TEACHING about ANTS

Connections to *A Framework for K-12 Science Education*[1]

Ants come in many sizes, shapes, colors and species. Although ants can spoil our picnics or become unwelcome visitors inside our homes, most ants are actually beneficial to us. Ants are also important to many other organisms. For these reasons and many more, ants present an amazing opportunity for students to explore life science, specifically how organisms live, grow, interact with environments, and reproduce.

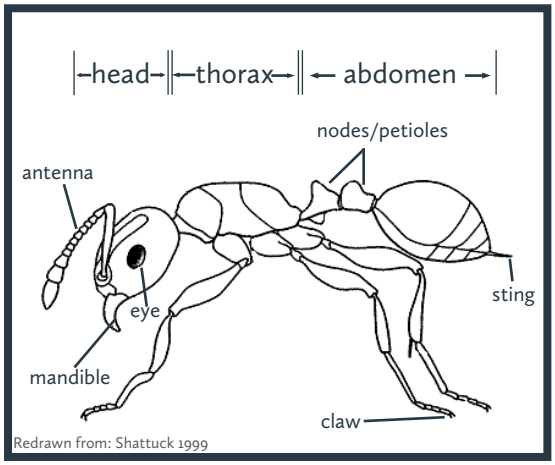
Here are a few ideas for aligning your curriculum with core disciplinary ideas from A Framework for K-12 Science Education, the foundation of the Next Generation Science Standards, through a study of ants:

LS1.A: Structure and Function

As a result of different physical structures, the functions and behaviors of ants vary across species. For example, some tree nesting species are long and cylindrical to accommodate living in hollow twigs (elongate twig ant, big-eyed arboreal ant), while some ground nesting species have extreme jaws (mandibles) to capture prey (the trap-jaw ant, Emma's bowed-jaw ant).

Essential Questions

- What are the external structures (body parts) of an ant? How does the body structure differ across species?
- How does the shape of external structures relate to it's function?



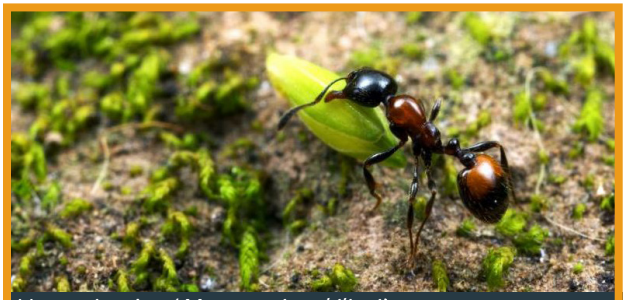
Redrawn from: Shattuck 1999

LS2.A: Interdependent Relationships in Ecosystems

Ants have a variety of diets and live from the tops of trees to beneath our feet. Some species of ants are important for helping plants thrive and reproduce, while other ants prey on the eggs and larvae of bothersome household insects.

Essential Questions

- How do ants help or hurt other organisms?
- How do different ant species interact with living and nonliving components of their environments?


Harvesting Ant (*Monomorium kilianii*)
from Expeditions at The Field Museum

LS2.C: Ecosystem Dynamics, Functioning and Resilience

The environmental and ecological impacts of ants are important to many organisms. Entire ecosystems can be affected when ant populations change. Ant populations can change as a result of natural events (i.e. movement promoted by hurricanes) and human activities (i.e. accidental introduction into new areas).

Essential Questions

- What role do ants play in ecosystems?
- How could changes in ant populations affect an ecosystem?

LS4.D: Biodiversity and Humans

Biodiversity, the multiplicity of genes, species, and ecosystems in the natural world, includes 90 plus ant species of the Florida Keys. Ants impact humans by aerating soil, dispersing seeds and eating eggs and larvae of household pests. Humans have impacted ants by introducing ant species to new areas and disrupting native habitats.

Essential Questions

- Describe the biodiversity of ants in the Florida Keys. How are the species similar and different?
- How do ants help humans and how are humans affecting the biodiversity of ants?

[1]National Research Council (2011). A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas. Committee on a Conceptual Framework for New K-12 Science Education Standards. Board on Science Education, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academy Press.

TEACHING about ANTS

FOR ILLINOIS EDUCATORS

RESOURCES FROM THE FIELD MUSEUM

Exploring ants in your classroom? The Field Museum is here to help! Extend teaching and learning about ants through field trips, classroom collections, and these online resources.

Field Trips fieldmuseum.org/schools

Engage the senses, bring ants to life, and inspire new questions. Our field trip programs and resources will help you plan a meaningful learning experience for Pre-K – 12 th grade students! The following exhibitions connect to ants:

- Underground Adventure Explore the world of soil, a rich habitat for ants underground. Before your field trip, visit the exhibition's website to download resources for students, lessons for teachers, and more. | archive.fieldmuseum.org/undergroundadventure |
- DNA Discovery Center Explore basic and complex questions about the molecule that connects all life on Earth: DNA. View a working DNA lab and witness science in action. Speak directly with a scientist weekdays at the lab, 11am – noon. | archive.fieldmuseum.org/dna |
- Evolving Planet Travel through this exhibition to experience 4 million years of life on Earth and explore biodiversity, structure and function, and evolution. Walk through a recreated Carboniferous forest with large insects and see real fossils of ants and other insects. | archive.fieldmuseum.org/evolvingplanet |

N. W. Harris Learning Collection harris.fieldmuseum.org

Bring Field Museum specimens and artifacts to your classroom through the *Harris Learning Collection* — a lending library of over 400 exhibit cases (mini-dioramas) and 70 experience boxes (hands-on kits) available to educators and parents.

Ants & their relatives can be found in the following materials:
- Experience Boxes: Insects, Spiders
- Exhibit Cases: Bees and their Allies, Harmful Insects, Beneficial Insects

Online Resources

- Romance of Ants View a gallery of ant images and videos, learn ant facts, and get your ant questions answered by a Field Museum scientist. | romanceofants.ning.com |
- Expeditions at The Field Museum Visit this website to learn about a Field Museum expedition to Australia and how scientists use ant DNA to answer questions about climate change. | expeditions.fieldmuseum.org/Australian-ants |
- Ant Web View images and data for the 120+ species of ants of Illinois or the 90+ species of ants found in the Florida Keys. Ask and answer your own research questions about the anatomy and biodiversity of ants found in this region. | antweb.org/illinois.jsp or antweb.org/floridakeys.jsp |
- Field Revealed: Turtle Ants Watch this video to learn about the adaptations of turtle ants, an ant species that use their dish-like heads to prevent intruders from entering their nests. | fieldmuseum.org/explore/multimedia/video-turtle-ants |
- Moreau Lab Get to know Field Museum scientist Dr. Corrie Moreau, her research and ant activities on her lab's website. View publications and data sets straight from Corrie's Ant Lab. | moreaulab.org |
- School of Ants (citizen science project) Participate in real science by studying ants in urban areas, specifically around schools and homes. Learn how to create your own sampling kit, collect ant samples and send your samples to a lab for identification. | schoolofants.org |

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