

Bees on blueberry farms in Georgia

Sarah Rezende, Jason Schmidt, Bodie Pennisi



Bees bring bigger berries



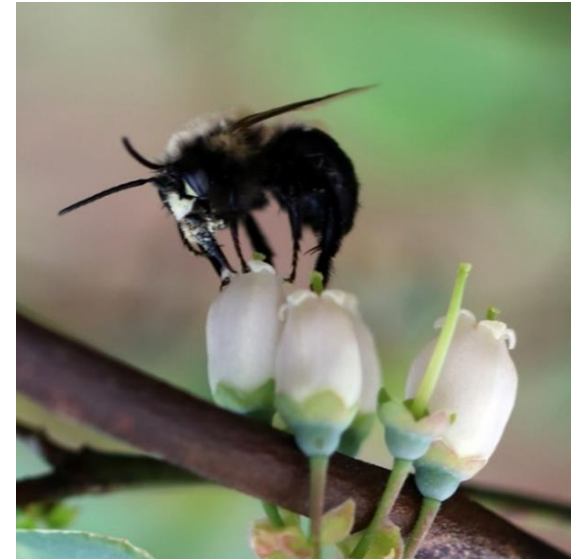
Photo: Julianna Wilson



Flower that were enclosed by a mesh to exclude bees



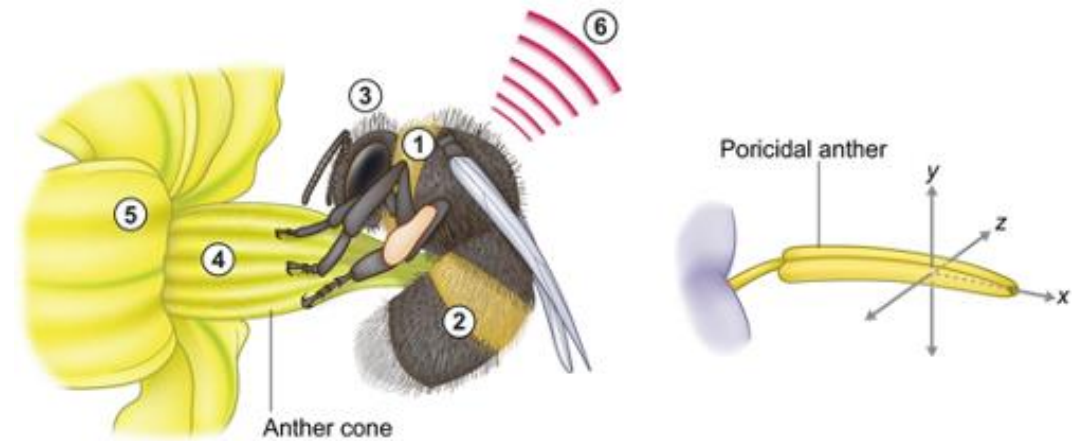
Flower that were allowed to be visited by bees





Bees bring bigger berries

Buzz pollination

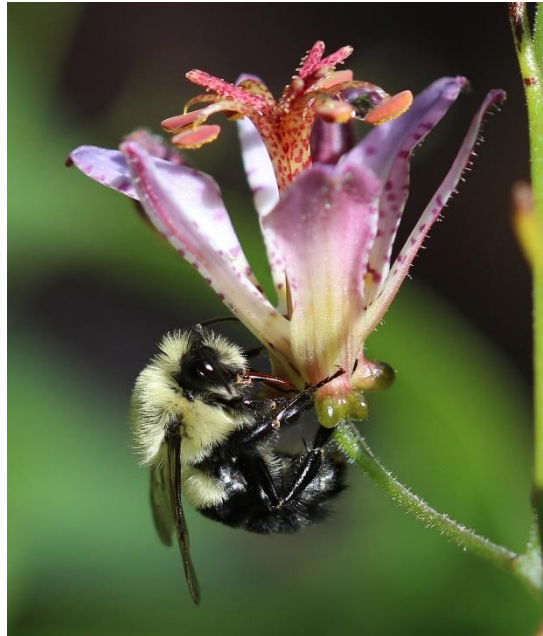


New Phytologist, Volume: 224, Issue: 3, Pages: 1068-1074, DOI: ([10.1111/nph.15666](https://doi.org/10.1111/nph.15666))



Importance of bees to blueberry production

Bombus spp.
Bumble bees



Habropoda laboriosa
southeastern blueberry bee



UGA1224134

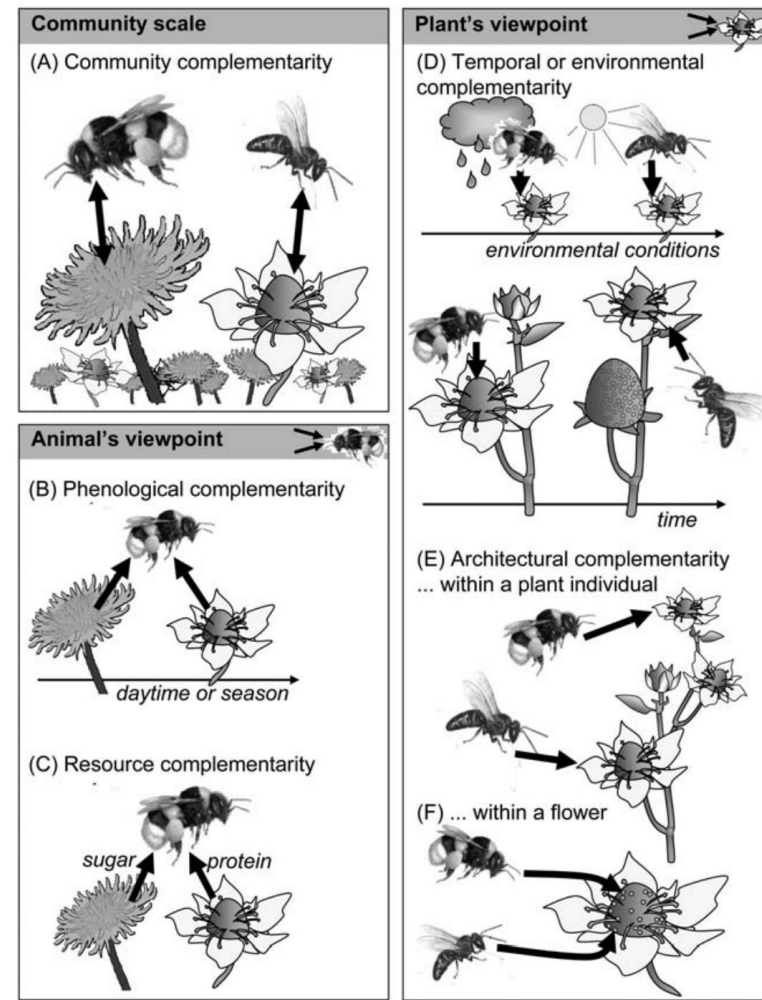
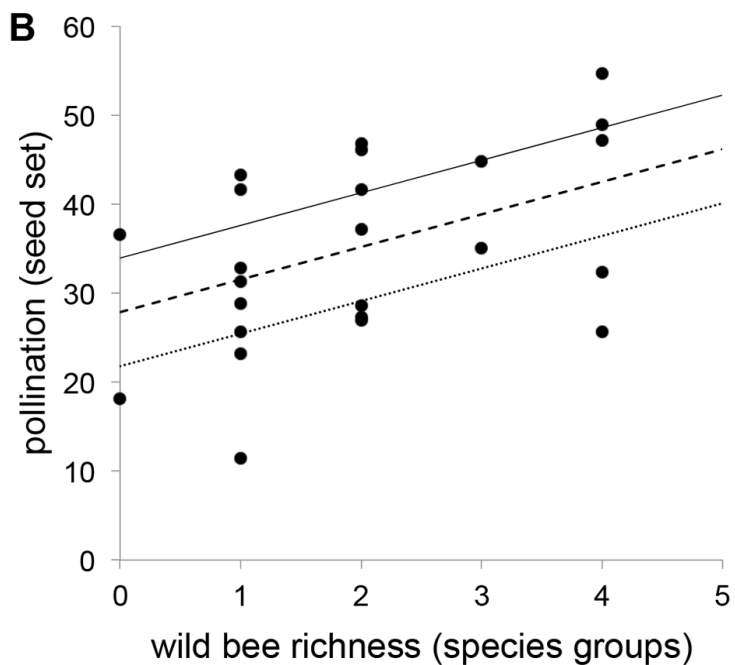
By Jerry A. Payne

➔ More efficient than the honeybees



Importance of bees to blueberry production

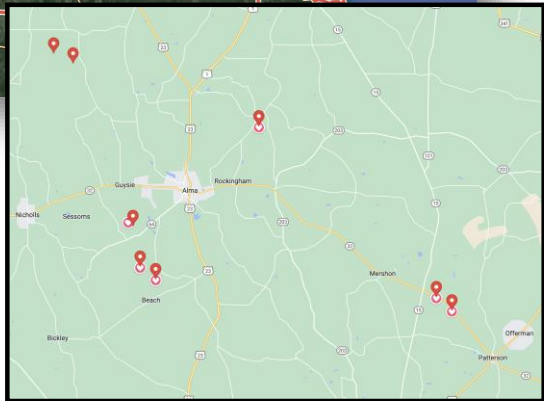
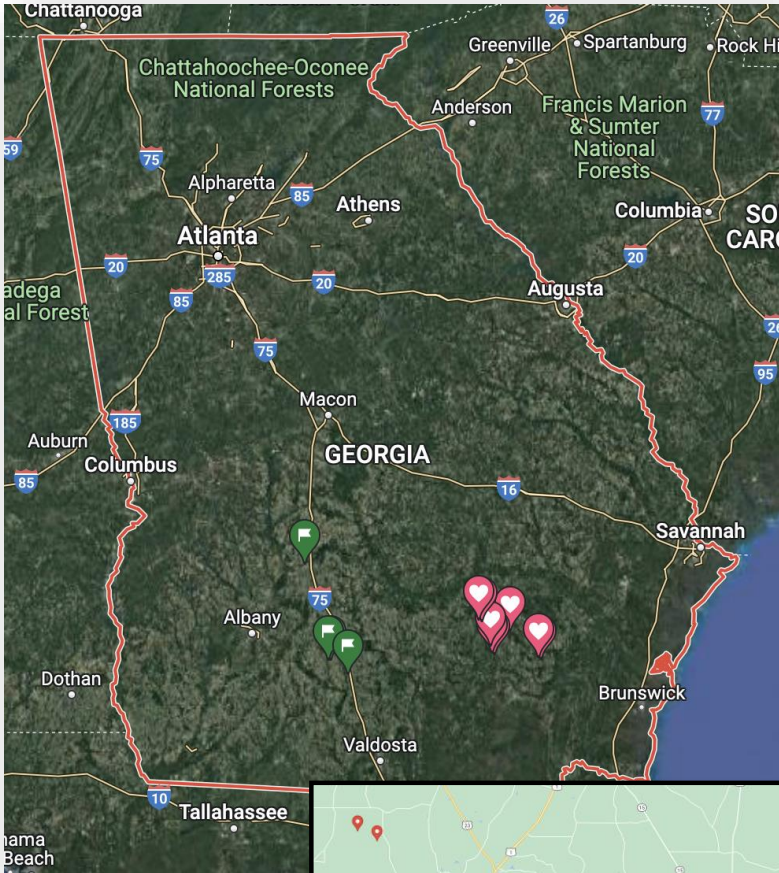
Higher number of bee species increases pollination levels



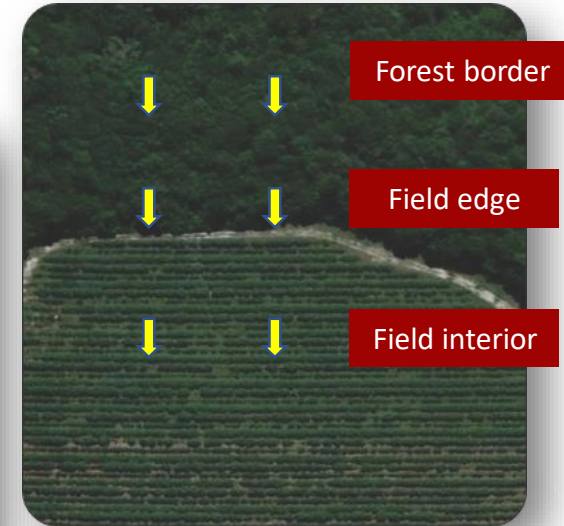
Blüthgen, N., & Klein, A. M. (2011). Functional complementarity and specialisation: the role of biodiversity in plant-pollinator interactions. *Basic and applied ecology*

**To help the bees we need to
know them**

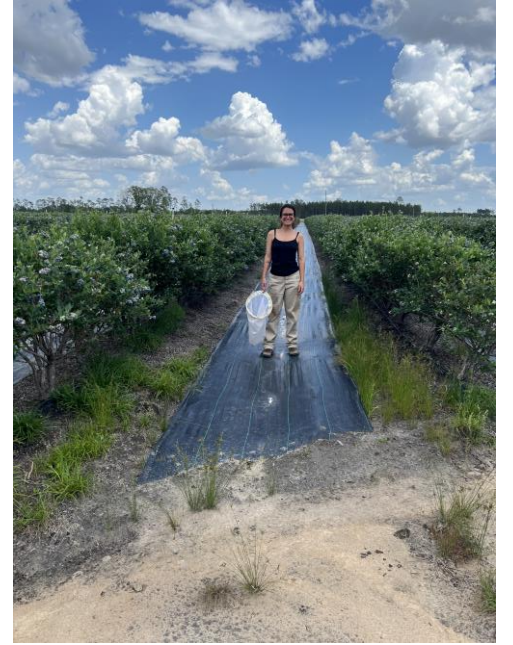
8 blueberry farms



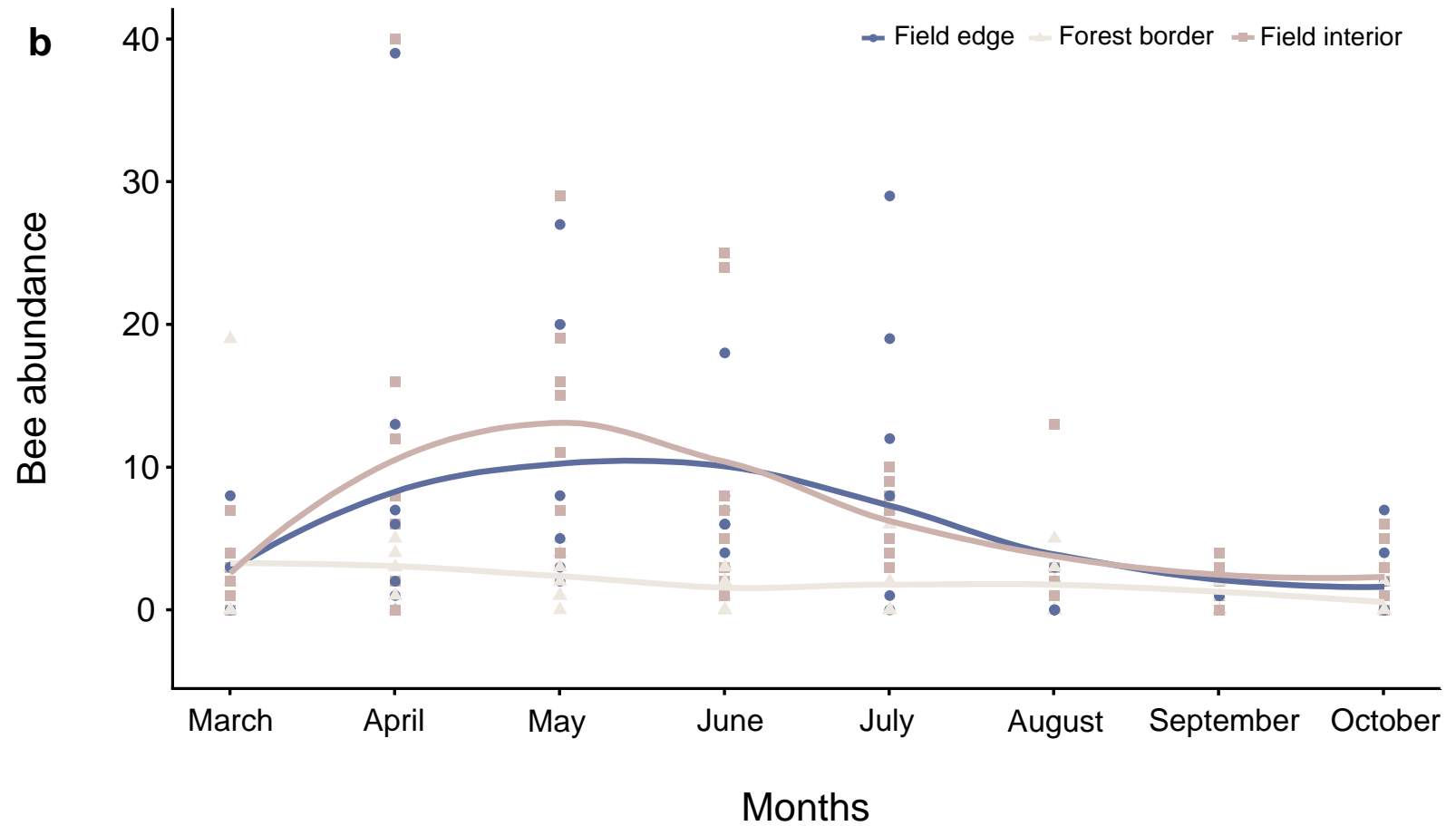
Vane Traps



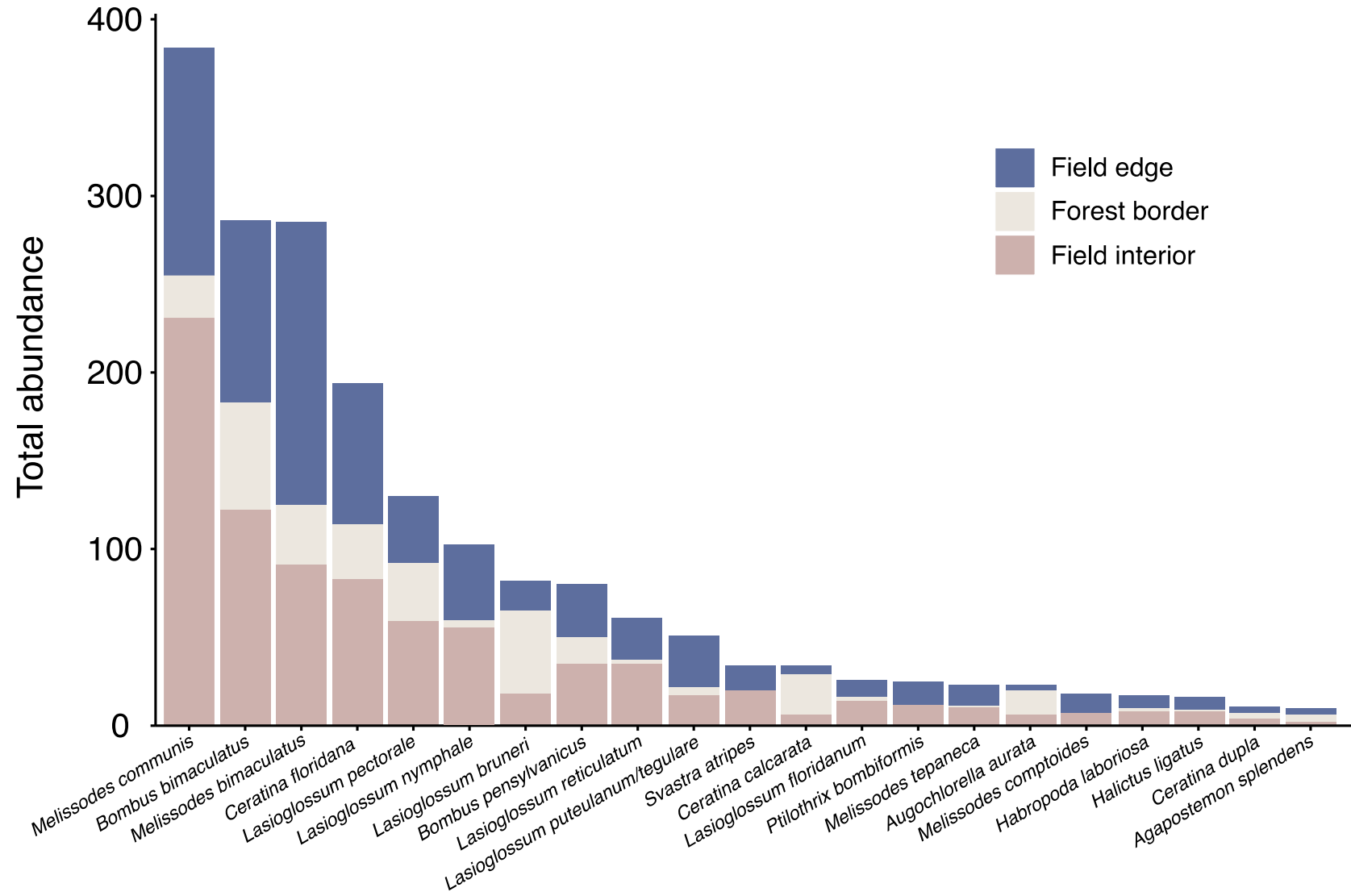
2021
2022



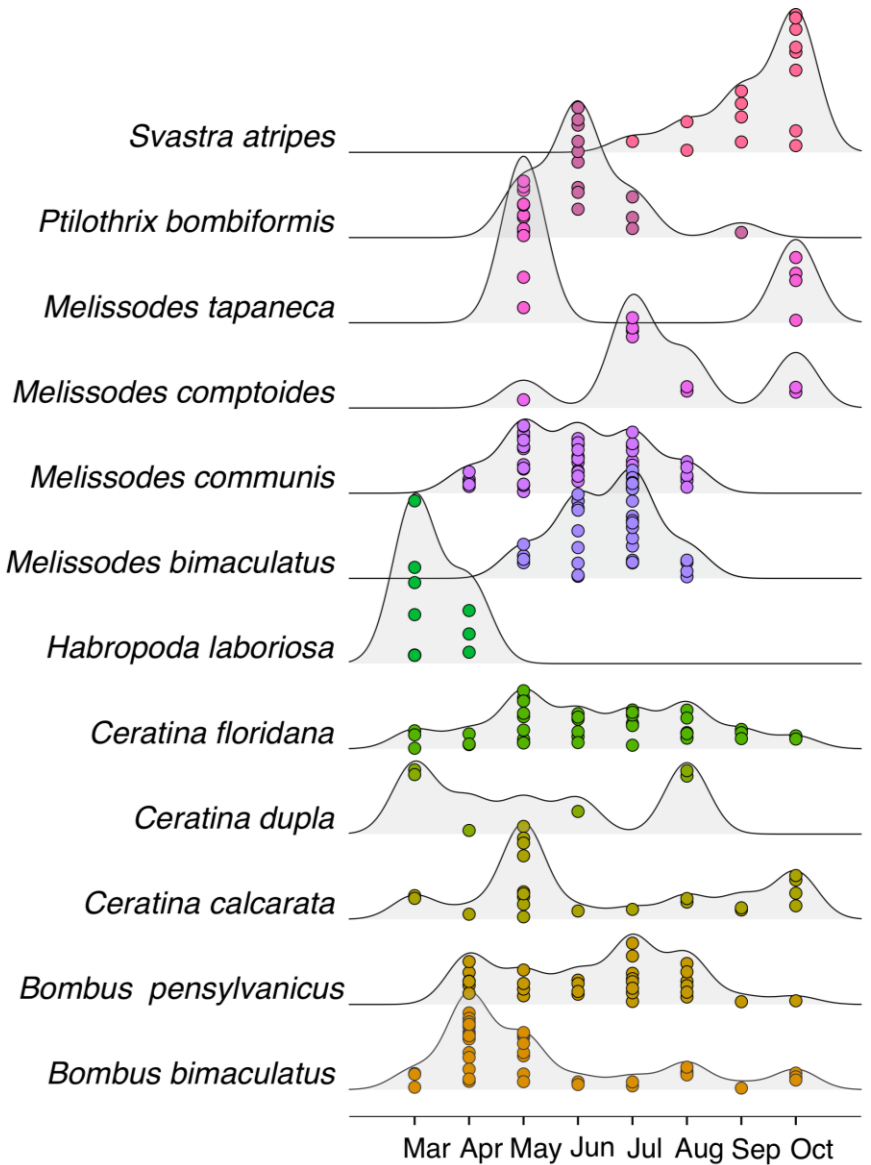
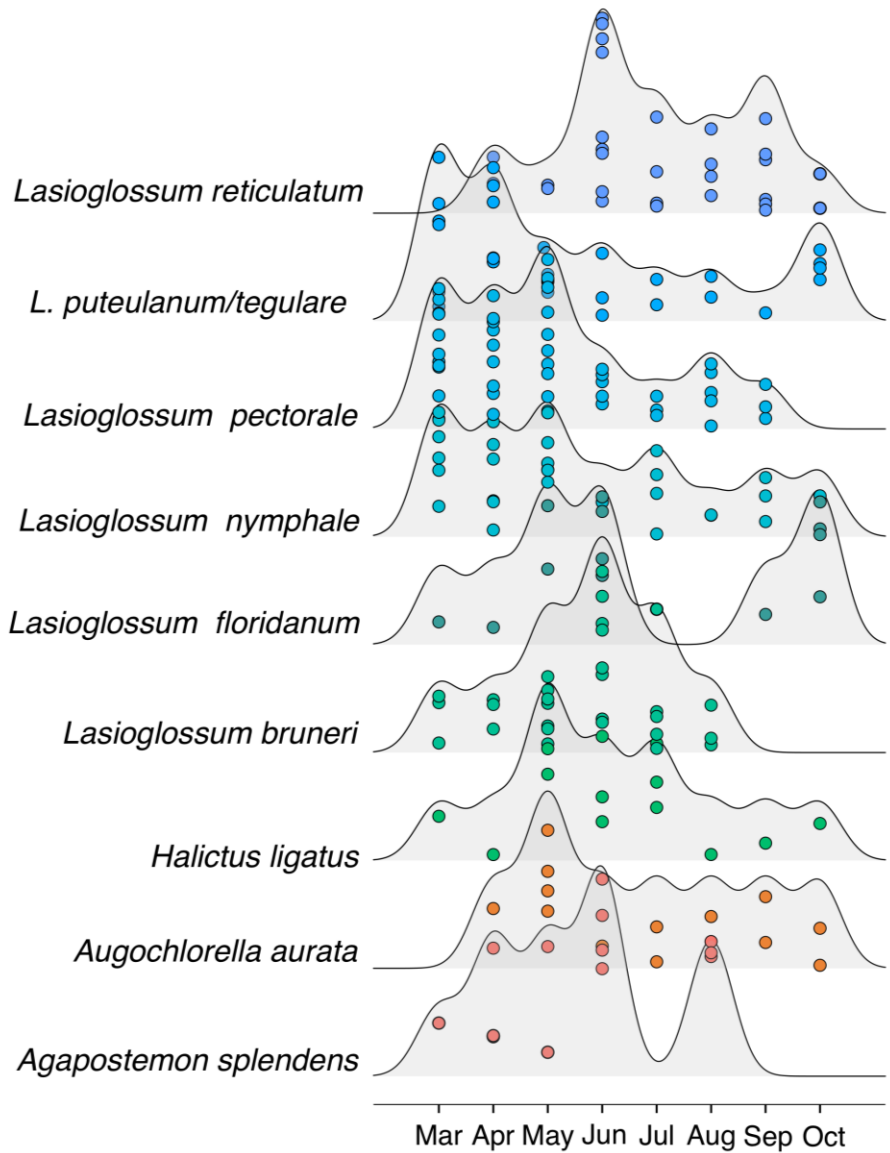
74 species



21 most abundant species



Phenology of the most common bees



Short-season bees

Bumble bees

- 7 species in the blueberry farms
- Colonies of *B. impatiens* can be purchased to increase bumble bee numbers during the blooming season
- Adapted to low temperatures

Corbicula



Bombus bimaculatus



Bombus pensylvanicus



Bombus impatiens

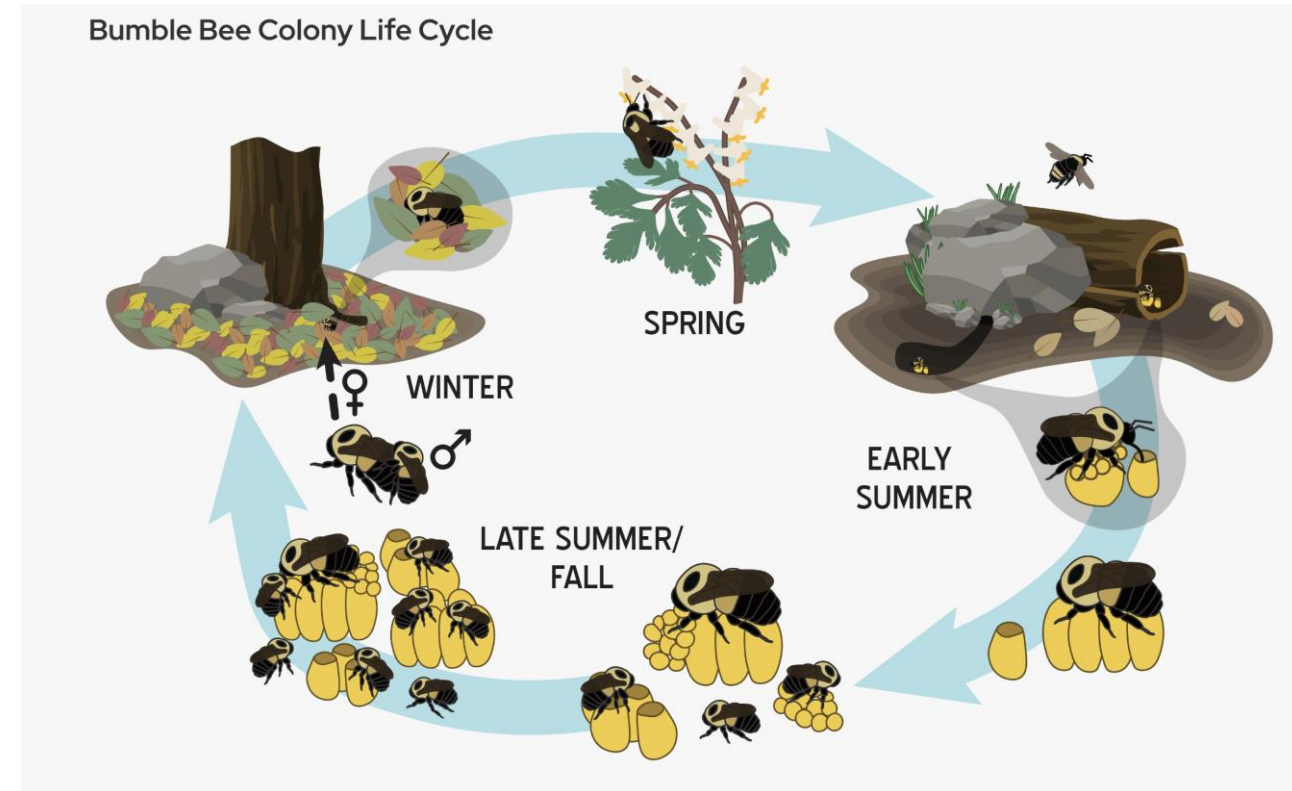


Bumble bees

- Nest in cavities in the ground, usually in forest areas
- Queen emerge in early spring, and the colony grows through the summer



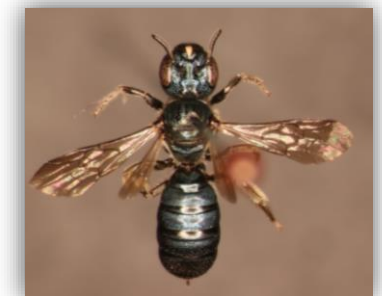
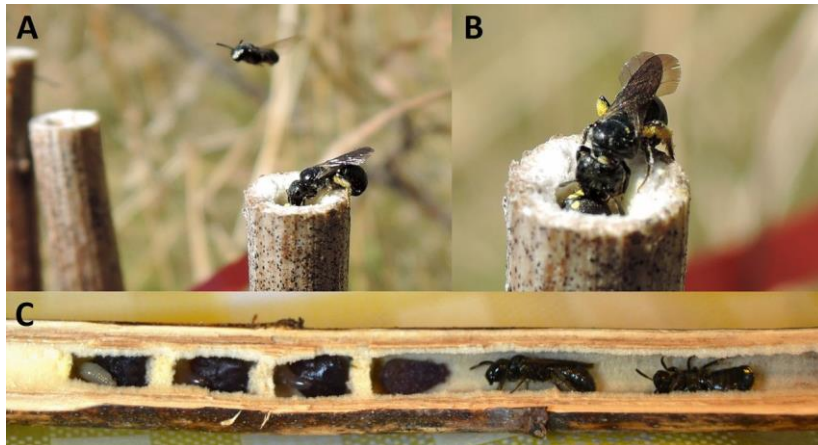
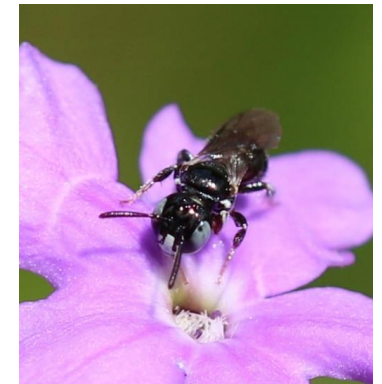
<https://www.bumblebeeconservation.org/bumblebee-nests/>



[wisconsinbumblebees.entomology.wisc.edu/about-bumble-bees/life-cycle-and-development/](https://www.wisconsinbumblebees.entomology.wisc.edu/about-bumble-bees/life-cycle-and-development/) (Accessed in Jan 2024)

Small carpenter bees: *Ceratina* spp.

- 4 species found in the blueberry farms
- Active throughout the year
- Nest in stems of shrubs and forbs
- Feed on a variety of plant species



Mikát et al. "Polyandrous bee provides extended offspring care biparentally as an alternative to monandry based eusociality." *PNAS* (2019)

Lawson et al (2021), Pollen composition significantly impacts the development and survival of the native small carpenter bee, *Ceratina calcarata*. *Ecol Entomol*, <https://doi.org/10.1111/een.12955>

Sweat bees

- Small-size bees
- Active throughout the year
- Nest under the ground
- 18 species found in the blueberry farms



Halictus ligatus



Lasioglossum pectorale



Lasioglossum nymphae



Photo by: Hadel Go





Metallic green sweat bees

- Small to medium-size bees
- Active throughout the year
- Nest under the ground
- Generalist : feed on many plant species



Agapostemon spp.



Augochlorella aurata

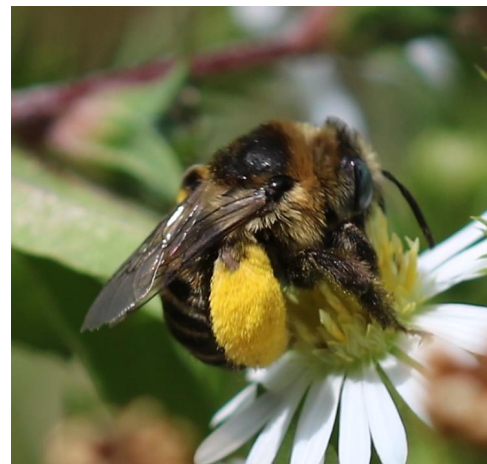
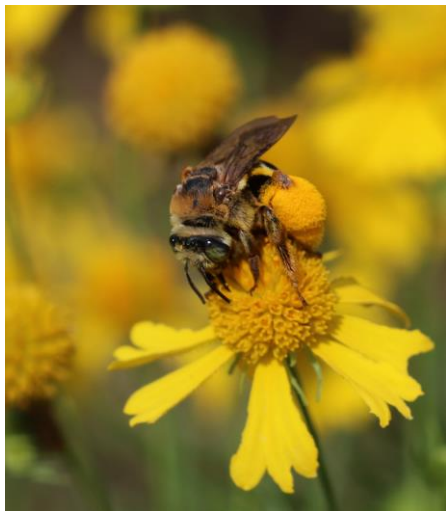


Bill Duncan
www.ozarkbill.com

<https://ozarkbill.com/2021/09/04/photographic-observations-of-a-communal-nesting-sweat-bee-agapostemon-virescens/>

Long-horned bees

- Very abundant
- Nest under the ground
- Males have long antennae
- Solitary bees, aggregation
- Active from late spring to fall



Black-legged longhorn bee (*Svastra atripes*)



<https://www.wildbeestexas.com/svastra> (Accessed: Jan 2024)



- Flight season: July to October
- Generalists

Melissodes communis



- Flight season: April to August
- Generalists

Two-spotted longhorn bee (*Melissodes bimaculatus*)



- Flight season: May to August
- Generalists, with a preference for Asteraceae

Southeastern blueberry bee

Habropoda laboriosa

- Active in early Spring
- Nest under the ground, sandy soils
- Specialist
- Solitary bees
- “Masters” of blueberry pollination
- Buzz pollination
- Use pollen from blueberry (*Vaccinium spp.*) and trumpet flower (*Gelsemium spp.*)
- Use nectar from Azalea, clover, and Eastern redbud



Mason bees

Osmia spp.



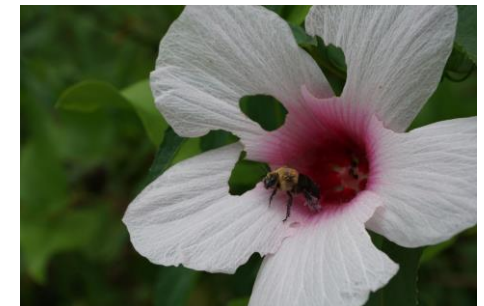
Leaf-cutting bees

Megachile spp.



Hibiscus bees

Ptilothrix bombiformis



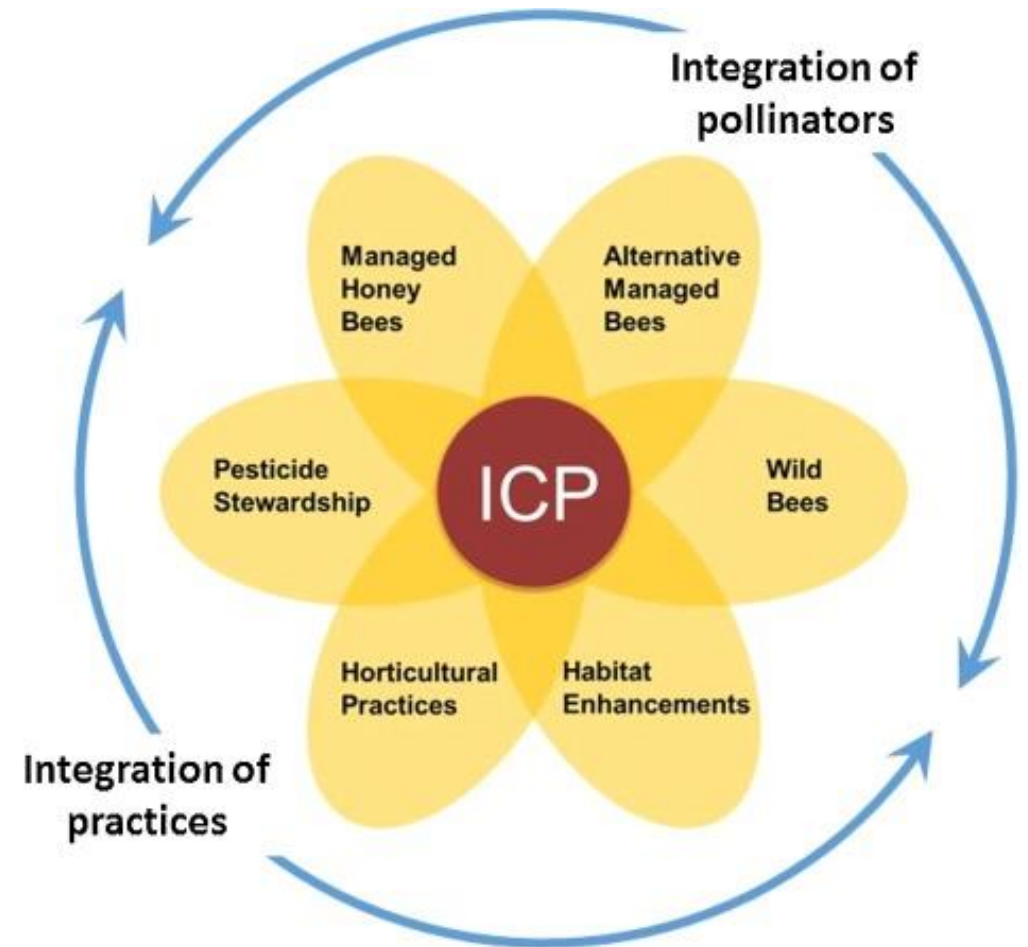


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Thank you.

sarah.rezende@uga.edu

- More bees > more pollination > larger fruits
- We know our pollinators
- Resources throughout the year



Big eyed bug



Parasitoid wasps



Tiny!!!

Predatory wasps



Fly



One pair of wings

Beetles



Sweat bees



Green bees



Southeastern blueberry bee



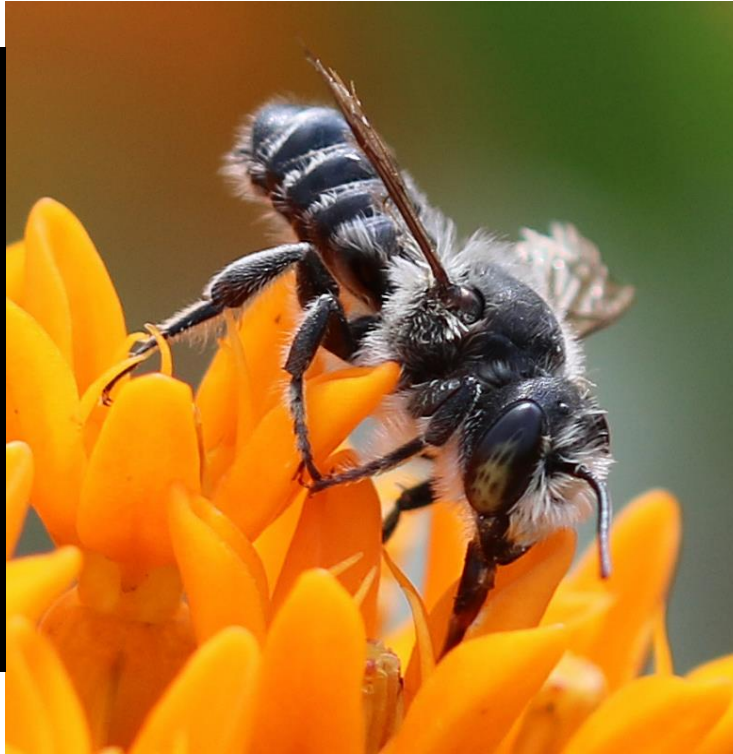
Mason bees



Hairs underside of
their abdomen

Leaf-cutting bees

Megachile spp.



Hairs underside of the
abdomen

Small carpenter bees

Ceratina spp.

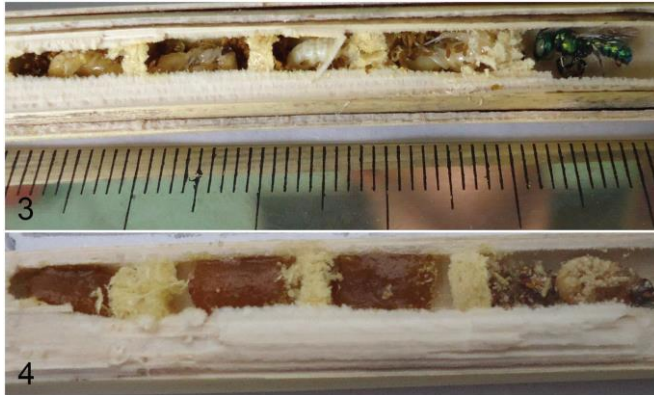


Photo by: Hussain Ali



- Active throughout the year
- Nest in stems of shrubs and forbs
- 4 species found in the blueberry farms

Large carpenter bees

Xylocopa virginica



- Excavates tunnels in softwood
- Found year round, often around wooden structure
- Not efficient blueberry pollinators