

# Attracting Native Bees to Your Florida Landscape <sup>1</sup>

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## Introduction

Florida is home to approximately 315 species of native wild bees. These bees rely on flowers for survival; their diets consist exclusively of pollen and nectar harvested from flowers. Recently reported declines in some bee species have heightened awareness of bee conservation across the United States and motivated efforts to increase floral resources for bees (Biesmeijer et al. 2006; Colla and Packer 2008; Ricketts et al. 2008; Potts et al. 2010; Burkle et al. 2013). Gardeners and land managers can aid in conservation efforts by planting flowers for bees in home or community gardens.

## Bee-Friendly Plants

Generally, the best plants for bees will be those that have abundant and accessible pollen and nectar. Avoid pollen-free plant varieties (e.g., some sunflowers and lilies) because they will not provide pollen, which is the essential food source for bees. Additionally, choose plants with flat flowers or short to medium-length flower tubes (corollas), and limit plants with long flower tubes such as honeysuckle (Figure 1). Many native wild bees have relatively short proboscises, or tongues, and may not be able to access nectar from flowers with long tubes; however, flowers with long floral tubes can attract other pollinators with long tongues or beaks such as butterflies, moths, and hummingbirds.



Figure 1. From left to right are examples of plants with relatively flat flowers, short-medium length flower tubes, and long flower tubes (from left to right: rosinweed *Silphium* sp., blue sage *Salvia azurea*, and firespike *Odontonema cuspidatum*).

Credits: R. Mallinger and UF/IFAS

Increasing the number of flowering plant species in your garden can increase the abundance and diversity of bees attracted to the garden (Kearns and Oliveras 2009; Pardee and Philpott 2014; Blaauw and Isaacs 2014). Aim for at least ten flowering plant species selected to complement one another (Williams et al. 2015; Mader et al. 2011). Specifically, design your garden to have three or more different plants blooming at any given time during the growing season, which is year-round in southern Florida, and March through November in northern areas of the state. Because bees often prefer dense floral displays, arranging flowering plants in clumps with multiple individuals per species will increase the attractiveness of the garden to bees (Blaauw and Isaacs 2014; Williams et al. 2015; Mallinger et al. 2019).

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Additionally, bees prefer white, yellow, or blue-purple flowers (Figure 2). Orange, pink, or red flowers are not as attractive to bees (but may be attractive to other pollinators). Finally, native plants are generally best for native bees (Isaacs et al. 2009; Morandin and Kremen 2012; Pardee and Philpott 2014). While bees may collect nectar from a variety of native and non-native plants, some specialist native bees require pollen from certain native plants in order to develop optimally. Non-native plants may provide abundant nectar for bees during times, or in places, with minimal native floral resources and can be useful in combination with native plants to increase resource availability.

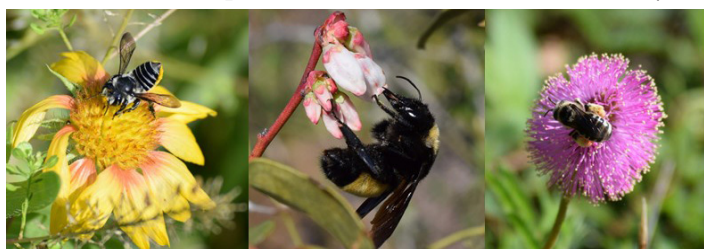


Figure 2. Flower colors that are highly attractive to native wild bees include yellow, white, and blue-purple (from left to right: blanketflower *Gaillardia* sp., blueberry *Vaccinium* sp., and mimosa *Mimosa* sp.).

Credits: Weaver and R. Mallinger, UF/IFAS

## Designing and Managing a Garden for Native Bees

You can provide flowers for native bees by simply incorporating bee-friendly plants into your existing landscape, or you can create a special space for them in your yard by incorporating some easy design ideas (Figure 3). Create a landscape design for any garden space that you plan to make changes to, no matter how big or small. The faculty, staff, and Master Gardener Volunteers at the [UF/IFAS Extension Office](#) in your county can assist you with basic garden design concepts and may even offer classes on landscape design. Some additional elements to incorporate into your pollinator garden include:

1. Install plants of varying heights to increase visual appeal of the garden space, being sure to pay attention to the average height and width of the mature plant/tree.
2. Limit weed barriers including fabric and plastic sheets, or dense wood and straw mulches. If you do use heavy weed barriers, keep some amount of area near the bee garden free of these barriers. Many native bees nest below the ground in tunnels or cavities like abandoned rodent nests and need bare or lightly covered soil. If you see a small mound of dirt with an entrance/exit hole on top, you may have a friendly resident!

3. Add a bee nest box for the native bees that build their nests above ground (<http://gardeningolutions.ifas.ufl.edu/design/gardening-with-wildlife/pollinator-hotels.html> and [https://www.dropbox.com/sh/gx7lae6qx7j23ev/AAAF-3qgh0\\_hV3z-gs2l-0lua/Creating%20a%20Pollinator%20Hotel.pdf?dl=0](https://www.dropbox.com/sh/gx7lae6qx7j23ev/AAAF-3qgh0_hV3z-gs2l-0lua/Creating%20a%20Pollinator%20Hotel.pdf?dl=0)).
4. Avoid pesticide use in and around your garden, especially on plants that are blooming. It is best to avoid all chemicals on plants during their bloom period, including fungicides and organic pesticides because they may harm bees that visit the flowers. If you do use pesticides during the flowering period, apply them in the evening hours, and always follow pesticide label instructions.
5. When purchasing seeds or transplants, it is best to buy ones that have not been treated with systemic insecticides such as neonicotinoids because these systemic chemicals can persist in the plant and may be present in the pollen and nectar.

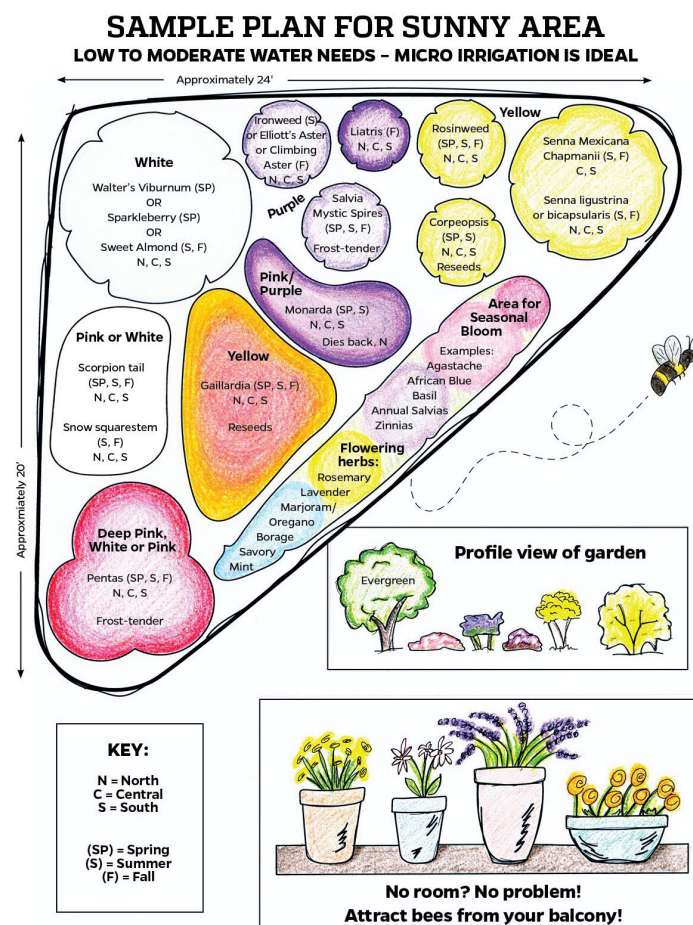


Figure 3. Example of a landscape designed to support native wild bees and other pollinators. The plants included provide attractive colors (white, yellow, and blue-purple) and ample pollen and nectar and can be grown throughout most of Florida. For each plant, information on bloom time, growing region, frost sensitivity, and flower color, is included.

# Plant Recommendations for Florida

Below are lists of plants that we recommend for native bees in northern, central, and southern Florida. These plants have floral traits expected to attract native bees, including attractive flower color, size, and shape. They also contain abundant nectar and/or pollen. While most of the suggested plants are native, some bee-attracting non-native plants are also included. This list should be used as a starting point, though it is not exhaustive. When evaluating plants for native bees, you can use the above criteria to consider plants not on this list. When choosing plants for your area, keep in mind the soil, moisture, and light requirements of the plants ([https://ffl.ifas.ufl.edu/pdf/FYN\\_Plant\\_Selection\\_Guide\\_2015.pdf](https://ffl.ifas.ufl.edu/pdf/FYN_Plant_Selection_Guide_2015.pdf)). Most bee-attracting plants grow in full sun, though some will thrive in partial shade.

## References

- Biesmeijer, J. C., S. P. M. Roberts, M. Reemer, R. Ohlemüller, M. Edwards, T. Peeters, A. P. Schaffers, S. G. Potts, R. Kleukers, C. D. Thomas, J. Settele, and W. E. Kunin. 2006. "Parallel declines in pollinators and insect-pollinated plants in Britain and the Netherlands." *Science* 313 351–354. DOI: 10.1126/science.1127863
- Blaauw, B. R., and R. Isaacs. 2014. "Larger patches of diverse floral resources increase insect pollinator density, diversity, and their pollination of native wildflowers." *Basic and Applied Ecology* 15 701–711. DOI: 10.1016/j.baae.2014.10.001
- Burkle, L. A., J. C. Marlin, and T. M. Knight. 2013. "Plant-pollinator interactions over 120 years: Loss of species, co-occurrence, and function." *Science* 339 1611–1615. DOI: 10.1126/science.1232728
- Colla, S. R., and L. Packer. 2008. "Evidence for decline in eastern North American bumblebees (Hymenoptera: Apidae), with special focus on *Bombus affinis* Cresson." *Biodiversity Conservation* 17 1379–1391. DOI:10.1007/s10531-008-9340-5
- Isaacs, R., J. Tuell, A. Fiedler, M. Gardiner, and D. Landis. 2009. "Maximizing arthropod-mediated ecosystem services in agricultural landscapes: The role of native plants." *Frontiers in Ecology and the Environment* 7 196–203. DOI:10.1890/080035
- Kearns, C. A., and D. M. Oliveras. 2009. "Environmental factors affecting bee diversity in urban and remote grassland plots in Boulder, Colorado." *Journal of Insect Conservation* 13 655–665. DOI:10.1007/s10841-009-9215-4
- Mader, E., M. Shepherd, M. Vaughan, S. Black, and G. LeBuhn. 2011. *Attracting Native Pollinators*. Storey Publishing, North Adams, Massachusetts, 1–385.
- Mallinger, R. E., J. G. Franco, D. A. Prischmann-Voldseth, and J. R. Prasifka. 2019. "Annual cover crops for managed and wild bees: Optimal plant mixtures depend on pollinator enhancement goals." *Agriculture, Ecosystems & Environment* 273 107–116. DOI: 10.1016/j.agee.2018.12.006
- Morandin, L. A., and C. Kremen. 2013. "Bee preference for native versus exotic plants in restored agricultural hedgerows." *Restoration Ecology* 21 26–32. DOI: 10.1111/j.1526-100X.2012.00876.x
- Pardee, G. L., and S. M. Philpott. 2014. "Native plants are the bee's knees: Local and landscape predictors of bee richness and abundance in backyard gardens." *Urban Ecosyst* 17 641–659. DOI: 10.1007/s11252-014-0349-0
- Potts, S. G., J. C. Biesmeijer, C. Kremen, P. Neumann, O. Schweiger, and W. E. Kunin. 2010. "Global pollinator declines: Trends, impacts and drivers." *Trends in Ecology & Evolution* 25 345–353. DOI: 10.1016/j.tree.2010.01.007
- Ricketts, T. H., J. Regetz, I. Steffan-Dewenter, S. A. Cunningham, C. Kremen, A. Bogdanski, B. Gemmill-Herren, S. S. Greenleaf, A. M. Klein, M. M. Mayfield, L. A. Morandin, A. Ochieng, S. G. Potts, and B. F. Viana. 2008. "Landscape effects on crop pollination services: Are there general patterns?" *Ecology Letters* 11 499–515. DOI: 10.1111/j.1461-0248.2008.01157.x
- Williams, N. M., K. L. Ward, N. Pope, R. Isaacs, J. Wilson, E. A. May, J. Ellis, J. Daniels, A. Pence, K. Ullmann, and J. Peters. 2015. "Native wildflower plantings support wild bee abundance and diversity in agricultural landscapes across the United States." *Ecological Applications* 25 2119–2131. DOI: 10.1890/14-1748.1



Table 1. Woody plants.

Scientific name	Common name	Bloom Period				Flower color	Region			Native (Y = yes, N = no)	Florida hardness zone
		Winter	Spring	Summer	Fall		North	Central	South		
<i>Acacia vachella</i>	Sweet acacia	X	X	X	X	Yellow	-	X	X	Y	9-11
<i>Acer rubrum</i>	Red maple	X	X	-	-	Red-pink	X	X	X	Y	8-10
<i>Adonidia merrillii</i>	Christmas palm	X (south FL)	-	-	-	White	-	-	X	N	10-11
<i>Aloysia virgata</i>	Sweet almond	-	-	X	X	White	X	X	X	N	8-11
<i>Symphoricarpu-m carolinianum</i>	Climbing aster	-	-	-	X	White-purple	X	X	X	Y	8-10b
<i>Bursera simaruba</i>	Gumbo limbo	-	X	-	-	Yellow-green	-	-	X	Y	10b-11
<i>Callicarpa americana</i>	Beautyberry	-	X	X	X	Lavender-pink	X	X	X	Y	8-11
<i>Callistemon</i> spp.	Bottlebrush	X	X	X	X	Red	X	X	X	N	8b-11
<i>Cercis canadensis</i>	Eastern redbud	X	X	-	-	Pink-purple	X	X	-	Y	8-9a
<i>Chionanthus virginicus</i>	Fringetree	-	X	-	-	White	X	X	-	Y	8-9
<i>Chrysobalanus icaco</i>	Cocoplum	X	X	X	X	White	-	-	X	Y	10-11
<i>Citharexylum spinosum</i>	Fiddlewood	X	X	X	X	White	-	-	X	Y	10-11
<i>Clethra alnifolia</i>	Sweet pepperbush	-	-	X	-	White	X	X	-	Y	8-9
<i>Coccoloba diversifolia</i>	Pigeon plum	-	X	X	-	White	-	-	X	Y	10a-11
<i>Coccoloba uvifera</i>	Seagrape	-	X	-	-	White	-	X	X	Y	9-11
<i>Cornus foemina</i>	Swamp dogwood	-	X	-	-	White	X	X	X	Y	8-10
<i>Duranta erecta</i>	Golden dewdrop	X (south FL)	X	X	X	Purple	-	X	X	N	9b-11
<i>Forestiera segregata</i>	Florida privet	X	X	-	-	Yellow	X	X	X	Y	8b-11
<i>Gamolepis chrysanthemo-ides</i>	Bush daisy	X (south FL)	X	X	X	Yellow	X	X	X	N	8b-11
<i>Halesia carolina</i>	Carolina silverbell	-	X	-	-	White	X	-	-	Y	8
<i>Hibiscus</i> spp.	Hibiscus	-	X	X	X	Variable	X	X	X	Some	8-11
<i>Ilex glabra</i>	Inkberry	X	X	-	-	White	X	X	X	Y	8-10
<i>Ilex</i> spp.	Holly	X	X	-	-	White	X	X	X	Some	8-11
<i>Jacaranda mimosifolia</i>	Jacaranda	-	X	X	-	Purple	-	X	X	N	9b-11
<i>Lysiloma latisiliquum</i>	Wild tamarind	-	X	X	-	White-pink	-	-	X	Y	10b-11
<i>Myrcianthes fragrans</i>	Twinberry (Simpson's stopper)	X	X	X	X	White	-	X	X	Y	9b-11
<i>Prunus angustifolia</i>	Chickasaw plum	-	X	-	-	White	X	X	-	Y	8-9b
<i>Psychotria nervosa</i>	Wild coffee	-	X	X	-	White	-	-	X	Y	10b-11
<i>Sabal palmetto</i>	Cabbage palm	-	-	X	-	White	X	X	X	Y	8b-11
<i>Senna ligustrina</i>	Privet senna	-	-	X	X	Yellow		X	X	Y	9-11
<i>Senna mexicana</i> var. <i>chapmanii</i>	Chapman's senna	X	X	X	X	Yellow	-	-	X	Y	10-11

Scientific name	Common name	Bloom Period				Flower color	Region			Native (Y = yes, N = no)	Florida hardiness zone
		Winter	Spring	Summer	Fall		North	Central	South		
<i>Serenoa repens</i>	Saw palmetto	-	X	-	-	White-yellow	X	X	X	Y	8-11
<i>Simarouba glauca</i>	Paradise tree	-	X	X	-	Yellow	-	-	X	Y	10b-11
<i>Sophora tomentosa</i>	Necklace pod	X	X	X	X	Yellow	-	-	X	Y	10-11
<i>Vaccinium arboreum</i>	Sparkleberry	-	X	-	-	White	X	X	X	Y	8-10b
<i>Viburnum obovatum</i>	Walter's viburnum	-	X	-	-	White	X	X	X	Y	8-10
<i>Vitex agnus-castus</i>	Chaste tree	-	-	X	-	Purple	X	X	X	N	8-11
<i>Wisteria frutescens</i>	American wisteria	-	X	X	-	Purple	X	X	-	Y	8-9

Table 2. Herbaceous plants.

Scientific name	Common name	Bloom Period				Flower color	Region			Native(Y = yes, N = no)	Florida hardness zone
		Winter	Spring	Summer	Fall		North	Central	South		
<i>Borago officinalis</i>	Borage	-	-	X (peak bloom)	-	Purple	X	X	X	N	8–11
<i>Bulbine frutescens</i>	Bulbine	-	X	X	-	Yellow-orange	-	X	X	N	9–11
<i>Chamaecrista fasciculata</i>	Partridge pea	X (south FL)	X (south FL)	X	X	Yellow	X	X	X	Y	8–10
<i>Conradina</i> spp.	False rosemary	X	X	X	X	Blue	X	X	-	Y	8–9
<i>Coreopsis leavenworthii</i>	Leavenworth's coreopsis	-	X	X	X	Yellow	X	X	X	Y	8–11
<i>Evolvulus glomeratus</i>	Blue daze	X	X	X	X	Blue	-	X	X	N	9–11
<i>Flaveria linearis</i>	Yellow top	X	X	X	X	Yellow	-	-	X	Y	10–11
<i>Gaillardia pulchella</i>	Blanketflower	-	-	X	-	Red-yellow	X	X	X	Y	8–11
<i>Glandularia maritima</i>	Beach verbena	X	X	X	X	Purple	-	-	X	Y	10–11
<i>Glandularia tampensis</i>	Tampa verbena	X	X	X	X	Purple	-	X	X	Y	9–10b
<i>Helianthus angustifolius</i>	Swamp (narrowleaf) sunflower	-	-	-	X	Yellow	X	X	X	Y	8b–11
<i>Helianthus debilis</i>	Dune (beach) sunflower	X (south FL)	X	X	X	Yellow	X	X	X	Y	8b–11
<i>Heliotropium angiospermum</i>	Scorpion tail	X	X	X	X	White	X	X	X	Y	8–11
<i>Liatis</i> spp.	Blazing star	-	-	X	X	Purple	X	X	X	Some	8–10b
<i>Melanthera nivea</i>	Snow squarestem	-	-	X	X	White	X	X	X	Y	8–11
<i>Mimosa strigillosa</i>	Powderpuff (sunshine mimosa)	-	X	X	X	Pink-purple	X	X	X	Y	8–11
<i>Monarda punctata</i>	Spotted bee balm (dotted horsemint)	-	-	X	X	Purple	X	X	X	Y	8–10a
<i>Ocimum kilimandscharicum</i> x <i>basilicum</i>	African blue basil	-	-	X (peak bloom)	-	Purple	X	X	X	N	8–11
<i>Origanum</i> spp.	Marjoram (oregano)	-	-	X (peak bloom)	-	Purple	X	X	X	N	8–11
<i>Pentas lanceolata</i>	Pentas	X (south FL)	X	X	X	Variable	X	X	X	N	8b–11
<i>Pityopsis graminifolia</i>	Silver-leaved aster	-	-	-	X	Yellow	X	X	X	Y	8–11
<i>Rudbeckia hirta</i>	Black-eyed susan	-	-	X	X	Yellow	X	X	X	Y	8–11
<i>Salvia</i> spp.	Salvia (sage)	X (south FL)	X	X	X	Variable	X	X	X	Some	8–11
<i>Silphium asteriscus</i>	Starry (bigleaf) rosinweed	-	X	X	X	Yellow	X	X	X	Y	8–10b
<i>Sisyrinchium angustifolium</i>	Blue-eyed grass	-	X	-	-	Blue	X	X	X	Y	8–11

Scientific name	Common name	Bloom Period				Flower color	Region			Native(Y = yes, N = no)	Florida hardiness zone
		Winter	Spring	Summer	Fall		North	Central	South		
<i>Solidago sempervirens</i>	Seaside goldenrod	-	X (south FL)	X	X	Yellow	X	X	X	Y	8–11a
<i>Stachytarpheta jamaicensis</i>	Blue porterweed	X (south FL)	X	X	X	Purple	-	X	X	Y	9–11
<i>Symphyotrichum elliottii</i>	Elliot's aster	-	-	-	X	Lavender	X	X	X	Y	8–11a
<i>Zinnia</i> spp.	Zinnias	X (south FL)	X	X	X	Variable	X	X	X	N	8–11