Supporting native bees in your garden

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Figure 1. A comparison of land use acreages for three statewide scenarios.
Why are pollinators important?

- 85% flowering plants are animal-pollinated
- Maintain plant biodiversity
- Produce fruits and seeds
  - Food source for birds and mammals
Agriculture and pollinators

- 87 of 115 crops
- 35% of crop production worldwide
Bees are the most important pollinators

- Abundant, diverse
- Actively collect pollen to feed their young
- Exhibit flower constancy or fidelity
What is a bee?

Kingdom: Animalia
Phylum: Arthropoda
Class: Insecta
Order: Hymenoptera
Family: 7 families
How Many Bees?
How Many Bees?

Over 300!
How Many Bees?

Over 300!

Over 4,000!
How Many Bees?

- Over 300! (Florida)
- Over 4,000! (United States)
- Over 20,000! (Global)
Honey bees

Apis mellifera

Single species in U.S.
Non-native
Native Bees in North America

Main groups:
• Mining bees
• Plasterer bees
• Leafcutter bees
• Mason bees
• Resin bees
• Sweat bees
• Bumble bees
• Long-horned bees
• Carpenter bees
• Cuckoo bees
Native wild bee decline in North America

- 1,437 (of 4,337) species assessed
- 749 (over half) are declining
- 347 (1 in 4) are imperiled
Conserving bees in your garden

1. Flowers
2. Nest habitat
3. Protection from toxins
Flowers

Bees eat pollen and nectar throughout entire life (larvae – adults)
Flowers

Mothers provision nests with pollen and nectar
No migration
Majority generalists
Specialist bees rely on pollen from specific plants or plant groups
Different bees forage at different times
Some species forage throughout most of the year (bumble bees)
Other species forage for a short period ~1 month
Tips for flowers

Diversity of flowering plants throughout the year
Tips for flowers

- Early blooming plants: trees and shrubs
- Late blooming plants: herbaceous wildflowers
Tips for flowers

- Native plants
  - May be more attractive
  - Better for specialist bees
  - Non-native plants can provide valuable nectar
Tips for flowers

- Color: Yellow, white, purple/blue flowers
- Bees not as attracted to red/orange/pink
- Shape: Relatively short flower tubes (flat flowers)
- Bees cannot access nectar from long tubes
Best trees/shrubs for bees in Florida

- Chaste tree
- Sweet almond
- Sabal palm
- Saw palmetto
- Seagrape
- Fiddlewood
- Walter’s virburnum
- Sparkleberry
Florida wildflowers

Monarda/bee balm/dotted horsemint
Blanketflower
Coreopsis
Salvia
Liatris/blazing star
Stokes aster
Beach sunflower
False rosemary (Conradina spp.)
Herbs, fruits, vegetables

- Basil (African Blue Basil)
- Borage
- Mint
- Thyme
- Rosemary
- Cucurbits (melons, squash)
- Cherries
- Plums & peaches
- Passion fruit
Weeds for bees

- Spanish needle (*Bidens alba*)
- Thistles
- Spiderwort
- Goldenrod
What about these?

- Pentas
- Zinnias
- Cosmos
- Coral honeysuckle
- Nasturtiums
- Lantana
- Azaleas
- Marigold
- Cannas
Research examining best plants for bees

- Native vs. non-native species
- Different cultivars
- Attractiveness
- Nectar and pollen
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Nesting resources

- Majority (70%) nest underground
  - Tunnels or shallow cavities
- Aboveground nesters (30%)
  - Some excavate own nests
  - Others use pre-existing cavities
Belowground nesters
Aboveground nesters
Tips for nesting resources

- Well drained soil
- Relatively bare
- No heavy mulch
- No weed barrier
- Sunny spot
- No disturbance
Tips for nesting resources
Tips for nesting resources

Small and long cavities (4 – 12 mm diameter holes, at least 150 mm long)
Replaceable liners (paper)
Cavities that can be cleaned
Tips for nesting resources

Secure a few feet above ground to post/stake/wall
Face east or southeast
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Protection from toxins
Tips for protection

Avoid seeds or starts that have been treated with systemic pesticides
Systemic neonicotinoids

- imidacloprid
- acetamiprid
- clothianidin
- dinotefuran
- nithiazine
- thiacloprid
- thiamethoxam
Tips for protection

• Do not spray plants in bloom
  – Look for flowering weeds

• IF spraying flowers
  – Spray late in day/night
  – Use chemicals with short activity period

• Minimize all chemicals
  – Including fungicides and insecticides
Tips for protection

- Low acute toxicity to bees
- Minimal residual activity
  - Systemic pesticides = high residual activity
  - Organic pesticides = shorter residual activity
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Resources

1. Xerces Society for Invertebrate Conservation: [https://xerces.org/](https://xerces.org/)
4. Protecting bees (plant selection): [https://protectingbees.njaes.rutgers.edu/](https://protectingbees.njaes.rutgers.edu/)