

# Honey Bees, Bumble Bees, and Other Bees, Managed and Wild

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# Honey Bees – Honey, Pollen, Brood

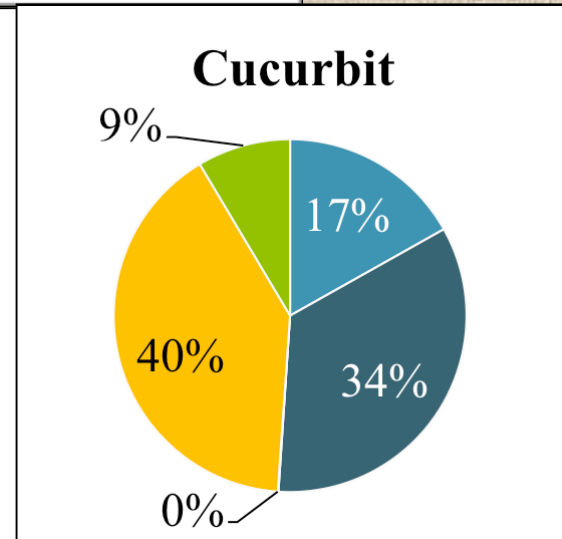
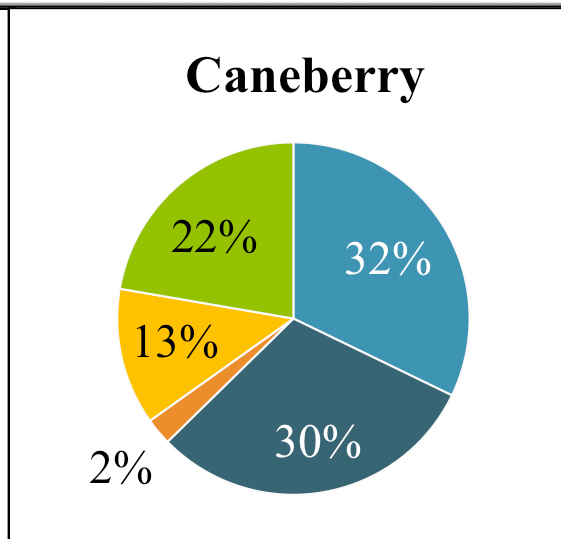
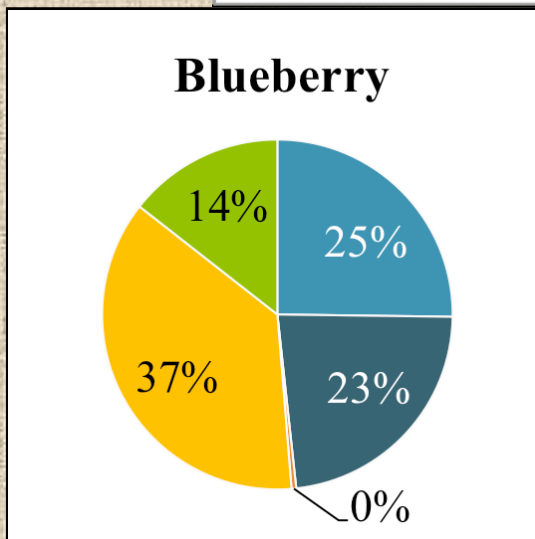
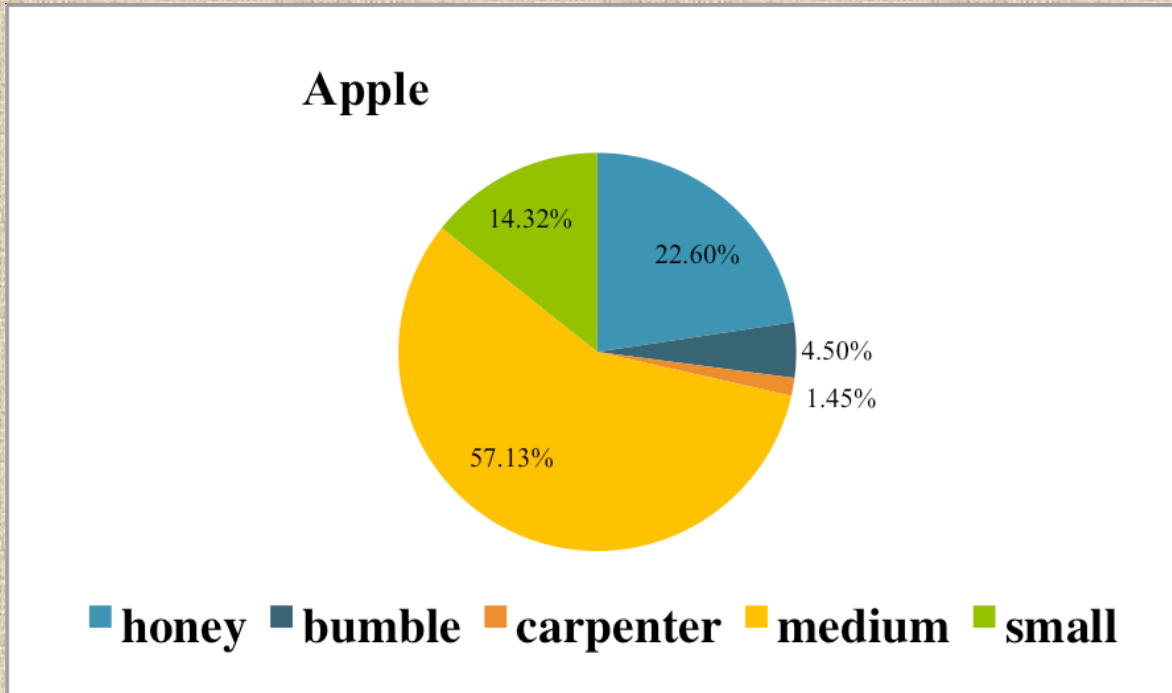


From [BeelInformed.org](http://BeelInformed.org)

Garibaldi et al. 2013. Wild pollinators enhance fruit set of crops regardless of honey bee abundance. *Science*, 339(6127), 1608-1611

- 41 crop systems worldwide (including some pollinated by flies, weevils, other insects as well as wild bees)
- Overall, wild insects pollinated crops more effectively – increases in their visits increased yield more than twice as much as with honey bees
- Wild insects and honey bees increased yield independently, so honey bees supplemented, rather than substituting for, the wild insects

# A diversity of bees are needed for crop pollination



From Nancy Adamson, Ph.D. Thesis, 2011, Virginia Tech

# Bumble Bee Life Cycle

In the early stages,  
the queen takes  
care of all nest duties



Nest Making (spring)

As the colony grows,  
the workers  
take over

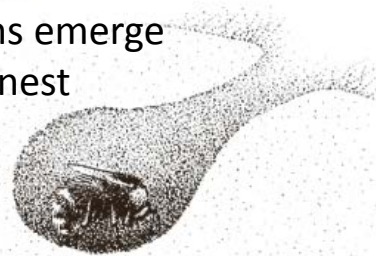


Queen Foraging (spring)



Nest Development (summer)

Mated queens emerge  
And look for nest  
Site (Spring)



Queen Hibernates (winter)



Queens and males (summer)

At the end of  
the colony cycle,  
males and queens  
are produced

Bumble bees are declining in species diversity in the Northeast, across North America, and around the world

15 of 46 North American species of conservation concern – being added to State Wildlife Conservation Plans

Species generally recognized as in serious decline:

- East of Rockies: *Bombus affinis*, *B. terricola*, *B. pensylvanicus*
- West of Rockies: *Bombus franklini*, *B. occidentalis*

# Listed species

- *Bombus franklini* is on the Red List of the International Union for the Conservation of Nature as Critically Endangered
- *Bombus affinis* federally listed as an Endangered Species in Canada, under consideration in US.
- Some are state listed – *B. affinis*, *B. terricola*, *B. ashtoni* in Connecticut

# *Bombus impatiens*, Common Eastern Bumble Bee



Inside nest, from Resonating Bodies



Male, from BugGuide.net

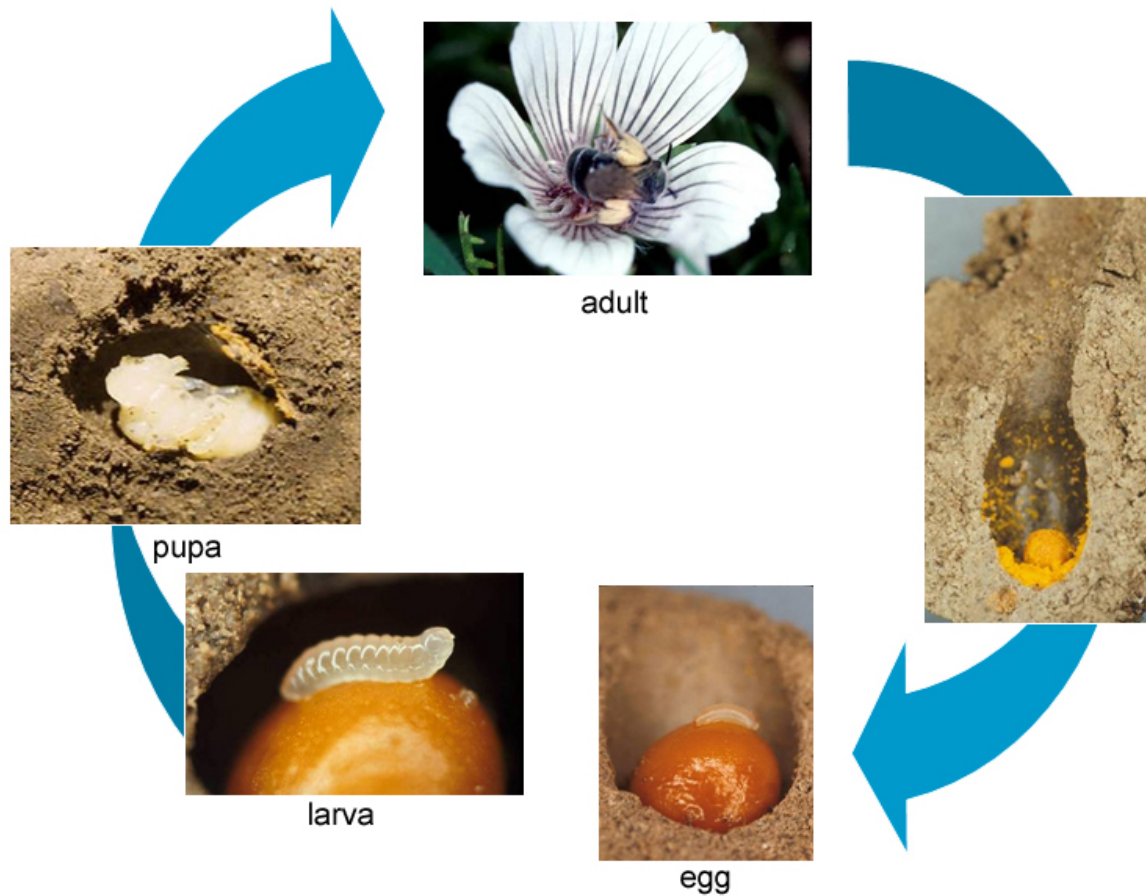
Female, from Wikimedia Commons

- Used as commercial pollinator on greenhouse tomatoes, blueberries, cucurbits and other crops
- Widely recognized as increasing in abundance, in contrast to many other species



# Life Cycle of Solitary Bees

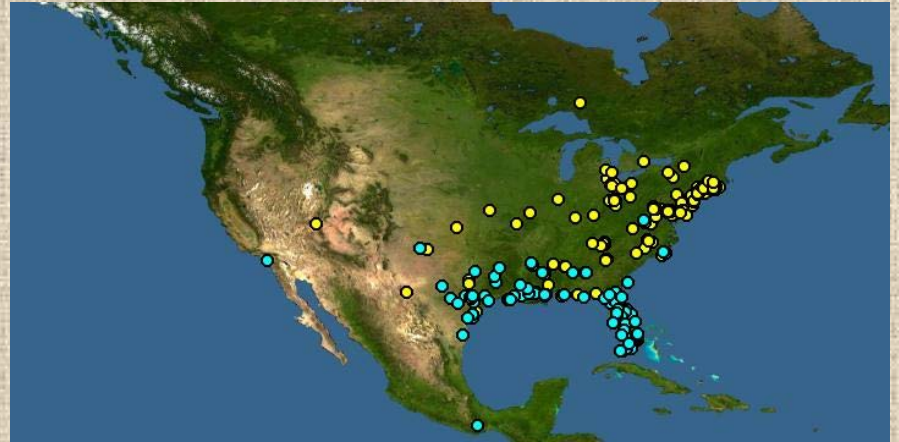
— Nesting in the Ground, Hollow Stems, Wood



[www.xerces.org/nativebees](http://www.xerces.org/nativebees)

# *Xylocopa* – 2 species – Carpenter Bees

Tunnel in wood and cause damage, but pollinators, too



# *Colletes* – Solitary Bees

Nest in the ground in aggregations



# Cellophane Bees - *Colletes*



Pollinators of spring-blooming trees, shrubs and crops. Nesting in patchy lawns and forest clearings early in spring. 35 species east of Mississippi

Pollinate

- Apple and other spring-blooming fruit trees
- Blueberry
- Cranberry

# Mason Bee Nests



Photo credits: L, Nigel Jones; R, Ellen Bulger

A Selection of bees – adapted from Bee  
Identification slide series assembled by  
Sam Droege,  
US Fish & Wildlife Service

(Numbers are numbers of species  
east of the Mississippi)

# Bombus

- 20 species

some  
parasitic  
species  
(Psithyrus)

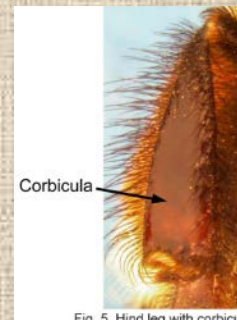
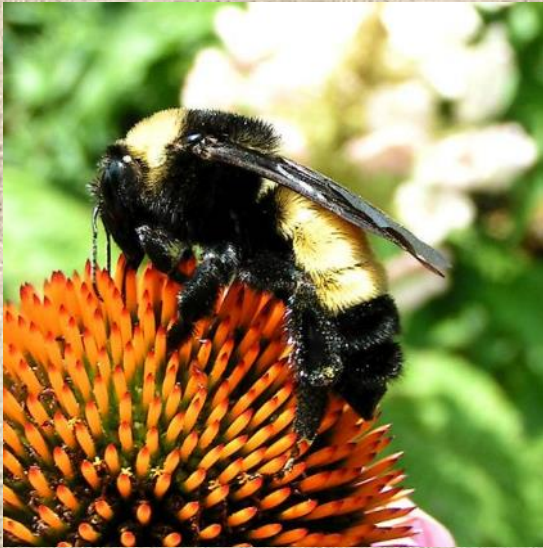


Fig. 5. Hind leg with corbicula.



# *Osmia* - Mason bees

Common, spring  
hole-nester, 28  
species

Photo by Hartmut Wisch



Photo by T.P. Junier, NCSU





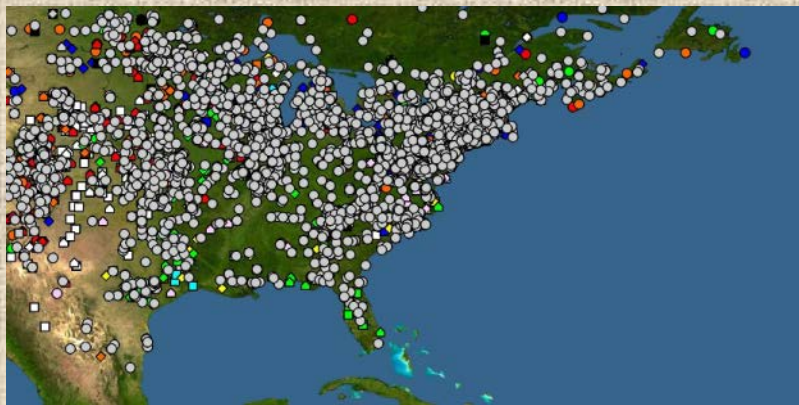
# *Megachile* – Leaf-cutter bees



**Common in all open environments,  
40 species**



# *Andrena* – 116 species – many highly pollen specific



# Green Bees

*Agapostemon* – 4 species - Biggest of the green bees,  
Common in Fields



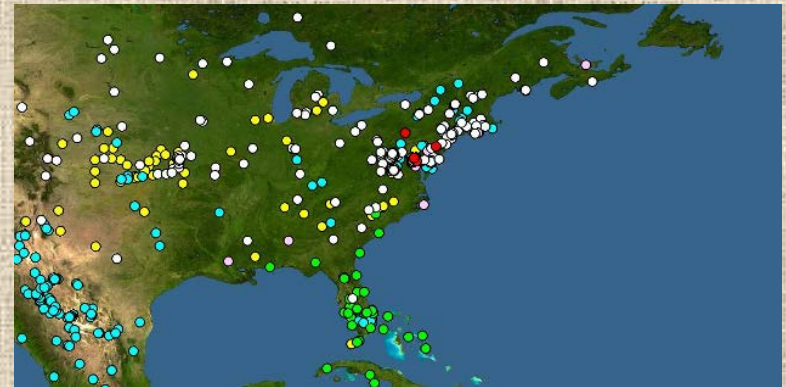
*Augochlorella* – In Every Field – 3 species – Way Abundant!



*Lasioglossum* – 115 species – Abundant!  
Many species everywhere, difficult to identify



*Halictus* – Every Open Place – 6 species



# *Andrena* – 116 species – many highly pollen specific

