honey bees (Kopec & Burd, 2017; Xerces

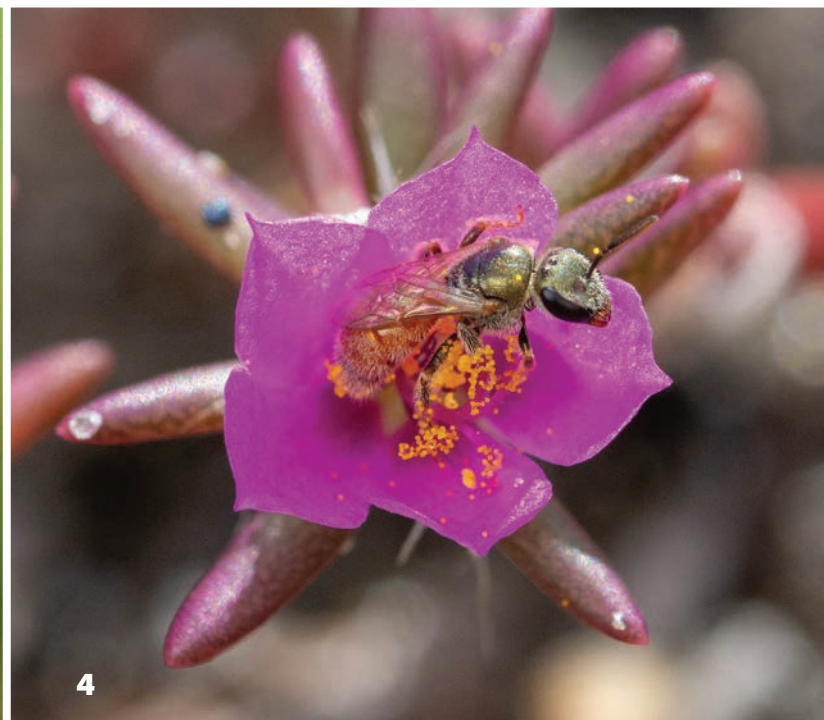
Society, 2023b). Losing more native bees could be disastrous for our ecology because native bees are responsible for pollinating 75% of native plants (United States Geological Survey). How can we preserve, conserve, and restore the flora of Florida without native bees?

Fortunately, it is easy for home gardeners to support native bees by planting bee-sustaining Florida native plants. Florida's bees coevolved with native plants over millions of years to form symbiotic relationships in which the bees and the plants depend on each other for reproduction. Adult bees feed on pollen and nectar from flowering plants, while plants enlist bees to spread their pollen from flower to flower. While male bees only drink nectar, female bees also feed on pollen at some stages of their life cycles,

Facing page:

1. A cuckoo bee (genus *Coelyoxis*) on Virginia creeper (*Parthenocissus quinquefolia*).
2. The long tongue of this American bumble bee (*Bombus pennsylvanicus*) is able to reach into the tubular flower of coral honeysuckle (*Lonicera sempervirens*).
3. Tiny bees need tiny flowers. This Floridian small carpenter bee (*Ceratina floridana*) is visiting frogfruit (*Phyla nodiflora*).
4. A bee (genus *Lasioglossum*, subgenus *Dialictus*) rests on the flower of kiss-me-quick (*Portulaca pilosa*). For scale, note the pollen grains on the bee's body and legs.
5. A female *Megachile* leafcutter bee cuts away a section of leaf, which she will use to create a nest cell. She will stock the cell with pollen for her larva to eat as it develops. Each cell contains a single larva.
6. A cuckoo bee (*Stelis louisae*) on snow squarestem (*Melanthera nivea*). This plant is attractive to many pollinators and is a great addition to the native bee garden.







and pollen is the main source of protein for nourishing bee larva. Of course, there are many types of animals that pollinate plants, but bees are not your average pollinator; they are in fact super pollinators. Bees actively collect pollen during foraging whereas other pollinators only accidentally transfer it while focusing on nectar. In addition, bees tend to visit only one species of flower on each foraging trip (Xerces Society, 2023b). This phenomenon, called flower constancy, improves the efficiency of bee pollination which naturally benefits both bees and plants.

While most native bees are generalists and collect pollen and nectar from a variety of flowering plants, 28% of Florida's bees are specialists who require the pollen of particular native plants to survive (Fowler & Droege, 2020). Specialist bees might depend on the pollen of one certain plant species or they could be a bit less choosy and forage on a particular genus or family of plants. These specialist bees evolved in strict ecological relationships with their host plants and are in danger of extinction if their hosts disappear. One example of this relationship is the blue calamintha bee (*Osmia calamintha*) and the threatened plant Ashe's calamint (*Calamintha ashei*), both residents of Florida's Lake Wales Ridge.

Therein lies the problem with non-native plants. Generalist bees may visit and pollinate non-native plants, but specialist bees can't survive on foreign pollen (Fowler & Droege, 2020, Tallamy, 2019). Thus, non-native plants can lead to a loss of bee species and bee diversity. The increase in planting of non-native plants has been implicated in the decline of insects in general (Tallamy et al., 2020).

The good news is that there are many Florida native plants available for use in the home landscape that feed both generalist and specialist bees. Figure 1 is a diagram of a sample bee garden. Table 2 lists common, easy-to-grow Florida native plants that befriend bees. The list is not exhaustive, but it includes native plants with abundant pollen and nectar favored by native bees. Use these two tools to build better bee habitat in your yard.

### In choosing and planting food sources for bees, there are three guiding principles:

- Serve up a continuous, year-long buffet of flowers. Different bee species are active at different times throughout the year. Providing flowers year-round accommodates all types of bees. Even in north Florida there are bees foraging in winter (Langlois-Zurro, 2022). To make sure as many bees as possible have food available, entomologists recommend having at least three plant species blooming at any given time (Mallinger et al., 2019). This diversity not only feeds more kinds of bees, it also improves the ecological function and resilience of your garden.
- Choose flowers with the color and shape that attract bees. Bees prefer white, yellow, and blue-purple flowers. Since they can't see the color red (Shipman, 2011), that intense color has little appeal for them – so balance the bright red flowers that attract hummingbirds to your garden with more subtle colors attractive to bees. Native bees also have preferences for

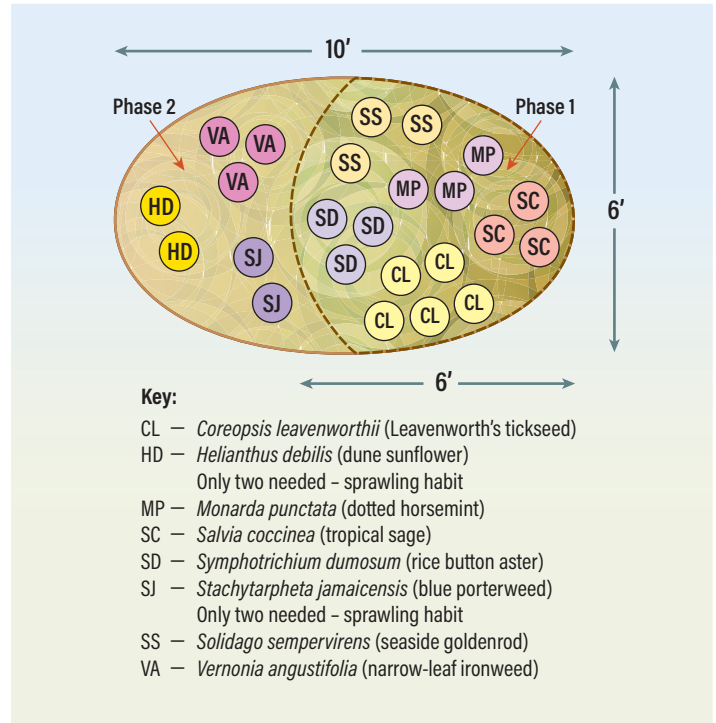


Figure 1. Sample Bee Garden. The garden can be completed in one or two phases.

flower shape and size. Larger species, such as bumble bees can access flowers with long tubes like coral honeysuckle (*Lonicera sempervirens*). But smaller species with short tongues cannot access pollen or nectar deep down in long tubular flowers (Mallinger et al., 2019). For them, plant easy-access flowers with flat faces such as asters, and those with shorter, more open tubes, like manyflower beardtongue (*Penstemon multiflorus*) or largeflower false rosemary (*Conradina grandiflora*). Even flower size can make a difference. Tiny bees have smaller ranges and often visit small flowers such as frogfruit (*Phyla nodiflora*). Bees are busy enough as it is, what with mating, building nests, and feeding their young; make it easy for them to step up to the buffet.

- Plant flowers in groups. A mass of flowers acts as a flashing neon sign to entice hungry bees to stop on in. Rather than scattering flowers around your landscape, arrange at least three of the same species together to lure bees and to simplify their foraging efforts. Flying relentlessly from flower to flower takes a lot of energy; planting flowers in groups helps bees be more efficient in their quest for food. Grouping flowers also helps the plants increase their pollination rate which improves plant reproduction (yielding more plants for you).

### Here are more ideas to optimize your landscape for native bees.

- Flowers for bees bloom best in sites with full sun. Six or more hours of sun per day is ideal, but a partly sunny location (4-6 hours of sun per day) will provide adequate energy for flowering. There won't be as many blooms in a less sunny location, but bees will still benefit from your floral banquet.

● Include host plants for specialist bees. If you only plant flowers for generalist bees, you will get only generalists. If you grow host plants for specialist bees you may attract both specialist and generalist bees, so plant for the specialists and the generalists will come (Fowler & Droegge, 2020, Tallamy, 2019). To find out more about specialist bee species and the plants they visit, see *Pollen Specialist Bees of the Eastern United States*, online at: [https://jarrodflower.com/specialist\\_bees.html](https://jarrodflower.com/specialist_bees.html).

● Add a small tree or a few shrubs to your wildflowers. Most people think of wildflowers when planting for bees, but

woody plants are also bee-worthy as they reliably produce abundant arrays of flowers every year. Some of these sturdy perennials tend to bloom in late winter, thereby feeding early season bees. You can create sufficient habitat for bees with wildflowers alone, but including a variety of plant forms adds an extra ecological dimension to your landscape.

● Avoid insecticides. Most insecticides are non-selective, meaning they kill any insect that comes in contact with them, including bees. Instead of using pesticides, which also kill insect predators that keep pests under control, try alternative methods

Species Name	Common Name	Flower Color	Bloom Time	Size (H x W)	Water Needs	Zones
<b>Trees and Shrubs</b>						
<i>Ardisia escallonioides</i>	Marlberry	White	All year	15' x 8'	Med	9A - 11
<i>Baccharis halimifolia</i>	Salt bush	White, yellow	Su-Fall	15' x 7'	Med	8A - 11
<i>Cercis canadensis</i>	Eastern redbud	Pink	W-Sp	30' x 15'	Low	8A - 9B
<i>Chrysobalanus icaco</i>	Cocoplum	White	All year	20' x 15'	Low	10A - 11
<i>Forestiera segregata</i>	Florida privet	Yellow	W-Sp	15' x 10'	Med	8A - 11
<i>Ilex glabra</i>	Gallberry	White	W-Sp	12' x 3'	Med	8A - 10B
<i>Psychotria nervosa</i>	Shiny-leaf wild coffee	White	Sp-Su	6' x 3'	Med	9A - 11
<i>Prunus umbellata</i>	Flatwoods plum	White	W-Sp	20' x 15'	Med	8A - 10B
<i>Senna ligustrina</i>	Privet senna	Yellow	All year	6' x 5'	Low	9A - 10B
<i>Serenoa repens</i>	Saw palmetto	white	Sp-Su	15' x 10'	Low	8A - 11
<i>Sophora tomentosa</i> var. <i>truncata</i>	Yellow necklacepod	Yellow	All year	8' x 6'	Low	9B - 11
<i>Vaccinium arboreum</i>	Sparkleberry	White	Sp	20' x 8'	Low	8A - 9B
<i>Vaccinium darrowii</i>	Darrow's blueberry	White	Sp	2' x 2'	Med	8A - 10A
<i>Virburnum obovatum</i>	Walter's viburnum	White	W-Sp	10' x 10'	Low	8A - 10A
<i>Zanthoxylum clava-herculis</i>	Hercules-club	White	Sp-Su	25' x 25'	Med	8A - 10B
<i>Zanthoxylum fagara</i>	Wild lime	Yellow, green	W-Sp	20' x 12'	Med	9A - 11
<b>Herbaceous Plants</b>						
<i>Bidens alba</i>	Beggarticks	White/yellow disk	All year	3' x 3'	Low	8A - 11
<i>Chamaecrista fasciculata</i>	Partridge pea	Yellow	Sp-Su	3' x 3'	Low	8A - 10B
<i>Chrysopsis mariana</i>	Maryland goldenaster	Yellow	Sp-F	2' x 1'	Low	8A - 9B
<i>Cirsium horribulum</i>	Purple thistle	Purple	Sp	4' x 2'	Low	8A - 11
<i>Coreopsis leavenworthii</i>	Leavenworth's tickseed	Yellow	Sp-F	3' x 1'	Med	8A - 11
<i>Elephantopus elatus</i>	Elephant's-foot	White, lavender	Sp-F	3.5' x 1.5'	Med	8A - 10B
<i>Erigeron quercifolius</i>	Oakleaf fleabane	White, yellow, lavender	Sp-Su	2' x 0.75'	Med	8A - 11
<i>Euphorbia cyathophora</i>	Painted-leaf	Yellow, green	All year (Wd)	3' x 2'	Med	8A - 11
* <i>Helianthus debilis</i> subsp. <i>debilis</i> ; <i>cucumerifolius</i> ; <i>vestitus</i>	Dune sunflower	Yellow	All year	2.5' x 2.8'	Low	* See note
<i>Liatris spicata</i>	Gayfeather	Purple	F	4'	Low	8A - 10B
<i>Melanthera nivea</i>	Snow squarestem	White	Su-F	5' x 4'	Med	8A - 11
<i>Mimosa strigillosa</i>	Sunshine mimosa	Pink	Sp-F	0.5' x 10+'	Low	8A - 10B
<i>Melochia tomentosa</i>	Tea bush	Pink	All year	Up to 10'	Low	10B
<i>Mondarda punctata</i>	Dotted horsemint	Pink	Su-F	2-5' x 2-3'	Low	8A - 10A
<i>Phyla nodiflora</i>	Frogfruit	White/purple	All year	0.6"	Med	8A - 11
<i>Penstemon multiflorus</i>	Manyflower beardtongue	White	Sp-F	2-3'	Low	8A - 11
<i>Rudbeckia hirta</i>	Black-eyed Susan	Yellow	Sp-F	3' x 1-2'	Low	8A - 10B
<i>Salvia coccinea</i>	Tropical sage	Pink, red	Sp-F	2-6'	Low	8A - 11
<i>Silphium asteriscus</i>	Starry rosinweed	Yellow	Sp-F	2-5' x 1'	Low	8A - 10A
<i>Solidago sempervirens</i>	Seaside goldenrod	Yellow	F	3-6' x 2'	Low	8A - 10B
<i>Stachytarpheta jamaicensis</i>	Blue porterweed	Purple	All year	0.5-1' x 4'	Low	9B - 11
<i>Symphotrichum dumosum</i>	Rice button aster	White/pink/blue/lavender	F	2-4'	Low	8A - 11
<i>Trichostema dichotomum</i>	Forked bluecurls	Blue	All year	3' x 2'	Low	8A - 10B
<i>Vernonia angustifolia</i>	Narrow-leaf ironweed	Purple	Su-F	2-3'	Low	8A - 9B

KEY: Sp = Spring / Su = Summer / F = Fall / W = Winter / Wd = Winter dormant

\* NOTE: There are three subspecies of dune sunflower. Be sure to plant the one native to your area of Florida. To avoid inbreeding, do not plant the different subspecies a common garden.

- Cucumberleaf dune sunflower (*Helianthus debilis* subsp. *cucumerifolius*) - northern 2/3 of the state, zones 8A to 10A (excluding counties on the Atlantic coast).
- East coast dune sunflower (*Helianthus debilis* subsp. *debilis*) - Atlantic coast of Florida and the Florida Keys, zones 8B to 11.
- West coast dune sunflower (*Helianthus debilis* subsp. *vestitus*) - Gulf coast of Florida, zones 9A-10A.

Table 2. A Selection of Florida Native Plants for Florida's Native Bees

Source: Florida Native Plant Society, 2022; Mallinger et al., 2019; Fowler, 2020; Laura Langlois-Zurro, personal communication.





Above left: A *Megachile* bee carries a partridge pea (*Chamaecrista fasciculata*) petal to its nest in the stem of a dried Canadian horseweed (*Erigeron canadensis*). Stem-nesting bees create nurseries in old flower stalks, so leave stems and flower heads intact. Above right: A *Halictus* female entering her nest after collecting pollen. Ground nesting bees need access to bare soil in order to make a nest.

like hand removal or trimming back affected areas. Native plants are used to being browsed by insects; it is a natural and (usually) non-fatal process for them, so try letting the bugs be.

- Purchase plants from a reputable native nursery. These nurseries are knowledgeable and enthusiastic about natives. Their plants should be free of pesticides. To be sure to get plants appropriate for your site, shop local, within 50 miles of your home. Locate a native nursery near you at [PlantRealFlorida.org](http://PlantRealFlorida.org).

- Support the complete life cycle of native bees. Like any animal, bees need more than just food to survive: they need a place to rest and raise their young. Native bees don't live in permanent hives. Seventy percent of them live in the ground while the other 30% are cavity-nesters, making homes in dead wood (Xerces, 2023a). Invite the ground-nesters to move in by maintaining patches of bare soil in your garden – sandy, sunny areas are preferred by most ground-nesting bees. Avoid using heavy mulch or materials like weed cloth. Instead, a light covering of fallen leaves or pine straw will allow bees to readily enter the soil. Cavity-nesting bees build their homes in stumps, logs, or stems. For them, maintain a brush pile or retain a log from a hurricane-downed tree. Stem-nesting bees create nurseries in old flower stalks, so to encourage their next generation, leave stems and flower heads intact until early

spring. This also provides roosting areas for male bees, who do not return to the nest once they have emerged.

- It's OK to start small. Don't get overwhelmed by thinking you need to create a large bee garden in one season. Start with a group of shrubs, a small tree, and a few wildflower species planted around it. You can also begin by simply adding bee-beckoning plants to your existing beds. Then enlarge your bee garden as space and time permit. Soon you will want to add a bench where you can sit and enjoy the seasonal flowers and the bustling activity of the bees (as well as their less-productive pollinating coworkers).

Bees might be tiny, but their impact is huge and it's hard to imagine life without them. As companions to bees for millions of years, Florida native plants are the natural way to support endangered native bees. With Florida natives you can welcome both beauty and the bees to your garden.

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## Further Reading

Florida Native Bees (Facebook group)

How to save flower stems for bees: <https://cpb-us-w2.wpmucdn.com/u.osu.edu/dist/1/117433/files/2022/10/heather-holm-StemNestingBees-copy.pdf>

Identifying native bee species: <https://edis.ifas.ufl.edu/publication/IN1285>

Nesting sites for bees: <https://xerces.org/blog/5-ways-to-increase-nesting-habitat-for-bees>

Specialist bees: <https://www.floridamuseum.ufl.edu/science/floridas-rare-blue-calamintha-bee-rediscovered/> and [https://jarrodflower.com/specialist\\_bees.html](https://jarrodflower.com/specialist_bees.html)



Above, from top: A Florida pebble bee (*Dianthidium floridense*) investigating a piece of driftwood displayed in a home garden setting. These bees create a nest by attaching various materials, like small pebbles or sand to a substrate. A two-spotted longhorn bee (*Melissodes bimaculatus*) holds on to a *Bidens alba* stem with its mandibles while roosting. Male bees do not return to the nest once they have emerged, so leaving dried stems in the garden provides shelter and roosting spaces for them.

#### **About the Author and Photographer**

**Leslie Nixon** is a semi-retired feline veterinarian. She spends her free time volunteering with the FNPS Pawpaw Chapter and cultivating Florida native plants in her yard. Naturally, her favorite part of growing natives is observing all the animals they attract.

**Laura Langlois-Zurro** is the founder of the Florida Native Bees Facebook group. She documents native bee behavior and inspires appreciation of native bees through her videos, photographs, and observations. Follow her on Instagram – @EcoGeekMama.