



How Can We Help Bees at School?



Try to ensure that your school facility crews are not using pesticides (for human health as well as bees!). Bees need habitat, so increasing the availability of flowers is critical. Native plants are most likely to successfully attract native bees but many easy to grow flowers such as sage, thyme, zinnias, sunflowers and lavender are also attractive to bees. Don't forget that 'weeds' such as dandelion will provide early nectar sources. Plant groupings of flowers to ensure a good supply of nectar. Spring blooming trees and shrubs are also a great option for mason bees. Mason bees are very gentle and have to be severely provoked to sting.

Activity idea: Have students spread the attached black-eyed Susan seeds (our state flower) on patches of sunny, bare soil in planting beds around the school.



Activity idea: Plant a sunflower seed to grow to help bees (ensure it is not a pollen free variety - Lemon Queen is a bee favorite). Each child can grow a sunflower from seed in a small paper cup in class and then take home to plant. Remind students that if they plant flowers to attract bees, their family should avoid using chemicals to kill bugs in their yard as these kill bees too. Observe bees that visit and take part in citizen science projects such as The Great Sunflower Project and <https://www.bumblebeewatch.org/>. Protect sunflowers from deer.

Activity idea: Have students create posters to educate others about our native bees and their importance.

Activity idea: Plant a pollinator garden. Information and advice can be found on the Department of Natural Resources website. It is fine to start small: <http://dnr.maryland.gov/wildlife/Pages/Education/Schoolyard-Wildlife-Habitat.aspx>

Planting recommendations for pollinators: http://www.xerces.org/wp-content/uploads/2014/09/MidAtlanticPlantList_web.pdf

Activity idea: If you already have an area with spring flowers (mid-April through mid-June), make a mason bee home. Drill holes in untreated lumber:

<http://www.nwf.org/Garden-For-Wildlife/Young/Build-a-Bee-House.aspx>.

These blocks need to be retired after 2 years to prevent the buildup of pests. To avoid this, line with fresh wax paper each year:



Mason bees need mud to seal the nest chambers

Remember to provide an area where mud can be collected too.



Instead of a wooden mason bee home, build a simple bamboo nest in a bucket:

<http://www.xerces.org/wp-content/uploads/2009/11/tunnel-nest-management-xerces-society.pdf>



Xerces.org

Detailed care information for your bee homes

Lots of information can be found about mason bee and other bee homes in these two publications by the Xerces Society and the Oregon Extension Service:

http://www.xerces.org/wpcontent/uploads/2008/11/nests_for_native_bees_fact_sheet_xerces_society.pdf<http://www.xerces.org/wp-content/uploads/2009/11/tunnel-nest-management-xerces-society.pdf>

https://catalog.extension.oregonstate.edu/sites/catalog/files/project/pdf/em9130_0.pdf

The most important details are:

- If you build your own nest, do not use treated wood.
- Cover the holes with chicken wire to help keep birds away from the bee house (woodpeckers can find the bees a tasty treat).
- Place 3-5 feet off the ground. Attach firmly so the house doesn't swing.
- Place east or south-east facing in a place where you can easily observe it, so the bees can get warmed up quickly by the morning sun.
- You can place several houses in locations around your schoolyard but each needs to be near a source of flowers and mud as mason bees don't fly far.
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Find out more about native bees:

Bee Basics: An Introduction to our Native [Bees](https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5306468.pdf) https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5306468.pdf

Bumble Bees of the Eastern United States <https://www.fs.fed.us/wildflowers/pollinators/documents/BumbleBeeGuideEast2011.pdf>



Larry Hogan, Governor

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Wildlife and Heritage Service

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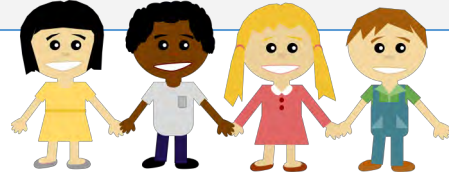
dnr.maryland.gov/wildlife



Jeannie Haddaway-Riccio, Secretary

Bees and Me

Bees are living creatures, just like you. They need to eat, drink and have a safe home to be healthy. Bees are also very different from people. Fill in the blanks using the words in the box below to describe how you and a bee are different.



Bees have _____ eyes.

I have _____ eyes.

Bees use their _____ to smell and taste.

I use my _____ to smell and my _____ to taste.

Bees move around by _____

I move around by _____

Bees have _____ legs

I have _____ legs

Bees live in a _____

I live in a _____

Bees like to eat _____

I like to eat _____

Before bees grow up, they are an

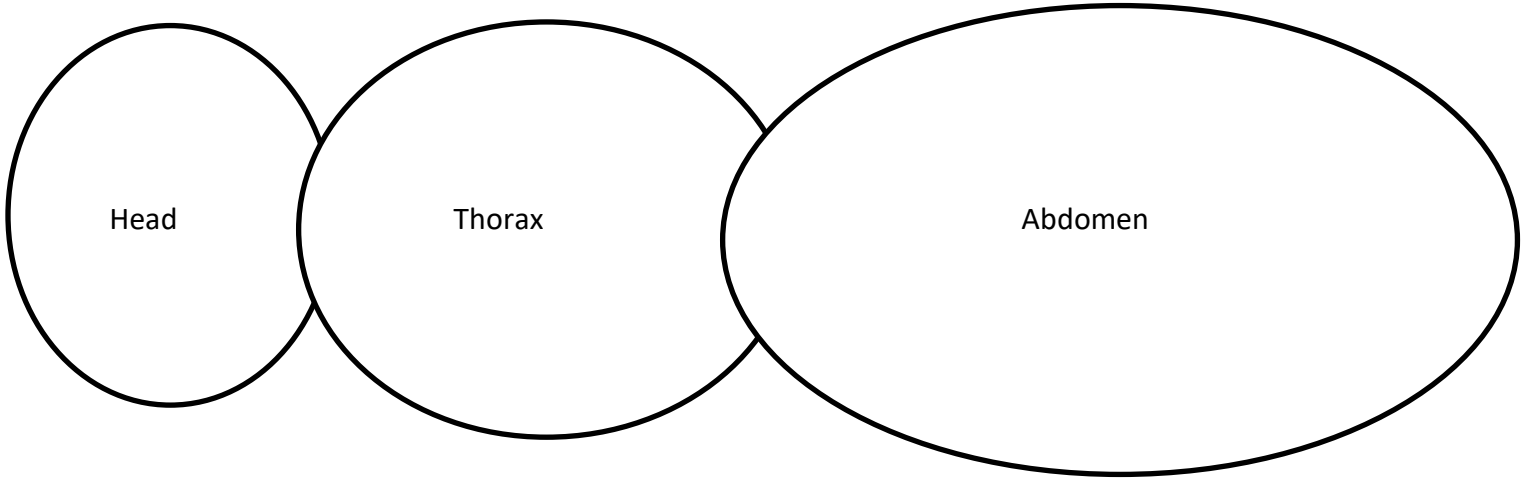
Before I grew up, I was a

_____ and _____

nest egg flying 6 nectar 5 antennae walking
nose 2 house larva tongue baby

Bee Anatomy

Can you add eyes, antennae, wings, legs and color to your bee body? What else does a bee have?



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The Mason Bee's Life Cycle

These are the stages in the lifecycle of a mason bee. Use the words at the bottom of the page to fill in the blanks.

The female bee seals a tube with mud and collects a ball of _____ and _____.

Then she lays an _____ on the food.

The egg hatches and the _____ eats the pollen and nectar.

Once it is grown, the larva spins a cocoon and transforms into a _____.

The following _____ the adult bee emerges from the nest tube.

This process is called _____.

egg bee pupa metamorphosis larva spring
pollen nectar



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The Mason Bee's Life Cycle

These are the stages in the lifecycle of a mason bee. Mason bees are **solitary** bees - the female bees only collect pollen for their own larva to eat.

- ◇ In spring, mason bees emerge and collect pollen from flowers such as apple _____.
- ◇ The female bee seals a tube with mud and collects _____ and _____ for food.
- ◇ She lays an _____ on the food, then seals it in its own chamber.
- ◇ The egg hatches and the _____ eats the pollen and nectar.
- ◇ Once it is grown, the larva spins a cocoon and transforms into a _____.
- ◇ The mother bee dies but the new bees _____ over the winter in their tubes.
- ◇ The following _____ the new adult bees emerge from the nest tube.
- ◇ This process is called _____.

egg pupa metamorphosis larva spring pollen hibernate
blossom nectar

The Bumblebee's Life Cycle

These are the stages in the lifecycle of a bumblebee. Bumblebees are **social** and live in a nest with their mother and sisters.

- ◇ In spring a new queen bee emerges from underground and hunts for a place to build her underground _____.
- ◇ She builds a wax pot and fills it with _____.
- ◇ She lays _____ on a ball of pollen which hatch into _____.
- ◇ The queen brings the larvae food until the larvae each spin a _____.
- ◇ The _____ collects more food and lays more eggs.
- ◇ The new _____ bees emerge and help the queen collect food for the larvae.
- ◇ The _____ of bumblebees grows through the summer.
- ◇ New queens hatch and dig a hole _____ to spend the winter but the old queen and the workers die. Next year, there will be new colonies of bumblebees.

eggs nest nectar queen larvae worker cocoon colony underground

Mason Bee True or False Quiz

- | | | |
|---|------|-------|
| 1. Mason bees are all black in color. | True | False |
| 2. Mason bees make honey. | True | False |
| 3. Mason bees lay their eggs in tubes and other small spaces . | True | False |
| 4. Adult mason bees pollinate fruit trees and flowers. | True | False |
| 5. Mason bees emerge in November. | True | False |
| 6. Mason bees have 4 legs and 6 wings. | True | False |
| 7. Mason bees carry pollen on their abdomen. | True | False |
| 8. Mason bees live for 2 years. | True | False |
| 9. Mason bees cannot fly in the rain. | True | False |
| 10. Mason bees pack pollen in the tube for their larvae to eat. | True | False |
| 11. Female mason bees die at the end of spring. | True | False |
| 12. Mason bees carry mud with their legs. | True | False |



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Mason Bee True or False Quiz Answers

1. False, mason bees vary in color from black to blue, gold and yellow.
2. False, European honey bees that live in large hives make honey.
3. True, mason bees prefer a hole 5/16ths of an inch diameter.
4. True, mason bees are extremely efficient pollinators visiting up to 2000 flowers a day (almost 3x as many as a honey bee) and will pollinate 90% of them. They often pollinate fruit trees so are sometimes know as orchard bees.
5. False, mason bees emerge in spring once temperatures exceed about 55F.
6. False, like all bees they have 4 wings and 6 legs.
7. True, mason bees carry pollen on their abdomen so it easily falls off to pollinate flowers that they visit.
8. False, the complete life cycle of a mason bee from egg to adult is one year.
9. False, mason bees are hard workers and fly in cool weather and even the rain.
10. True, female mason bees pack a mixture of pollen and nectar in the tube for their larvae to eat.
11. True, once they have laid all their eggs their lifecycle is over. The new bees stay protected inside the nest tube for the winter.
12. False, mason bees carry mud in their mouths! They will only nest where there is a source of mud nearby as they don't like to carry it far.

