

Pollinators and the Food Supply

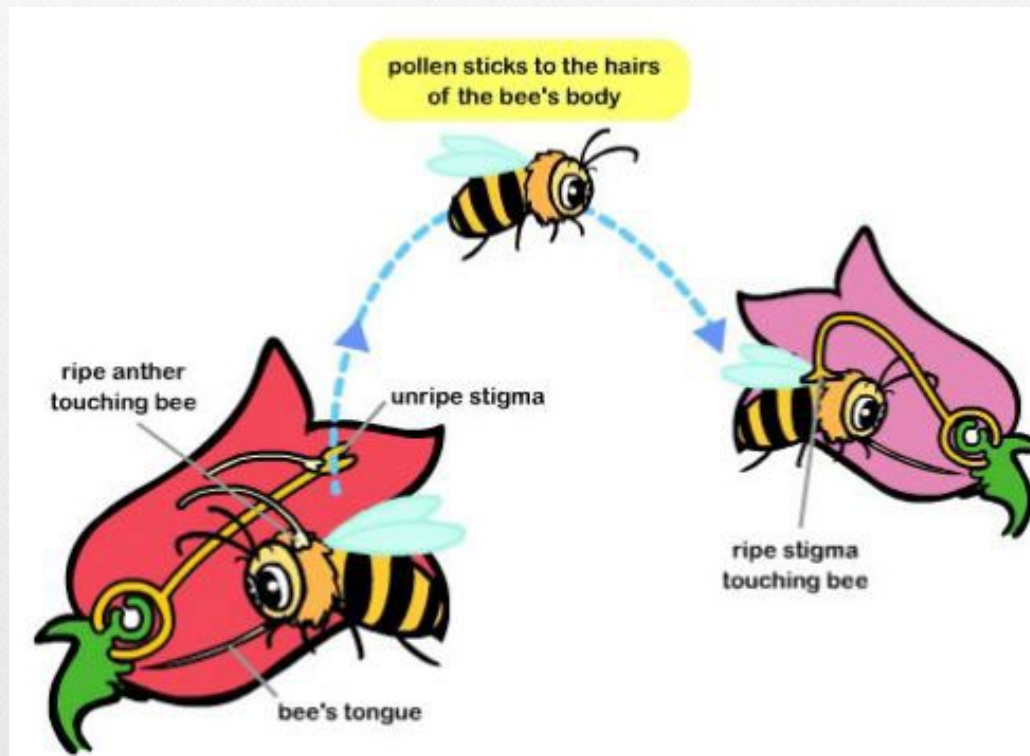


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What is Pollination? (...and why should we care?)



- male pollen to female eggs for fruit production
- can happen in several different ways
- no pollination = no fruit, no seeds, less genetic diversity
- **less food**

Types of Pollination

- Wind can carry pollen
- Insect pollinators
- Birds and bats can be pollinators
- Some plants self-pollinate but still benefit from pollinators

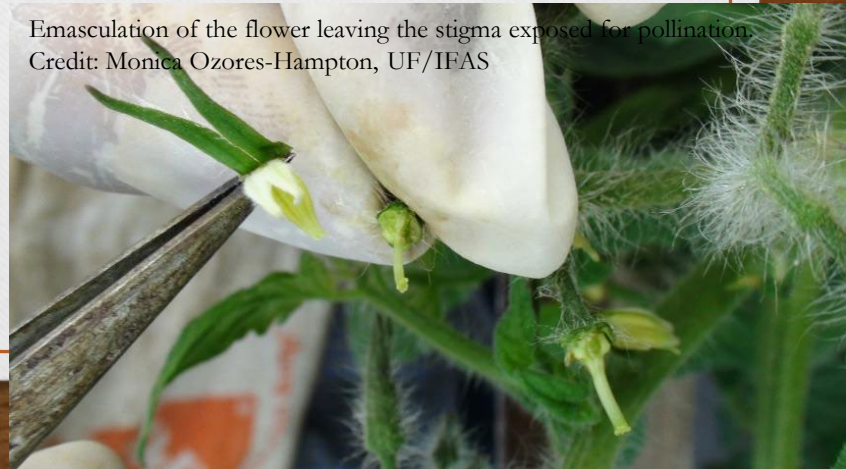


What is a pollinator?

- Bees, native (315+ species in FL)
- Honey bees (European)
- Other insects: flies, beetles, wasps, etc.
- Bats, birds, other animals
- You could be a pollinator too!



Blister beetle. Photo by Beatriz Moisset.



Emasculation of the flower leaving the stigma exposed for pollination.
Credit: Monica Ozores-Hampton, UF/IFAS



Pollinators in Peril = Food in Peril

- Insects in decline worldwide:
 - Decrease in food for animals
 - Decrease in ecosystem services
 - Decrease in pollination services (less food for us!)



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Reversing Pollinator Decline is Key to Feeding the Future

usda.gov

- Why the decline: loss of habitat, use of pesticides, changing climate, more?



Just Some Food Crops That Need Pollinators

Apples, **Mangos**, Kiwi Fruit, Plums, **Peaches**, Nectarines, **Guava**, Pomegranates, Pears, Black and Red Currants, Okra, **Strawberries**, Onions, **Citrus**, Cashews, Apricots, **Avocados**, **Passion Fruit**, Lima Beans, Kidney Beans, Green Beans, Cherries, Coffee, Walnut, Macadamia Nuts, Figs, Persimmons, **Cucumber**, Hazelnut, **Cantaloupe**, Chestnut, **Watermelon**, Coconut, **Starfruit**, Beets, Mustard Seed, **Broccoli**, **Cauliflower**, **Cabbage**, Brussels Sprouts, Bok Choy (Chinese Cabbage), Chili Peppers, **Bell Peppers**, **Papaya**, **Eggplant**, Raspberries, Elderberries, Blackberries, Cocoa, Vanilla, Cranberries, **Tomatoes**, Grapes, **Blueberries**, **Squash**

***FL Agriculture Crops** (many others can be grown here too)





A Bland Future?

- Grains (wheat, corn, rice) mostly wind or self pollinated
- Sugarcane, potatoes, etc. where we eat tuber or stem don't need insects to pollinate to produce
- But we can't live on carbs and sugar alone...

The Irony

- Increase in “luxury” foods that need pollinators: avocados, almonds, apples, etc.
- Habitat loss to insects... for human developments



How Pesticides Play a Role



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- Pesticides kill insects = less pollinators
- Some cause chronic effects = long term impairment, eventual death
- Colony insects bring home contaminated pollen

Why Diversity Matters



- We need a diversity of foods for nutrition
- Plants need a diversity of insects/animals for pollination
- Insects/animals need a diversity of plants





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Discussion Time

- Your holiday feast?
- Your favorite pasta meal?
- Your favorite dessert?
- Your favorite drinks?



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What Can We do?

- **Stop using pesticides**
- If you **MUST** use them:
 - How do you determine the need?
 - Apply in the evening: bees are most active during morning & afternoon
 - **DO NOT** spray plants during bloom/flowering



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What Can We do?

- Don't buy plants treated with pesticides
- Do buy organic produce when possible

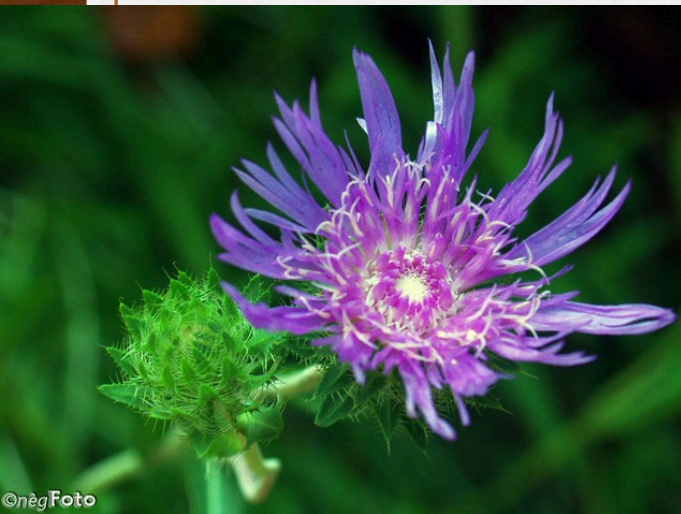


What Can We do?

- **Plant for pollinators**
 - Variety of flower shapes, sizes, and colors
 - Flowers for all seasons
 - Group like flowers together



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What Can We do?

- **Plant herbs**

- You can enhance your food flavors!
- Many are pollinator favorites: cilantro, basil, mint, rosemary, oregano



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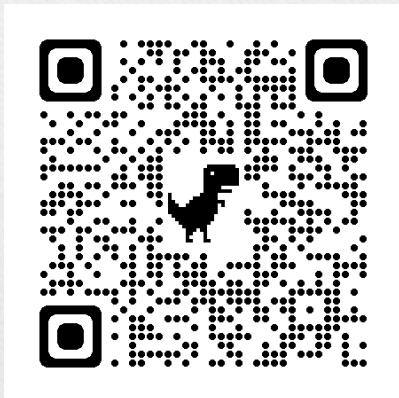


What Can We do?

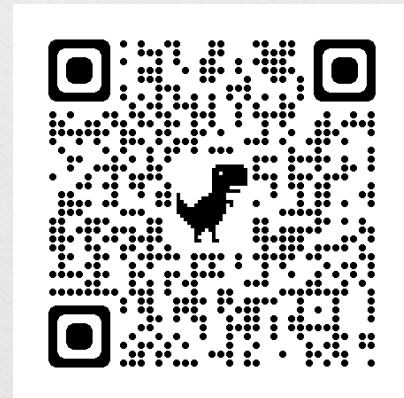


- Plant for year-round pollinator support
 - Flowers year-round
 - Focus on natives, then Florida-Friendly non-natives

FL Bee Gardens app:



Design a Pollinator Garden:



January


- Maple, *Acer rubrum*
- Spanish Needle, *Bidens alba*



Honey Bee (*Apis mellifera*) collecting pollen from Spanish needles (*Bidens alba*). Photo credit: Josh Hillman.



February



The Southeastern blueberry bee uses buzz pollination on a blueberry plant. Photo credit: Tyler Jones, UF IFAS.

- Spanish Needle, *Bidens alba*
- American beautyberry, *Callicarpa americana*
- Tickseed, *Coreopsis* spp.
- Cherry/plum, *Prunus* spp.
- Blueberry, *Vaccinium* spp.
- Sweet acacia, *Vachelia farnesiana*
- Walter's viburnum, *Viburnum obovatum*



March



- Spanish Needle, *Bidens alba*
- American beautyberry, *Callicarpa americana*
- Seagrape, *Coccoloba uvifera*
- Buttonwood, *Conocarpus erectus*
- Cherry/plum, *Prunus* spp.
- Blueberry, *Vaccinium* spp.
- Walter's viburnum, *Viburnum obovatum*





Sabal palmetto
Photo by Dennis Girard

April



- Spanish Needle, *Bidens alba*
- American beautyberry, *Callicarpa americana*
- Seagrape, *Coccoloba uvifera*
- Buttonwood, *Conocarpus erectus*
- Yaupon holly, *Ilex vomitoria*
- Wild coffee, *Psychotria nervosa*
- Cabbage palm, *Sabal palmetto*
- Walter's viburnum, *Viburnum obovatum*



May

- Spanish Needle, *Bidens alba*
- Buttonwood, *Conocarpus erectus*
- Yaupon holly, *Ilex vomitoria*
- Wild coffee, *Psychotria nervosa*
- Cabbage palm, *Sabal palmetto*





June



- Spanish Needle, *Bidens alba*
- Fiddlewood, *Citharexylum spinosum*
- Seagrape, *Coccoloba uvifera*
- Wild coffee, *Psychotria nervosa*
- Cabbage palm, *Sabal palmetto*
- Spiderwort/Dayflower, *Tradescantia ohiensis*
- Walter's viburnum, *Viburnum obovatum*



July

- Spanish Needle, *Bidens alba*
- Partridge pea, *Chamaecrista fasciculata*
- Cabbage palm, *Sabal palmetto*
- Spiderwort/Dayflower, *Tradescantia ohienensis*



August



Honey Bee (*Apis mellifera*) collecting pollen from Spanish needles (*Bidens alba*). Photo credit: Josh Hillman.

- Spanish Needle, *Bidens alba*
- Partridge pea, *Chamaecrista fasciculata*
- Goldenrod, *Solidago* spp.
- Spiderwort/Dayflower, *Tradescantia ohiensis*





September



- Climbing aster, *Ampelaster carolinianus*
- Spanish Needle, *Bidens alba*
- Spotted mint, *Monarda punctata*
- Goldenrod, *Solidago* spp.
- Spiderwort/Dayflower, *Tradescantia ohiensis*





Photo: Homer Edward Price

October

- Climbing aster, *Ampelaster carolinianus*
- Marlberry, *Ardisia escallonioides*
- Spanish Needle, *Bidens alba*
- Spotted mint, *Monarda punctata*
- Goldenrod, *Solidago* spp.



November

- Climbing aster, *Ampelaster carolinianus*
- Spanish Needle, *Bidens alba*
- Spotted mint, *Monarda punctata*
- Goldenrod, *Solidago* spp.





December

- Red maple, *Acer rubrum*
- Spanish Needle, *Bidens alba*
- Goldenrod, *Solidago* spp.



Honey Bee (*Apis mellifera*) collecting pollen from Spanish needles (*Bidens alba*). Photo credit: Josh Hillman.



Thank you!

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