



Protecting Pollinators

A “how-to-help” guide for non-beekeepers.

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Beekeeper/Pollinator Workgroup



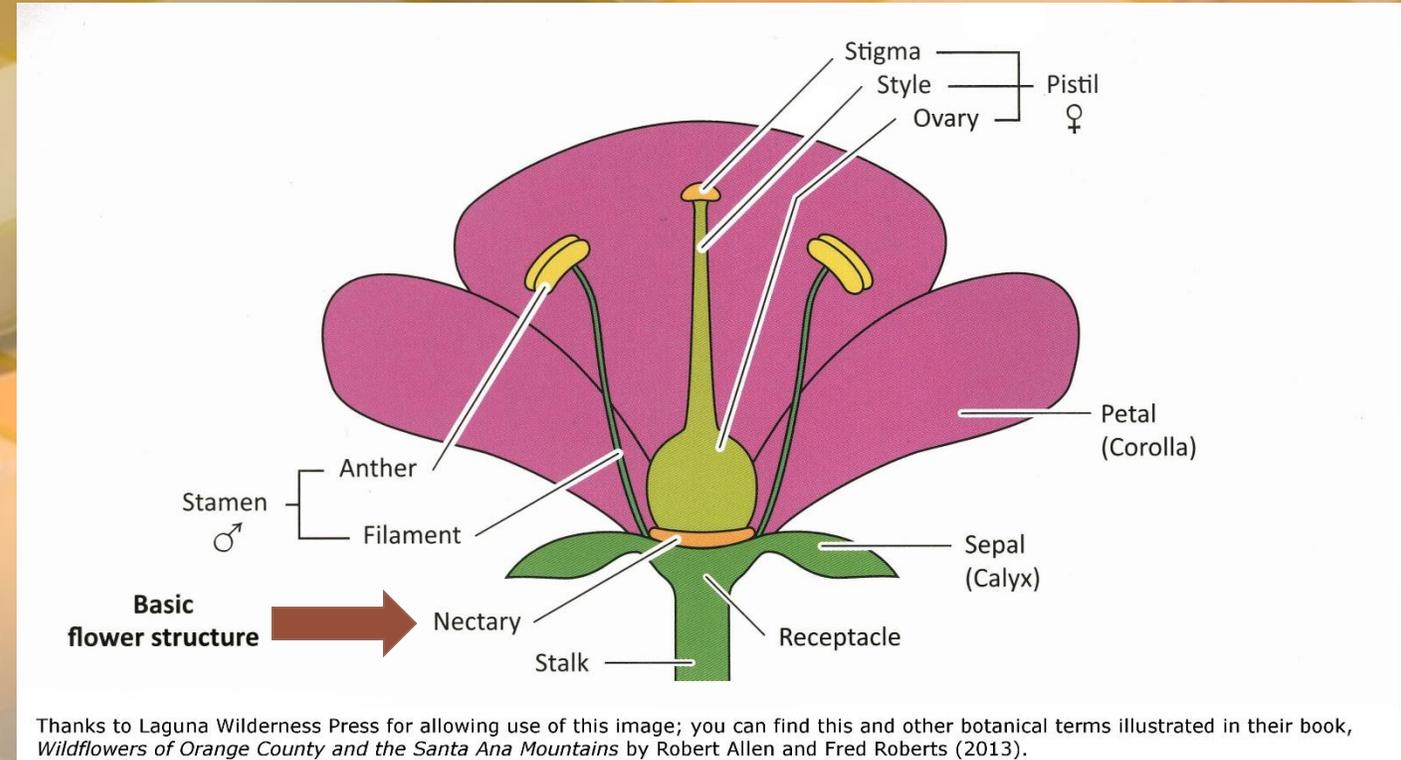
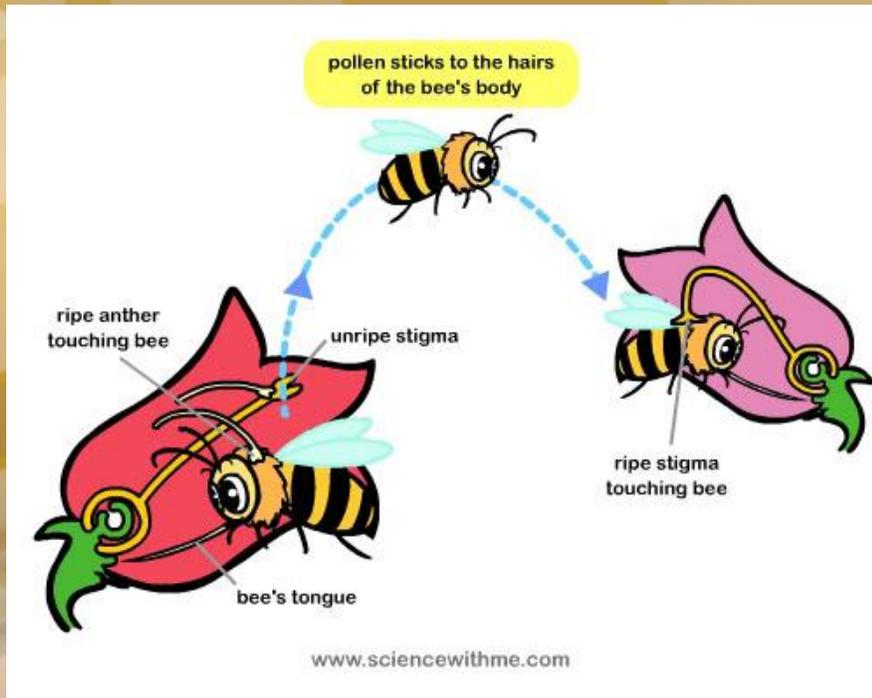
Missouri Farm Bureau Beekeeper/Pollinator Workgroup

- The Beekeeper/Pollinator Workgroup has been working together for one year
 - Developing a list of the challenges facing the industry and how FB members can help
 - Developing a unified message that can be used to educate about the industry challenges and needs
 - Will be making suggested policy recommendations to be reviewed in the FB policy development process

Why Create an Educational Video on Pollinators?

1. To Explain the pollination process
2. Identify which foods could be impacted by pollinator decline?
3. Explain why there is a decline in Beekeepers?
4. Explain everyone can help, even if they are not interested in becoming a managed beekeeper.

Pollination Process



What Foods that Benefit from Pollinators?

- Apples
- Mangos
- Rambutan
- Kiwi Fruit
- Plums
- Peaches
- Nectarines
- Guava
- Rose Hips
- Pomegranates
- Pears
- Black Currants
- Red Currants
- Alfalfa
- Okra
- Strawberries
- Onions
- Cashews
- Cactus
- Prickly Pear
- Apricots
- Allspice
- Avocados
- Passion Fruit
- Lima Beans
- Kidney Beans
- Adzuki Beans
- Green Beans
- Orchid Plants
- Custard Apples
- Cherries
- Celery
- **Coffee**
- Walnut
- **Cotton**
- Lychee
- Flax
- Acerola
- Macadamia Nuts
- Sunflower Oil
- Goa beans
- Lemons
- Buckwheat
- Figs
- Fennel
- Limes
- Carrots
- Persimmons
- Palm Oil
- Loquat
- Durian
- Mint
- Oregano
- Cucumber
- Hazelnut
- Cantaloupe
- Tangelos
- Coriander
- Caraway
- Chestnut
- Quince
- Watermelon
- Star Apples
- Coconut
- Tangerines
- Boysenberries
- Starfruit
- Brazil Nuts
- Beets
- Mustard Seed
- Rapeseed
- Broccoli
- Cauliflower
- Cabbage
- Brussels Sprouts
- Turnips
- Congo Beans
- Sword beans
- Chili peppers
- Red peppers
- Bell peppers
- Green peppers
- Papaya
- Safflower
- Sesame
- Eggplant
- Raspberries
- Elderberries
- Blackberries
- Clover
- Tamarind
- **Cocoa**
- Black Eyed Peas
- **Vanilla**
- Cranberries
- Tomatoes
- Grapes
- Almonds
- Bok Choy (Chinese Cabbage)
- Dill
- Pumpkins
- Squash
- Soybeans

What would we eat if all the insect pollinators disappeared...



Benefits of Managed Beekeeping



Connection with Nature



Socializing Hobby

Other Benefits Beekeeping

Common Nectar Rich Flowers



Rough Blazing Star
(*Liatris aspera*)



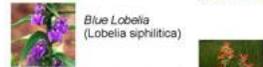
Lanceleaf Coreopsis
(*Coreopsis lanceolata*)



Marsh Milkweed
(*Asclepias incarnata*)



Cardinal Flower
(*Lobelia cardinalis*)



Blue Lobelia
(*Lobelia siphilitica*)



Royal Catchfly
(*Silene regia*)



Wild Bergamot
(*Monarda fistulosa*)



Columbine
(*Aquilegia canadensis*)



Purple Coneflower
(*Echinacea purpurea*)



Missouri Primrose
(*Oenothera macrocarpa*)



Prairie Beard Tongue
(*Penstemon tubaeformis*)

Foxglove Beard Tongue
(*Penstemon digitalis*)



Southern Prairie Aster
(*Aster paludosus*)



White Heath Aster
(*Aster pilosus*)



Dandelion
(*Taraxacum*)



Yellow and White Sweet Clover
(*Melilotus*)



MISSOURI HONEY PLANTS

PLANT	Bloom Time									
	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	
Alfalfa										
Aster										
Basswood										
Birdsfoot trefoil										
Brambles										
Brassicas										
Buckthorn										
Clover										
Cotton										
Cucurbits										
Dandelion										
Elm										
Fruit trees										
Goldenrod										
Hawthorn										
Honeysuckle										
Locust										
Maple										
Milkweed										
Persimmon										
Poplar										
Privet										
Red bud										
Soybean										
Sumac										
Sunflower										
Tulip poplar										
Vetch										
Willow										



Salable Products



Honey and Products made with honey



Equipment and Services



Pollen and Propolis



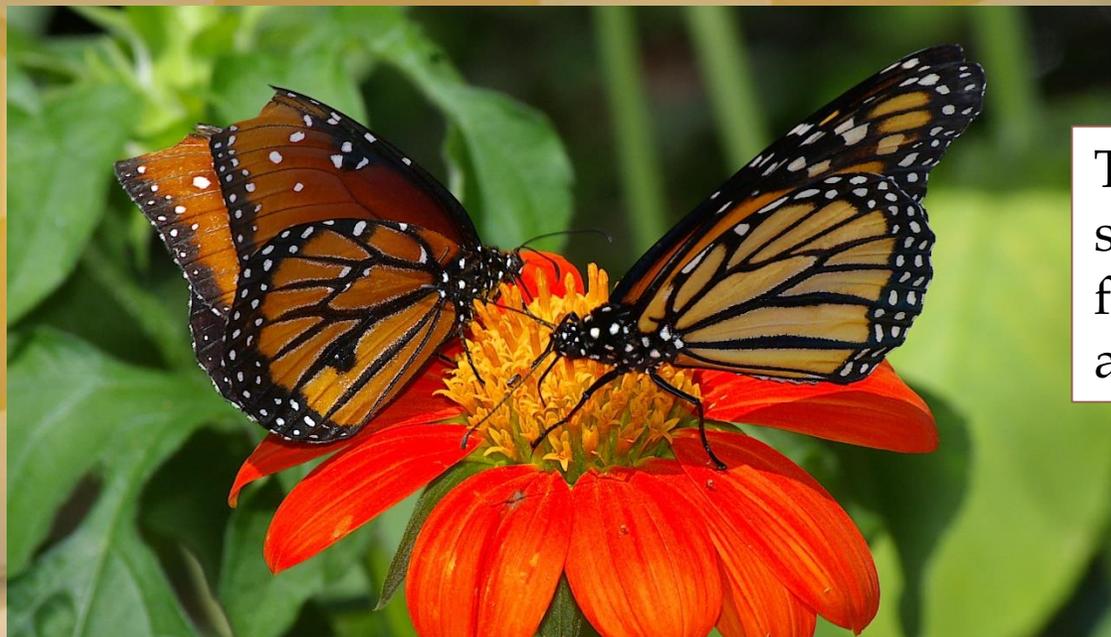
Bees

Why the Decline in Beekeepers?

- During the 1940's and 1950's, a steep decline in local honey prices
- During the 1960's and 1970's, better commercial agricultural practices
- During the 1980's and early 1990's, the invasive pest "varroa mite"
- During the early 2000's, colony collapse disorder



Loss of other pollinators



A nature reserve near Bavaria showed a decline in recorded butterfly and moth species from 117 in 1840 to 71 in 2013, a 39% decline.



Tent trap studies in western Germany have shown a steady decline in biomass of insects, from 3.5 pounds in 1989 to 10.6 ounces in 2014, a 81% decline.





**Where do
we go from
here?**



Utilities Companies

Plant areas with pollinator friendly, flowering plants

Only mow “out-of-the-way” areas after plants have flowered and seeded



Municipalities

Plant areas with pollinator friendly, flowering plants that attract butterflies

Educate staff on benefits of bees and pollinators.



Crop Farmers

Research use of cover crops for corn and winter fields.

Consider leaving 2-foot wide areas in marginally-productive fence rows for pollinator plants



Cattle Farmers

More Forbs in pastures

Rotational Grazing





NOW

Bumblebee Math

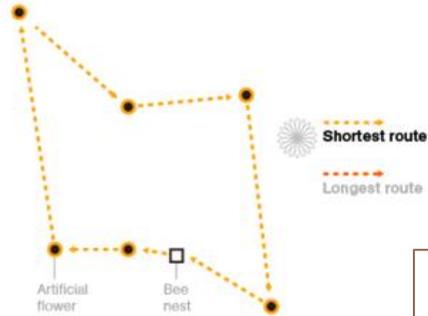
The flight of the bumblebee—even when not set to music—may seem frenetic and random as the workers forage for pollen and nectar to carry home. But researchers at Queen Mary, University of London discovered there's choreography in the flower bed. Each bee has a brain the size of a grass seed, but the insects are able to harvest efficiently by solving one of math's great puzzles: the traveling salesman problem.

The challenge is to find the shortest way to visit each flower once before returning to the nest. Computers must resort to laborious calculations, measuring each possible route. The bees studied, *Bombus terrestris*, and perhaps other species use spatial memory, rapidly refining routes through trial and error. (Hint: Moving to the next nearest flower isn't the answer.) Scientists know why the bees do it—flying is exhausting. Now they're trying to figure out *how* the insects do it. Learning what dictates their decisions could yield insights that improve our transportation and communication networks. To the bees, it's just a matter of good orchestration. —Gretchen Parker

FAST LEARNERS In lab trials, bees found the shortest route connecting six flowers without trying all the possible paths. Each bee was tested 80 times and used the shortest route more frequently over time.



Bumblebees travel up to five miles per foraging trip, so optimizing routes among flowers helps conserve energy.



Schools

S.T.E.M. and honey bees

Encourage outdoor classrooms



Homeowners

Reduce lawn by 10%

Landscape with more
pollinator friendly plants

Top Ten Things a Beekeeper wants you to know...



1. There are over 400 native bees in Missouri
2. Learn how to live with insects instead of fearing them.
3. Take up gardening and IPM
4. Work with beekeepers before spraying.
5. Read all label instructions

Ten Top Things a Beekeeper wants you to know...



6. Support your local farmers.
7. Plant nectar rich flowers.
8. Observe bee hives but don't touch.
9. Work with your neighbors, not against them
10. Not all pollinators are honey bees but helping the honey bee does help all pollinators.

Thank you for doing your part to
protect our pollinators



Questions?