

## Lesson Plan

Lesson Title	The Yellowjacket Queen
Grade Level	Kindergarten – 2 <sup>nd</sup> grade
Topic	Yellowjackets (and mention of honey bees)
Lesson time	30-40 mins.
Materials Required	<ul style="list-style-type: none"> <li>Activity book (<a href="#">available here</a>)</li> </ul>
Standards addressed	<ul style="list-style-type: none"> <li>K-ESS3-1: Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live</li> <li>LS1.A: All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find and taking in food, water and air</li> <li>2-LS4-1 Make observations of plants and animals to compare the diversity of life in different habitats</li> </ul>

### The Yellowjacket Queen (PowerPoint)

**Slide 1:** This slide is actually a video clip. Students see the title and the hole but nothing happens until you click. Ask students why they think there is a picture of a hole for a yellowjacket lesson, then click/tap anywhere on the picture to start the video loop. Students will realize that the hole is actually the entrance to a yellowjacket nest and will see yellowjackets flying in and out of the hole. The main messages are:

- Some kinds of yellowjackets nest in hidden locations like abandoned rodent burrows
- Yellowjackets are extremely dangerous and even though the hole is small, the nest may contain hundreds or thousands of yellowjackets

Click/tap anywhere outside of the picture to advance the slide.

**Slide 2:** Yellowjackets are not bees!

Bees often get blamed for things that yellowjackets are responsible for (especially being aggressive when people are eating outdoors). Ask the students to point out similarities and differences between these two photos (yellowjacket on the left, honey bee on the right). The following table provides background information for a discussion comparing these two interesting insects. You don't need to mention every single one of these.

	Yellowjackets	Honey bees
Is this an insect?	Yes	Yes
Number of wings?	4	4
Number of legs?	6	6
Does it make a nest?	Yes	Yes
Does it have a queen?	Yes	Yes
What are the cells in the nest made of?	Paper	Wax
Where is the nest built?	Often hidden underground or hanging in a tree	Usually in a hole in a tree

Does this insect visit flowers?	Yes	Yes
Does this insect sip nectar?	Yes	Yes
Does this insect make honey?	No	Yes
Can this insect sting?	Yes (multiple times)	Yes (workers can sting once)
Can this insect bite?	Yes	No
Does this insect need protein to grow?	Yes	Yes
Does this insect collect meat for protein?	Yes	No
Does this insect collect pollen for protein?	No	Yes
Does this insect hunt for other insects (for protein)?	Yes	No

Yellowjackets are a type of wasp (there are thousands of different kinds of wasps). The main difference between bees and wasps is their source of protein for their young. Bees (including honey bees, carpenter bees, bumble bees, etc.) feed their larvae pollen. Bees have special hairs that help them collect pollen. Wasps get their protein from other animals, especially insects and spiders. Most kinds of wasps do not collect meat as a source of protein, but unfortunately, yellowjackets do.

**Slide 3:** The Yellowjacket Queen

This is the title page for the story. The story reads like a digital book, but has many animations that are initiated when you click/tap. The picture is a nest. On the right side you can see the paper cover, on the left side we are peeking behind the cover to the cells on the inside of the nest.

**Slide 4:** This slide starts out in the winter. Mention that you don't normally see many yellowjackets in the winter. A yellowjacket will appear in the stump. She crawled into the hiding place in the fall, and is now spending the winter alone. (Click 1) The winter storm will fade away, and signs of spring are all around (sunshine, insects, flowers, etc.). (Click 2) The queen emerges from her winter hiding spot. She is very hungry (no food during the winter). She lands on a flower. Ask the students if she is sipping nectar or gathering pollen. Nectar gives her energy to fly. (Click 3). She begins her search for a spot to build her nest. Ask students what she finds.

**Slide 5:** Now we can see underground. She has found an old gopher tunnel that leads to a small burrow. There is a root hanging down. Now she needs to find something to use to build her nest. (Click 1) She flies to a nearby wooden fence post. She scrapes off little pieces of wood that she chews and smooths into a tiny piece of paper. (Click 2) She repeats this many times, and she builds a tiny nest. The nest is paper and hangs upside down from the root. On the outside is a paper cover and on the inside she builds special spaces called cells. She lays one egg in each cell. Soon the eggs begin to hatch into hungry babies called larvae. (Click 3) The larvae need protein and insects are full of protein, so the queen hunts for flies and caterpillars and many other kinds of insects. The larvae begin to grow.

**Slide 6:** A few weeks later, the first workers hatch from their cells. They look just like their mother, but are a little smaller. Watch for the next 15-20 seconds to see what the workers are doing. Ask the students. They do a variety of activities including, gathering food, water and nesting materials, they guard the nest, and dig the burrow deeper and remove pebbles and dirt so the nest can grow. Once the workers leave their cells, the queen will never leave the nest again. She will continue laying eggs for the rest of her life.

**Slide 7:** By summer time, the nest has grown! Now, there are hundreds of workers and over a thousand larvae! With so many mouths to feed, the yellowjackets need to find more food. At this time you can also ask students to point out the various activities of the yellowjackets in the picture.

**Slide 8:** Every summer people make the same mistakes when they eat outside. They forget to cover up their food and drinks, and the yellowjackets learn to get their food from people instead of hunting for insects.

**Slide 9:** At the very end of the summer, the nest has thousands of yellowjackets, and they start producing new queens. Watch carefully what happens just before heavy rains arrive in the fall. (Click 1) Hundreds of new queens leave the nest to find places to hide for the winter. The old queen and her workers are at the end of their life cycle and the rains eventually wash the nest away. Every year the same cycle happens. You can ask your students what the yellowjackets are doing in real life right now.

**Slide 10: Safety**

Ask students to point out problems in the picture that will make a yellowjacket problem worse. You can click/tap on the following:

- Trash on the ground
- Lid on the ground
- Uncovered food and drink
- Trap that is too close to the table

At this point, you can ask for questions and ideas about how to stay safer from yellowjackets (remaining calm, not swatting them etc.).

Visit the [Yellowjacket School website](#) for more information or email [erice@msmosquito.com](mailto:erice@msmosquito.com)