

# Lesson Plan: Ants

## Summary:

In this episode of *Sketch and Coffee Live at 5:30am Texas time*, Blade uses a Safari Ltd. ant model as the day's random object and shares facts about ant evolution, diversity, and biology. From their ancient arthropod ancestors to modern Amazonian giants, the discussion explores how ants have adapted to almost every land environment on Earth.

<https://www.youtube.com/live/E71zKpQpral?si=WjCvTB4dT68PljA->

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## Lesson Objective

Students will learn about the evolution, diversity, and ecological roles of ants, and explain how their adaptations help them thrive in different environments.

## Standards Alignment

- **NGSS MS-LS4-1:** Analyze and interpret data for patterns in the fossil record.
- **NGSS MS-LS2-2:** Construct an explanation that predicts patterns of interactions among organisms across ecosystems.
- **CCSS.ELA-LITERACY.RST.6-8.2:** Determine central ideas or conclusions of a text and summarize the information.

## Materials Needed

- Nine Fun Facts About Ants handout (included below)
  - Projector or smartboard for video or images
  - Student notebooks
  - Optional: ant figurine, magnifying glass, or field collection kit
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## Procedure

### 1. Introduction (5 min)

- Ask: “What’s the most surprising thing you know about ants?”
- Share one personal or historical ant encounter.

### 2. Guided Learning (15 min)

- Present and discuss each of the Nine Fun Facts.
- Use a world map to show ant distribution and where ancient and modern giant ants lived.

### 3. Independent/Group Activity (10 min)

- Students choose one fact and research one additional detail about it.
- Share findings with the class.

### 4. Application (10 min)

- Discuss how ants’ social structures compare to human organizations.
- Consider the advantages and disadvantages of specialization in a colony.

### 5. Wrap-Up (5 min)

- Quick review: students recall three facts without looking.

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## Assessment

- Participation in discussion and activity.
  - Completion of research share-out.
  - Ability to recall and explain at least three facts from the handout.
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## Extension

- Science: Create a diagram of the ant life cycle.
- Social Studies: Compare the structure of an ant colony to a historical society.
- Art: Observational drawing of an ant model or specimen.

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## Rubric

Criteria	4 - Excellent	3 - Good	2 - Satisfactory	1 - Needs Improvement
<b>Content Knowledge</b>	Recalls 5+ facts and explains connections	Recalls 3-4 facts	Recalls 1-2 facts	No recall
<b>Research Skills</b>	Adds multiple accurate details	Adds one accurate detail	Adds incomplete or vague detail	No detail added
<b>Engagement</b>	Actively participates in all discussions	Participates in most	Limited participation	No participation

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## Nine Fun Facts About Ants

1. **Arthropods Are Ancient** Ants belong to the arthropod phylum, a group that includes insects, spiders, and crustaceans. This phylum has been around for more than 500 million years, since the Cambrian explosion, and was among the first animal groups to colonize land.  
Source: <https://www.britannica.com/animal/arthropod/Evolution-and-paleontology>
2. **Ants Pre-date the Continents as We Know Them** Ants began evolving during the Cretaceous period, tens of millions of years before today's continents drifted into their modern shapes. As landmasses separated, ants spread and diversified independently, leading to the massive variety of species we see today.  
Source: <https://www.pnas.org/doi/10.1073/pnas.0502264102>
3. **Ants Evolved from Wasps** Around 120 million years ago, a branch of solitary wasps evolved into eusocial insects: ants. These early ants retained many wasp-like features, including narrow waists, stingers, and (in some castes) wings. Over time, they became highly specialized for colony life.  
Source: <https://www.pnas.org/doi/10.1073/pnas.0502264102>
4. **There Are Over 15,700 Named Ant Species** More than 15,700 species and subspecies of ants have been scientifically described, and the total number may exceed 20,000. They live in nearly every land-based ecosystem on Earth and play crucial roles in seed dispersal, soil turnover, and food webs.  
Source: <https://www.pnas.org/doi/10.1073/pnas.2201550119>
5. **Some Ancient Ants Were Huge** The prehistoric species *Titanomyrma gigantea* lived about 50 million years ago. Queens of this species grew over 2 inches long and had wingspans up to 6 inches.  
Source: <https://www.iflscience.com/hate-flying-ants-we-used-to-have-ones-the-size-of-hummingbirds-79793>

6. **The Largest Living Ants Are in South America** Today's biggest ants belong to the *Dinoponera* genus, found in the Amazon. Workers can grow up to 1.6 inches long and have powerful stings. Interestingly, these ants don't have true queens, dominant females lead the colony and reproduce.

Source: <https://antwiki.org/wiki/Dinoponera>

7. **Ant Colonies Have Castes That Look Nothing Alike** An ant colony functions like a miniature city, with specialized castes including queens, soldiers, and workers. Some species even have "living storage tanks" or head-plug soldiers. The physical differences between these castes can be so extreme they appear to be different species.

Source: <https://www.orkin.com/pests/ants/ant-hierarchy>

8. **Ant Farms Took Off in 1956** Milton Levine invented the first commercial ant farm in 1956 after watching ants at a Fourth of July picnic. His company, Uncle Milton Industries, went on to sell over 20 million ant farms, making it one of the most iconic science toys of all time.

Source: <https://www.latimes.com/local/obituaries/la-me-milton-levine-20110126-story.html>

9. **Ants Are Still a Toybox Staple** Safari Ltd.'s "Life Cycle of an Ant" figurine set is one of many modern educational tools that bring ant biology into homes and classrooms. It includes highly detailed models of ant eggs, larvae, pupae, and adults, great for hands-on learning or sketching.

Source: <https://www.safariltd.com/products/life-cycle-series-life-cycle-of-an-ant-figurines-663916>

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## Worksheet

**Name:** \_\_\_\_\_

**Date:** \_\_\_\_\_

### Review Questions

1. How long have arthropods existed? \_\_\_\_\_
2. From what ancestors did ants evolve? \_\_\_\_\_
3. How many named species of ants exist? \_\_\_\_\_
4. What is the largest living ant species? \_\_\_\_\_
5. Which ancient ant was the up to two inches long? \_\_\_\_\_

### Discussion Prompt

How do the social structures of ants compare to human communities?

### Data Analysis

Using the Fun Facts, create a timeline showing when ants evolved and when giant species lived.

### Reflection

If you were part of an ant colony, which caste would you choose and why?