



Beekeeping and Gardeners

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What is a Bee?

What is Inside a Beehive?

The Importance of Honeybees

What Honeybees Need

Stings – Good News, Bad News

Flowers and Pollen Primer

Plants for Honeybees

Honey

What is a Bee?

Worker

- Lives 30-45 days
- 3/8" to 1/2" long
- 21 days to develop
- Sterile female
- Does all the work

Queen

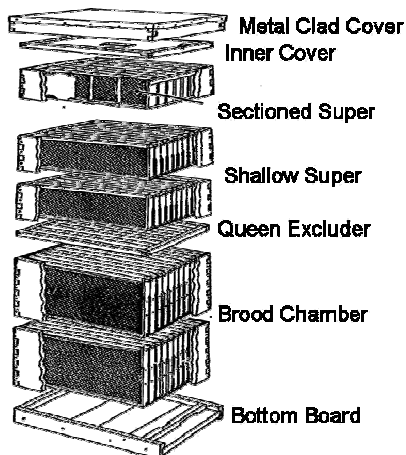
- Lives 1-3 years
- 16 days to develop (fed royal jelly)
- Mates with 10-20 drones when 1 week old
- Lays 1500 eggs per day



Drone

- Lives 30-40 days
- 24 days to develop
- Mates with queen from other hive, then die

What is Inside a Beehive?



The Importance of Honeybees

Products of the Honeybee

- Honey: Healthy, Healing
- Beeswax: Clean burning candles, polish, balm, cosmetics
- Pollination: Over 1/3rd of our food is the result of honeybee pollination
- Other: Pollen, Venom, Propolis (kills HIV virus!) Royal Jelly, Food, Bees & Queens



Honeybees are in Trouble – You can help!

- Lack of knowledge of the benefits of honeybees and the incorrect perception that honeybees are dangerous and aggressive contribute to policies and practices that are endangering the honeybee.
- Improper use of pesticides kills and weakens honeybee colonies.
- Honeybees, revered in ancient cultures and placed in prominent places of honor in home gardens are now hidden and forbidden in many cities' landscapes.
- In recent years, several diseases and parasites have reduced honeybee populations and the most recent threat, colony collapse disorder, is wiping out entire colonies. Researchers around the world are racing to understand the cause and discover a response to this serious new threat.

What Honeybees Need

- Nectar & pollen for food
- Water to dilute honey, cool the hive, and control humidity
- Shelter to keep out sun, wind, rain, and snow
- Propolis to weatherproof and sterilize the hive interior

Supply plants that provide nectar and are attractive to bees. A vegetable garden, herb garden, flower beds, trees, shrubs and berries can provide great variety and a constant nectar flow for bees. Consider colors that bees see and choose natives and single blooms for best results.

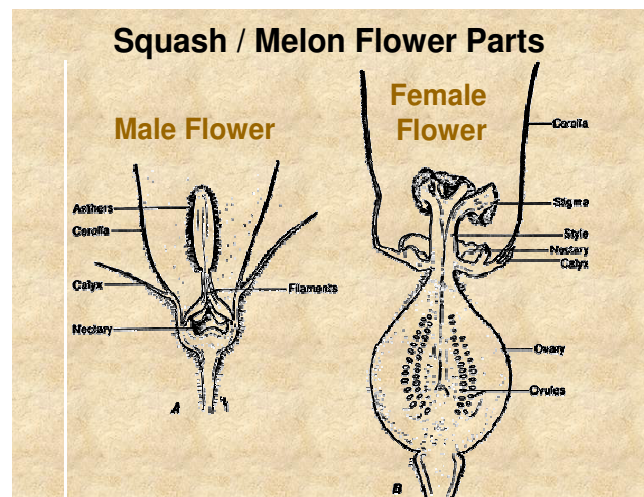
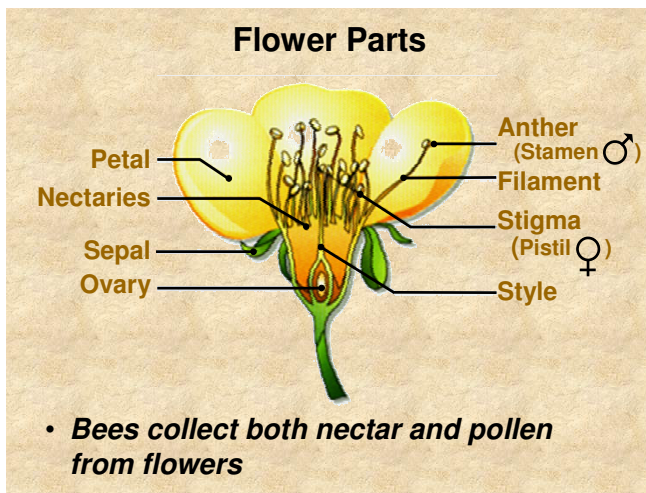
Mostly, relax & enjoy the foraging bees, they won't sting unless you threaten them!

What Honeybees Need from You!

- **Spread the Word – Educate Others!**
- **Plants that attract bees/butterflies**
 - Variety of blooms & bloom times for nectar & pollen
 - Blue/purple/yellow, Single flowers
- **Proper use of pesticides**
 - Always follow package directions
 - it's the law
- **Source of Water:** *Shallow / drip*
- **Habitat:** **Become a beekeeper** 😊



Flowers and Pollen Primer



Plants for Honeybees

- *Almonds* *
- *Alfalfa*
- *Apples* *
- *Apricots* *
- *Aspen (Poplar)*
- *Asters*
- *Basswood*
- *Berries*
 - *Blackberry**
 - *Blueberry* *
 - *Cranberry* *
 - *Raspberry**
 - *Strawberry* *
- *Box elder*
- *Buckbrush*
- *Buckwheat*
- *Catmint (Nepeta)*
- *Catnip*
- *Cherries* *
- *Clovers*
 - *Alsike*
 - *Crimson*
 - *Ladino,*
 - *Red*
 - *White*
- *Coneflowers*
- *Cucumbers* *
- *Dandelion*
- *Fireweed*
- *Goldenrod*
- *Hawthorne*
- *Herbs*
 - *Borage*
 - *Dill*

(* commercially pollinated by honeybees)

- *Hyssop*
- *Lavender*
- *Lemon Balm*
- *Lovage*
- *Marjoram*
- *Mint*
- *Oregano*
- *Rosemary*
- *Sage*
- *Thyme*
- *Honeysuckle*
- *Juneberry*
- *Legumes*
 - *Alfalfa*
 - *Birdsfoot*
 - *Trefoil*
 - *Hairy Vetch*
- *Loosestrife(invasive)*
- *Locusts*
- *Maples*
- *Melons* *
 - *Muskmelon*
 - *Watermelon*
- *Milkweed*
- *Mustard*
- *Ohio Buckeyes*
- *Pears* *
- *Plums* *
- *Pumpkins* *
- *Pussy Willows*
- *Russian Sage*
- *Smartweed*
- *Spotted*
- *Knapweed(invasive)*

- *Squash* *
- *Sumac*
- *Sunflowers* *
- *Wild Fruit*
 - *Crab Apple*
 - *Plum*
 - *Cherry*
- *Willows*

Good for foraging

- *Blanket Flower (Gaillardia)*
- *Chrysanthemum*
- *Daffodil /Jonquil*
- *Evening Primrose*
- *Forget-me-not*
- *Globe Thistle*
- *Larkspur*
- *Liatris*
- *Lupine*
- *Marigold*
- *Mexican Sunflower*
- *Moss Rose*
- *Oriental Poppy*
- *Pansy*
- *Penstemon*
- *Petunia*
- *Phlox*
- *Salvia*
- *Sedum*
- *Snapdragon*
- *Tall Verbena (bonariensis)*
- *Violet*

Honey Info

Variety and Properties

- Nectar is the source of different flavors/colors
- Honey is antiseptic, antibiotic, antifungal, and antibacterial - it never spoils!

Benefits of Honey

- Nutritious; Proteins, vitamins, minerals, antioxidants
- Less negative impact on teeth
- Stomach, digestion, Ulcers
- Allergies,
- Burns, Abrasions, Skin treatments

Stings – Good News, Bad News

Compound	Percentage in venom (dry weight)	Effects
Melittin	30–50	Bursts blood and mast cells; pain. Releases histamine and serotonin from mast cells; itching and swelling. Depresses blood pressure and respiration.
Phospholipase A ₂	10–20	Destroys cell membranes; causes pain; synergistic with melittin.
Hyaluronidase	2	Hydrolyzes hyaluronic acid, which glues connective tissue together; allows greater penetration of other components.
Apamin	3	A neurotoxin that causes tremors.
Mast Cell Degranulating (MCD) peptides	2	Releases histamine from mast cells; pain; anti-inflammatory.
Histamine	<1	Burning itch; redness; local skin reaction.

Each sting contains about 50–150 µg of venom. Other compounds in venom that have an effect are protease inhibitor, antigen 1 (unique to honey bees), and peptide 401.

Source: Adapted from M. L. Winston, *The Biology of the Honey Bee* (Cambridge: Harvard Univ. Press, 1987), and J. O. Schmidt, *Bee Products*, ed. Mizrahi and Lensky (New York: Plenum Press, 1996).

Web Site References

<http://www.extension.umn.edu/honeybees/>

<http://www.mnbeekeepers.com/>

www.pollinator.com

- Pollination for the home gardener

http://www.pollinator.com/apple_pollinks.htm

- links to apple tree pollination info

<http://www.pollinator.com/identify/whatsbuzzin.htm>

- pics/descriptions of bees & lookalikes

www.honey.com

- Honey for health, recipes

www.kutikshoney.com

- Honey for health

www.whfoods.com

- Honey nutrition, recipes, healthy foods

<http://dsc.discovery.com> (search for honeybee)

- news stories about history & science of bees

http://en.wikipedia.org/wiki/Northern_Nectar_Sources_for_Honey_Bees (zone 5)

<http://www.organicaginfo.org> (search for pollinator plants)

