



Bee Hotel

Overview: In the United States, there are about 4,000 species of bees, and less than one percent are honey bees. In this lesson, students learn what solitary bees are, why they are important for pollination, and how to make an effective bee hotel for them.

Objectives: The student will be able to:

Explain what solitary native bees are and how they are different from honey bees.

Describe where solitary bees prefer to make their nests.

Describe what aspects a bee hotel should have in order to attract solitary bees.

Materials:

video: *Why You Need a Bee Hotel* available to download at njagclassroom.org, NJAITC Lessons, Animal Agriculture

Support Pollinators instruction sheet

Toilet paper tube (at least one for every group of four students)

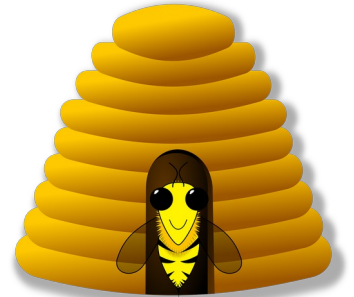
One or two packages of 100 paper straws

Glue

Materials to waterproof the bee hotel: waterproof tape, acrylic paint, and or crayons

String

One roll aluminum foil



Procedure:

Start by showing at least the first two minutes of the *Why You Need a Bee Hotel* video. The video is long and goes into a lot of detail, but if you show just the first two minutes it will explain why bee hotels are needed and what types of bees will use them.

After the first two minutes, stop the video and explain that you are going to make a bee hotel with items we can find in our homes. Show students the materials and ask them to brainstorm in small groups how they could put them together to make a bee hotel. Explain to students that solitary bees like to nest in dark places, so one end of the bee hotel should be covered.

After sharing ideas, show students the picture of the bee hotel on the *Support Pollinators* instruction sheet. Ask the groups of students to compare their ideas with the picture shown, and decide how they want to make their bee hotel. Groups gather materials and make their hotels.

Optional: If students have several ideas about how to make a bee hotel, you can give them extra materials to experiment with different ways of construction.

Optional: You can show students more of the video to introduce another type of bee hotel. At minute 3:15, there is a great explanation of how the bees will use the hotel. At minute 9:00, the construction of a more elaborate bee hotel is shown.

When construction is finished, ask students to brainstorm with their groups where would be the best place to place their bee hotels. Then gather the class for discussion. The best place for a bee hotel is:

A sunny spot for warmth, facing south or east

3-5 feet off the ground

A spot protected from wind or rain

Somewhere with a nearby water source and flowers to pollinate

You can set up your bee hotels anytime during the growing season, but the best time to encourage bees to use your hotels is to set them up just before spring, when the solitary bees are first active and looking for a home.

Evaluation:

Students write a paragraph or essay about what they have learned about bee hotels and why they are important.

New Jersey Learning Standards:

Science

3-5-ETS1-1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-PS2-2 The patterns of an object's motion in various situations can be observed and measured; when that past motion exhibits a regular pattern, future motion can be predicted from it.

3-PS2-4 Define a simple problem that can be solved through the development of a new or improved object or tool.

Support Pollinators!

Build a D-I-Y Native Bee House

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Materials Needed:

- Empty toilet paper roll
- Hollow stems, bamboo or paper straws
- Acrylic paint and paintbrush, duct tape or crayons
- Rubber band
- String
- Putty, tinfoil or some material to plug up stem/straw holes



Steps for Building:

1. Seal the cardboard toilet paper roll to help keep weather from destroying it. Some choices are to paint with acrylic paint, add a layer of tape, color with a crayon or dip it in wax.
2. Put string through the toilet paper roll and tie the string so it could be hung above the ground.
3. Cut hollow stems, bamboo or straws to 3.5 inch pieces.
Since toilet paper rolls are about 4 inches long, the 0.5 inches of leftover space creates a roof that will protect entryway for bees.
Cut enough pieces to fit snugly into roll (amount varies depending on stem size).
4. Tie stems or straws tightly together with a rubber band before placing into toilet paper roll.
5. Stuff tied bunch of stems or straws into toilet paper roll.
6. Leave a fingertip of space on one end to help keep weather from hitting the stem or straw openings.
7. Plug the other end of roll with putty or secure tinfoil onto one end using a rubber band (this way bees only have one entry point into stems or straws).
8. Hang the house so it faces east or southeast and is 3 to 5 feet off of the ground in an area protected from weather. The house can also be wedge between tree branches (look for "V" shaped branches). Any time during the growing season is a good time to place the habitat outside.
9. As the weather gets warmer, each week monitor the habitat for insect activity. Study the habitat and keep a journal taking notes on any activity.
Observe a queen bee plugging up holes after she lays her eggs.
Look for bees crawling out of the holes when the weather is warmer.
Discover where the bees travel to get food. Flowers, trees?
10. Change out the pollinator house every 1 to 3 years to help keep bees from getting a disease or destroyed by enemies. When ready to change it, take the nest down and leave it on the ground for one year so bees can emerge.

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