MISSOURI BOTANICAL GARDEN

William T. Kemper Center for Home Gardening

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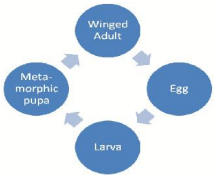
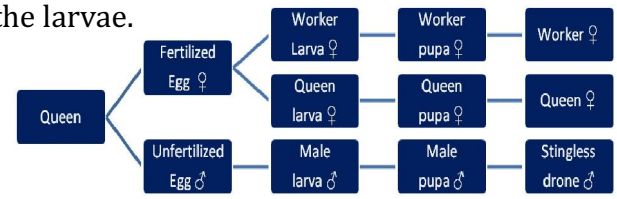
Insect Order ID: Hymenoptera (Bees)

Life Cycle–Complete metamorphosis: Queens or solitary adults lay eggs. Larvae eat, grow and molt. This stage is repeated a varying number of times, depending on species, until hormonal changes cause the larvae to pupate. Inside the cell (in hives) or pupal case (solitary), they change in form and color and develop wings. The adults look completely different from the larvae.

Solitary wasps:



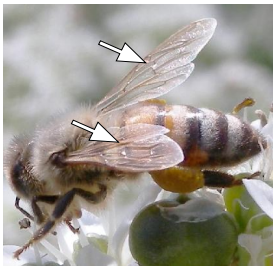
Social wasps:



Adults–Bees have hard bodies and membranous wings. The forewing is larger than the hindwing and the two are hooked together as are all Hymenoptera, hence the name "married wings," but this is difficult to see. All have a cinched-in waist (wasp waist). Head is oblong-shaped. Eyes are compound, but not multifaceted. Eggs are laid from the base of the ovipositor, while the ovipositor itself, in most species, has evolved into a stinger. Thus only females have stingers. To collect nectar many species have long tongues. The densely hairy bodies of some species aids in the collection of pollen. Many of the individual hairs are branched giving them a feathery appearance. Most collect pollen on their bodies, some on their abdomens, others in a "pollen basket" on a section of their hindlegs. *(Click images to enlarge or orange text for more information.)*

Long tongue for lapping up nectar

Wasp waist (cinched-in waist)



2 pairs of wings

Empty pollen basket
Flattened hindleg

Compound eyes

Oblong-shaped head

Densely hairy body

Bulging pollen baskets

Eggs–Colonies of social bees have at least one queen that lays both fertilized and unfertilized eggs. Most are fertilized and all fertilized eggs are female. Most of these become workers; a few become queens. The few unfertilized eggs are male. Eggs are tended by workers. Solitary bees collect food, usually nectar and pollen, and lay their eggs on the food source.

Larvae–All are vermiform (worm-like), so they have no legs, no prolegs, no wings, no wingbuds. Heads are difficult to discern. They produce no frass. Larvae are rarely seen, as they are either tended inside a hive or are provided with food by a solitary female and left inside a solitary nest. *(Click images to enlarge or orange text for more information.)*

Manmade
solitary bee house


Larvae of colony bees are
hidden within the hive


Carpenter bee nest
exposed by a woodpecker

Pupae–All have a pupal stage, during which the adult, winged form develops. All are exarate pupae (the appendages are free and visible).

Beneficial/Benign Aspects–Honeybees provide honey and wax, and all species, not just honeybees, are important pollinators. Many, many food crops require bees for pollination. *(Click images to enlarge or orange text for more information.)*


All bees are pollinators


Honeybee
covered with pollen

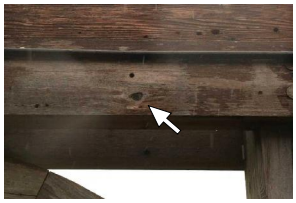

Carpenter bees are
very important pollinators


There are many native
solitary bees that are
important pollinators


Honey & wax

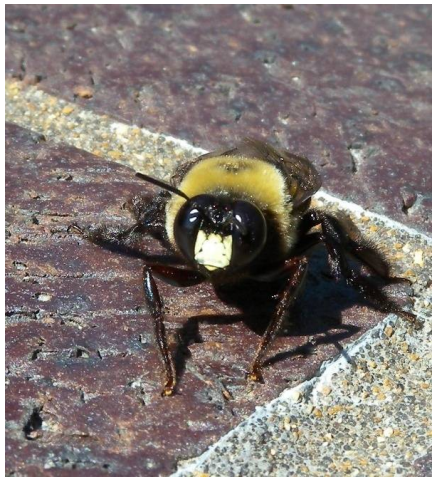
Damage–Both adults and larvae have chewing mouthparts or chewing-lapping mouthparts. Most damage from bees is either from stinging or from tunneling by carpenter bees or from leaf cutting by leaf-cutter bees; this last however is only cosmetic. Since stingers evolved from ovipositors (egg-laying organs) and only females lay eggs, only females have stingers. Unlike wasps, which can sting repeatedly, the stingers of bees stay in the victim's skin along with the venom sack, which means each bee can sting only once and will die after stinging. Social bees are usually only aggressive in defense of their colony or if provoked, but since most species of bees are solitary, most bees are not aggressive. Male carpenter bees, which have a white patch on the face, display aggressive behavior, but are harmless since males have no stinger. Honeybee workers, during swarming, are glutted with honey to take to a new hive and are therefore lethargic and even less aggressive than usual. Carpenter bees burrow and lay their eggs in dead wood, such as, logs, wood siding, decks or fence posts; hungry woodpeckers hunting their larvae enlarge the tunnels. Most bee species, however, are both solitary and nest in the ground. *(Click images to enlarge or orange text for more information.)*

Swarming bees are glutted with honey, sluggish and pose little danger



Carpenter bees tunnel into wood

Woodpeckers hunt carpenter bee larvae



Male carpenter bees look dangerous but have no stinger

Damage from leaf-cutter bees is only cosmetic

Most bees are solitary and not aggressive

Social bees use ready-made cavities

Comments–Bees are classified in the order Hymenoptera, Suborder Aculeata, Superfamily Apoidea.

For more information on honeybees see the Kemper Factsheet "Honeybees." For more information on bees in Missouri, see MU Guide G7391 "Bees and Wasps."

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