



Social Insects: Ants and Termites

5_A

Introducing the Read-Aloud

10 minutes

What Have We Already Learned?

5 minutes

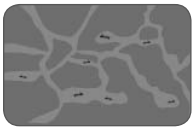
Remind students that they learned about the habits of honeybees and paper wasps in the previous read-aloud. Ask them whether honeybees and paper wasps are social or solitary insects. (social) Review some of the characteristics they learned about social insects:

- live together in organized communities called colonies
- depend upon and cooperate with one another: gathering food, caring for young, caring for queen
- have very specialized jobs.

Vocabulary Preview

5 minutes

Chambers



◀ Show image 5A-4: Underground ant tunnels with chambers

1. In today's read-aloud, you will hear about parts of an ant's home, called *chambers*.
2. Say *chambers* with me three times.
3. Chambers are enclosed spaces, compartments, or rooms used for a special purpose.
4. [Point to the chambers in the image.] Ants live in underground tunnels with many dark chambers.
5. Why do you think ants build chambers at the end of their tunnels? What do you think ants use chambers for? (Answers may vary.)

Crop

1. [Show Image Card 13] In today's read-aloud, you will hear that an ant has two stomachs. One of the stomachs is called a *crop*.
2. Say the word *crop* with me three times.
3. [Point to the ant's abdomen in the image.] The crop of an ant is located in its abdomen. The crop is a second stomach that ants use to store food.

Note: *Crop* is a multiple-meaning word. Students should be familiar with the meaning of *crop* as a plant grown on a farm.

4. The worker ant carried food in its crop back to the nest to feed the young ants.
5. If you had a crop, or second stomach just to store food, what would you use it for? (Answers may vary.)

Purpose for Listening

Tell students that they are going to learn about two more social insects today: ants and termites. Ask them to listen carefully to discover in what ways ants and termites are the same and how they are different from the other social insects they have learned about (honeybees and paper wasps).



Social Insects: Ants and Termites

Show image 5A-1: Black garden ant

Hi there, everybody. Because I'm one of the most common insects on the planet, I'm sure you know that I'm an ant. But, did you realize how much my cousins and I look like a wasp? Take a close look.



Show image 5A-2: Ant and wasp

See how slender, or thin, our waists are? Mine is unusually flexible, making it easy to bend and twist. Count my body parts. You'll see that I have three, just like all other insects—my head with its long antennae, my thorax, and my abdomen.¹

Here's something you might not know: I have two stomachs! Both are located in my abdomen, but one is for my own digestion and the other, called the crop, is just a storage bin where I keep food for other ants.

The fact that I store food for other ants should tell you something about me.² Ants are social insects. We raise and care for our young in ant colonies. There are many different kinds of ants with many different ways of life.

Show image 5A-3: Collage of ants³

Carpenter ants build their nests in wood. Leafcutter ants grow fungus on the leaves they cut in vast, or very large, underground gardens.⁴ The **aggressive** weaver ants live in leaves they bind together in trees.⁵ The huge colonies of army ants travel in groups, eating everything in sight. Trap-jaw ants can jump distances of more than twelve inches!⁶ Harvester ants build huge nest mounds where they store seeds. Beware of the red fire ants—they sting!

I am a black garden ant, the type that you may see most often, so that is the kind of ant I am going to tell you about today. Like many other ants, we live in underground tunnels, or passageways.

1 [Have student volunteers point to those parts of the insect in the image.]

2 What does this tell you about ants?

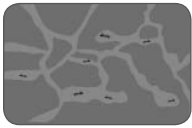


3 [Point to each ant as you read about it, going from left to right on each line, top to bottom.]

4 A fungus is a type of living organism—not a plant or animal. Mushrooms form as part of one kind of fungus.

5 The word *aggressive* means forceful or ready to attack.

6 [Demonstrate the width of twelve inches with your hands.]



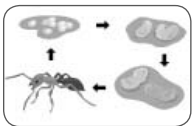
← **Show image 5A-4: Underground ant tunnels with chambers**

Bees have honeycombs, paper wasps have paper nests, and we have tunnels—miles and miles of tunnels, full of little **chambers**, or rooms—hundreds of very dark chambers. A colony may have as few as twelve ants or as many as a million or more. The center of an ant colony's life is this nest of tunnels.



← **Show image 5A-5: Winged queen ant**

An ant colony begins with the queen. A young queen is born in one colony but leaves that colony to start her own. Her wings carry her into the air to find a mate. Once she mates, she sheds her wings and immediately finds a nesting place underground. There she builds a chamber and seals herself inside to lay her eggs.



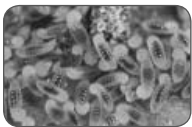
← **Show image 5A-6: Stages of development: egg, larva, pupa, emerging adult**

When ant larvae hatch, the queen cares for the first brood herself, feeding them with her own saliva as they change from wormlike larvae into pupae and, finally, adults.⁷ The queen does not leave the nest this whole time, getting nutrition from her now-useless wing muscles in order to survive.

Ants undergo a complete metamorphosis.⁸ Most of the eggs develop into small female worker ants that begin their lifetime of hard work by gathering food for the queen, making sure she is well fed. The queen will never leave the nest again, living there for ten to twenty years, perhaps even longer. As the mother of the colony, she has her own special chamber. Her only job from this point on is to lay eggs.

7 The word *hatch* in this sentence means to come out of an egg. The word *hatch* can also mean an opening in the deck of a ship or in the floor, wall, or roof of a building.

8 What is a metamorphosis? (a change) Can you name the four stages in complete metamorphosis? (egg, larva, pupa, adult)



← **Show image 5A-7: Worker ants feeding larvae**

The worker ants carry the eggs from the queen's chamber into **nurseries** where they keep the eggs clean and moist by licking them until they hatch.⁹ Then they carry the larvae into separate chambers to feed them.

Black ants eat other insects, any crumbs that we can find, and the honeydew of aphids.¹⁰ We chew the food up well and put it in

9 Nurseries are places to breed and care for young animals and plants.

10 [Show Image Card 14 (Ants Tending Aphids).] Honeydew is a sugary liquid made by the aphids. The ants collect the honeydew and protect the aphids from predators.

a pouch in our mouths where the liquid is squeezed out of it. We spit out the solid parts and swallow the liquid. Remember, we have two stomachs, one being a crop for storing food, so worker ants come back to the nest with crops full of food for the young.



← **Show image 5A-8: Ant pupae**

11 You learned the word *molt* in a previous lesson. What does it mean when insects molt? (They shed their skins to grow.)

As they grow, the larvae molt a few times and after a few weeks they spin cocoons.¹¹ The worker ants move these newly formed pupae into much drier chambers where they rest until they are ready to gnaw their way out into the world.

As social insects, ants cooperate in many ways. When these new workers emerge, some will help care for the queen and larvae, and some will build and repair the tunnels, but others will guard the nest.



← **Show image 5A-9: Soldier ant guarding a nest**

12 or give off

These guards, called soldier ants, have larger heads and jaws than the other ants, and they place their bodies across the entrance to the nest to defend the colony. All ants, including soldier ants, **emit**¹² chemical signals that other ants smell with their antennae. Soldier ants use these signals to warn the colony of danger. This is one way that ants communicate, or share information.

← **Show image 5A-10: Ants communicating**



Another way ants communicate is through touch. If an ant is hungry, it taps a food gatherer lightly with its antennae to let it know that it would like to eat.

They exchange the food mouth-to-mouth in what looks like little kisses. When food is shared, the ants also share and pass along some chemical information important for the entire colony. If one of us ants gets trapped when the soil around us caves in, or falls down on us, we produce a squeaky sound by rubbing joints together and other ants “hear” the cry for help through their legs.



← **Show image 5A-11: Termites and cockroach**

Before I leave, I want to introduce you to another social insect that some people mistakenly call white ants. Do you think these look like ants? They're not. They are termites. Termites are more closely related to cockroaches and yet they do not have hard exoskeletons. They are soft-bodied and nearly blind. They would not survive as solitary insects on their own, but they are very successful social insects.

There are several differences between termites and the other social insects you have learned about—honeybees, paper wasps, and ants. Termites do not go through as many stages of development.¹³ They skip the pupa stage so their metamorphosis is incomplete.

13 What is it called when insects go through a progression of changes? (metamorphosis)



← **Show image 5A-12: Termite queen**

The termite society is a bit different as well. Both a king and a queen rule termite colonies. They start a colony together. The queen is the most important member of the colony, sometimes laying six or seven thousand eggs a day. She is so well protected by the countless numbers of worker termites that it is almost impossible to find her within the colony. Just in case something should happen to the royal couple, termite colonies include substitute kings and queens as well.



← **Show image 5A-13: Termite soldiers**

Termite workers perform similar jobs to the worker ants, but the job of guarding the colony rests with a small number of soldiers, equipped with strong legs and long powerful jaws. Unlike honeybees, paper wasps, and ants, where all the workers are female, in the termite colonies, both male and female workers are important members of the society.



← **Show image 5A-14: Termites chewing on wood**

Termites' favorite food is wood. They can be very **destructive** if they choose to eat through the walls of a house!¹⁴ Depending on where they live, some termite species eat insects, waste materials, and fungus. They build their temperature-controlled nests underground, inside fallen trees, in timber, and in tree branches.

14 *Destructive* refers to something that causes a large amount of damage or harm.



← **Show image 5A-15: Termite nest in a tree and termite mound**

15 [Point to the image on the left.]

Does this nest look a bit like a wasp nest?¹⁵ I think so. It's made of chewed wood and saliva like the wasp nest, but with added mud and soil.

16 [Point to the image on the right.]

17 [Point out the man standing next to the termite mound to give students a sense of the height of the mound.]

Some termites build mounds above ground to house their colonies.¹⁶ These towering mud structures are hard as rock and some are as tall as a two-story house.¹⁷ Lots of teamwork goes into building these mounds with incredible air-conditioning systems to keep the chambers cool in very hot climates.

Next time you'll hear from an insect that glows in the dark. Until then, be thinking about who that might be.

Discussing the Read-Aloud

15 minutes

Comprehension Questions

10 minutes

If students have difficulty responding to questions, reread pertinent passages of the read-aloud and/or refer to specific images. If students give one-word answers and/or fail to use read-aloud or domain vocabulary in their responses, acknowledge correct responses by expanding the students' responses using richer and more complex language. Ask students to answer in complete sentences by having them restate the question in their responses.

1. *Literal* Are ants and termites social or solitary insects? (social)
2. *Inferential* The author of this read-aloud made the statement that ants are social insects. What reasons, or facts, did the author give to support this statement? (Ants live and work together cooperatively in colonies with specialized jobs.)
3. *Literal* Which ant in the colony is the one from which all other ants come? (the queen)
4. *Literal* Where do ants build their nests? (in underground tunnels)
5. *Literal* Queen bees and wasps lay their eggs in cells within their nests. Where do ant queens lay their eggs? (They build a special chamber in the underground tunnel and seal themselves inside to lay the eggs.)

6. *Inferential* How often does the queen ant leave her nest? (never; After she mates, she loses her wings. She lays eggs within the same nest, never leaving for the remainder of her life—ten, twenty, or more years.) How is this different from the queen wasp? (The queen wasp retains her wings and leaves her nest each season, beginning a new colony after a winter of hibernation.)
7. *Inferential* Both honeybees and ants have clever ways of carrying food back to their nests. What are they? (Honeybees' hairy legs act like baskets to carry pollen; ants have an extra stomach, or crop, for storage.)
8. *Evaluative* Name some ways that termites are different from ants. (Termites have incomplete metamorphosis, whereas ants are complete; termites have multiple kings and queens, whereas ants have only one queen; male termites serve the hive in many ways, whereas the only role of a male ant is to mate with the queen.)

[Please continue to model the *Think Pair Share* process for students, as necessary, and scaffold students in their use of the process.]

I am going to ask a question. I will give you a minute to think about the question, and then I will ask you to turn to your neighbor and discuss the question. Finally, I will call on several of you to share what you discussed with your partner.

8. *Evaluative Think Pair Share:* Many people stack firewood on their wooden porches so that it is handy to transport into the house to make fires when it is cold outside. Given what you know about the termite's eating habits, do you think that is a good idea? Why or why not? (Answers may vary.)
9. After hearing today's read-aloud and questions and answers, do you have any remaining questions? [If time permits, you may wish to allow for individual, group, or class research of the text and/or other resources to answer these remaining questions.]

Word Work: Destructive

5 minutes

1. In the read-aloud you heard, “[Termites] can be very *destructive* if they choose to eat through the walls of a house!”
2. Say the word *destructive* with me.
3. If something is destructive, it causes great damage or harm.
4. Hurricanes can be very destructive storms.
5. Can you think of something that is destructive? Try to use the word *destructive* when you tell about it. [Ask two or three students. If necessary, guide and/or rephrase the students’ responses: “_____ is destructive.”]
6. What’s the word we’ve been talking about?

Use an *Antonyms* activity for follow-up. Directions: A word that is an antonym of *destructive*, or that means the opposite of *destructive*, is the word *constructive*. If something is constructive, it is helpful and can make something better.

I am going to describe some scenarios. If what I describe is an example of something that is destructive, or causes harm, say, “That is destructive.” If what I describe is an example of something that is constructive, or that is helpful, say, “That is constructive.”

1. The engineers built a new bridge over the river. (That is constructive.)
2. I helped my little sister learn to tie her shoe. (That is constructive.)
3. The puppy chewed through my mother’s new shoes. (That is destructive.)
4. The ocean wave destroyed the sand castle I built on the beach. (That is destructive.)
5. We helped plant flowers in the garden. (That is constructive.)



Complete Remainder of Lesson Later in the Day



Social Insects: Ants and Termites

5_B

Note: Extensions may have activity options that exceed the time allocated for this part of the lesson. To remain within the time periods allocated for this portion of the lesson, you will need to make conscious choices about which activities to include based on the needs of your students.

Extensions

20 minutes

↔ Multiple Meaning Word Activity

5 minutes

Sentence in Context: Hatch

Note: You may choose to have students hold up one or two fingers to indicate which image shows the meaning being described, or have a student walk up to the poster and point to the image being described.

1. [Show Poster 3M (Hatch).] In the read-aloud, you heard that worker ants keep the eggs clean and moist until they *hatch*. Here *hatch* means to come out of an egg. Which picture shows this meaning of *hatch*?
2. *Hatch* also means an opening in the deck of a ship, or in the floor, wall, or roof of a building. Which picture shows this kind of *hatch*?
3. Now with your partner, make a sentence for each meaning of *hatch*. Remember to be as descriptive as possible and use complete sentences. I will call on some of you to share your sentences. [Call on a few student pairs to share one or both of their sentences. Have them point to the part of the poster that relates to their use of *hatch*.]

↔ Vocabulary Instructional Activity

5 minutes

Word Work: Aggressive

1. In the read-aloud you heard that weaver ants are *aggressive*.
2. Say *aggressive* with me three times.
3. *Aggressive* means forceful or ready to attack.
4. The mother bear became aggressive whenever she thought another animal was going to hurt her cubs.
5. Tell your partner about an animal that you think is aggressive. Give an example of how it is aggressive. Use the word *aggressive* when you tell about it.

Use an *Antonyms* activity for follow-up. Directions: If any of the things I say describe someone or something that is aggressive, say, "That is aggressive." The antonym or opposite of *aggressive* is *calm*. If any of the things I say describe someone or something that is calm, say, "That is calm."

- a mother gently rocking her baby (That is calm.)
- a lion attacking its prey (That is aggressive.)
- an army charging at its enemy in battle (That is aggressive.)
- a nurse carefully bandaging a cut (That is calm.)
- a snake capturing a mouse (That is aggressive.)

Insects Journal (Instructional Master 5B-1)

20 minutes

- Have students look through the trade books for pictures of ants and termites. Have them draw a picture of an ant and/or a picture of a termite in their journal. Then, have them write one or two sentences about ants and/or termites based on something they have learned from the read-aloud. Tell students that they should also write down any questions they may have about ants and/or termites on the back of the page.
- Have students share their drawings, sentences, and questions with their partner or home-language peers. Encourage them to expand upon their vocabulary using richer and more complex language, including, if possible, any read-aloud vocabulary.

- ✈ Have students work in pairs or small groups to look through the book tub or other resources to search for answers to their questions. You may wish to extend this research beyond the classroom book tub to include online resources and/or library resources.

Writing an Insect Story: Plan (Instructional Master 5B-2)

20+ minutes

- Tell students that they are going to write a narrative, or story, where the main character is an insect. Explain that this means that their story will be told, or narrated, by an insect. Remind students that the read-alouds they have heard have been narrated by insects.
- Have students review the journal pages they have created so far. You may also wish to have them review some of the trade books from the classroom book tub.
- After reviewing their journal pages, tell students to choose one type of insect to write their story about.
- Have students brainstorm ideas for including factual information in their story. Ask the following content questions to encourage the brainstorming process, writing key words on the board for students to refer to later:
 - Is your insect a solitary insect or a social insect?
 - Does your insect go through incomplete metamorphosis or complete metamorphosis?
 - Does your insect have wings?
 - What different kinds of jobs does your insect have?
 - How does your insect communicate?
- Give each student a copy of Instructional Master 5B-2 (Writing Plan). Tell students that they are going to use this worksheet to plan their story.
[Remind students that when they studied *The Ancient Greek Civilization* domain, they used the writing process of planning, drafting, and editing as they wrote a fictional narrative together as a class. You may choose to model the stages of this writing process as needed.]

- Have students write the type of insect they have chosen in the “Insect” box. Then have them think of a name for their insect and write it in the “Name” box.
- Have students brainstorm ideas for their insect stories and write words and phrases on their worksheets in the appropriate boxes. You may choose to model this by writing down your ideas on chart paper, a chalkboard, or a whiteboard.
- Ask the following questions to help students organize their stories:
 - What is the setting of your story?
 - Who are the characters? What are their names? What are they like?
 - What is the plot? What do you want to happen?
 - What will happen at the beginning, middle, and end of your story?
- You may wish to have students work together in groups to allow them to give and receive feedback.
- Tell students that they will continue their writing with the draft step the next time you meet. Save this worksheet for the next lessons.

Take-Home Material

Family Letter

Send home Instructional Masters 5B-3 and 5B-4.