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Honeybees

- *Apis mellifera* or common honeybee originated in Northeastern Africa and Southern Europe
- Honeybees have been domesticated by humans in ancient Egypt

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Honeybees in North America

- There are no honeybees native to the Americas
- Colonists brought honeybees in 1622 as a source of honey, wax and as a pollinator for crops that were planted in the colonies
- Most of the bees that have been imported in America are Italian honeybees
- Escaped colonies of bees spread throughout the continent

3

Pollination

- Honeybees have a structure on the hind limbs for collecting pollen called the pollen basket
- In visiting flowers to collect nectar and pollen, bees inadvertently transfer pollen from one flower to another thereby allowing reproduction in the plant
- The pollen is returned to the hive to feed young bees

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Honeybee Problems

- Since honeybees are colonial insects, diseases can be spread quickly and destroy a hive
- Varroa mites
- Colony Collapse Disorder (CCD)
- Africanized bees
- Predators
- Foulbrood

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Need for Pollinators

- Since 1950, the number of managed beehives has decreased by 50% and wild hives have become virtually nonexistent
- Crops requiring pollination have increased
- Because of their role in pollination, many consider bees to be keystone species in ecosystems

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Native North American Bees

- There are about 2000 species of bees that are native to North America
- None of these are honey producers
- Many of these native bees are important pollinators, especially with the decline of domesticated European honeybees

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Mason Bees - *Osmia lignaria*

- Sometimes called Blue Orchard Bees
- Solitary bees that do not live in large colonies
- All females are fertile
- Mason bees have few defensive strategies making them far less likely to sting than honeybees
- Mason bees will pollinate most ornamental and agricultural crops

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Pollination

- It is estimated that 250 Mason bees will effectively pollinate an acre of apple orchard
- This is the equivalent of two honeybee hives consisting of 15,000-20,000 bees in each hive
- Mason bees are capable of pollinating plants such as alfalfa that honeybees cannot pollinate
- Mason bees may travel ½ mile to forage

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Mason Bee Life Cycle

- Like honeybees, Mason bees have complete metamorphosis
- Unlike honeybees, all female bees are fertile and lay eggs in a tunnel in wood in spring
- The eggs develop over the year in the holes in the wood blocks
- The adult bees emerge the following spring to mate and continue the life cycle

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- Adult Mason bees live about 20 days and females may fill two tunnels with eggs
- Unfertilized eggs produce male offspring

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Mason Bee Habitat

- Mason bees can be attracted to nest in area by providing a suitable nest box
- Nests can be as simple as a block of untreated wood with dead-end holes 3/8 inch in diameter
- Nests should be mounted above ground level and where sunlight warms the nest for part of the day

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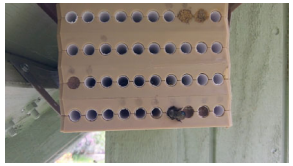

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Mason bee nest boxes should be placed in proximity to a pollen source and not far from water and a location with damp soil or mud


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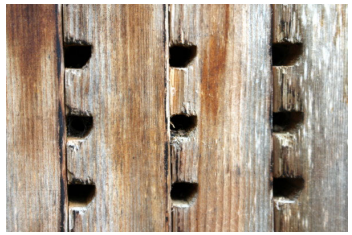
- Nests should not be painted or stained but desirable results are obtained by scorching the front of the nest
- Darker wood is attractive to the bees and warms more quickly

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Nest boxes can be as simple as a bundle of straws

The straws need to be 3/8 inches internal diameter
Paper straws are preferred
Enclose the bundle of straws in a shield from rain

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Role of Mason Bees

- Since they are not honey producers, Mason bees will never replace honeybees
- However, since Mason bees are far more efficient pollinators, they can be used to effectively augment honeybees as pollinators of many crops and native stands of wildflowers and native woody plants

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Other Native Bees

Like Mason bees, these pollinators were in North America before the arrival of Europeans

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Squash Bees

- Native bees that pollinate squash, melons, pumpkins and cucumbers
- Solitary bees that build shallow nests in soil often near sources of pollen
- Squash bees begin pollinating earlier in the day than honey bees

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Bumble Bees

- The only native bee that is colonial
- Only the queen survives the winter
- Frequently nest in abandoned rodent holes in soil
- There are 50 known species in the US
- Bumble bees are excellent pollinators of tomatoes

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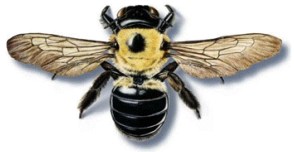
Carpenter Bees

- Do some pollination but are often “nectar thieves” cutting into the sides of flowers
- Usually considered more of a garden pest
- Look like bumble bees except for less fuzzy abdomen



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Leafcutter Bees

- Very similar to Mason bees except leaf cuttings are used to partition nest cells rather than mud
- Very efficient pollinators and do very little damage to plants by cutting leaves

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Sweat Bees

- Beautiful small bees
- Western alkali bees are important pollinators of alfalfa
- Sweat bees are not thought of as major pollinators in the Eastern US


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Miner Bees

- Dark ground dwelling bees that forage earlier in the spring than other bees
- One of the few pollinators of azaleas
- Efficient pollinators of apple trees


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