## Glossary

**Canopy** (ˈ**ka**-nə-pē): Anything that covers like a roof. On a tree, the area of leaves that cover the ground.

**Crossbow** (ˈ**krȯs** ˌbō): A tool used for shooting stones that consists of a short bow mounted on the end of a wooden stock.

**Decomposition** ((ˌ)**dē**-ˌkäm-pə-ˈ**zi**-shən): The act or process of breaking up, as by decaying or rotting.

**Ecosystem services** (**ē**-kō-**sis**-təm ˈsər-vəs): Any of the various benefits provided by plants, animals, and the communities they form.

**Habitat** (ˈ**ha**-bə-ˌtat): Environment where a plant or animal naturally grows and lives.

**Leaf litter** (ˈ**lēf** ˈ**li**-tər): The decaying leaf material on the surface of the forest floor.

**Rappel** (rə-ˈ**pel**): To descend by sliding down a rope, usually outfitted with a special device to create friction.

**Species** (ˈ**spē**-(ˌ)shēz): Groups of organisms that resemble one another in appearance, behavior, chemical processes, and genetic structure.

**Variable** (ˈ**ver**-ē-ə-bəl): Thing that can vary in number or amount.

Accented syllables are in **bold.** Marks taken from Merriam-Webster Pronunciation Guide.

This article was adapted from Hanula, J.L.; Wade, D.D.; O'Brien, J.; and Loeb, S.C. 2009. Ground-dwelling arthropod association with coarse woody debris following long-term dormant season prescribed burning in the longleaf pine Flatwoods of north Florida. *Florida Entomologist*. 92(2): 229–242. http://www.srs.fs.usda.gov/pubs/ja/jahanula017.pdf.

## FACTivity

The question you will answer in this FACTivity is: What are the key characteristics of arthropods? You will create your own aPod based on the characteristics of arthropods and describe the creature's life history.

### Time:

One class period

### Materials:

Pieces of white construction paper for each student and markers or crayons

Your teacher will provide the following background to the students (or students may read it on their own): Arthropods are invertebrate (without a backbone) animals of the phylum Arthropoda. All arthropods have the following characteristics:

1. Invertebrate
2. A hard outer body covering called an exoskeleton
3. Specialized mouth parts
4. Jointed legs
5. Compound Eyes
6. Segmented body

Arthropods include insects, crustaceans (lobsters, crabs, shrimp, crayfish), millipedes, centipedes, horseshoe crabs, arachnids (spiders, ticks, and mites) and sea spiders. Together, arthropods comprise the largest and most varied group of invertebrate on Earth.

The bodies of arthropods are divided into different segments, each having a specialized role. The segments have numerous paired, jointed appendages (legs, antennae, claws, and external mouth parts) that serve many varied functions. The exoskeleton acts as a protective covering to the underlying segmented body. It also provides an attachment for muscles and a barrier to water loss for animals living on land. It is made mostly of chitin (ˈ**kī**-tən), a rigid, complex carbohydrate, and is usually covered by a hardened, waxy cuticle. The cuticle acts as a hinge between segments, allowing the body to bend and move to the right or left. Periodically, the rigid exoskeleton is shed in a process called molting. The temporarily soft animal then swells in size, and its new, larger exoskeleton hardens.

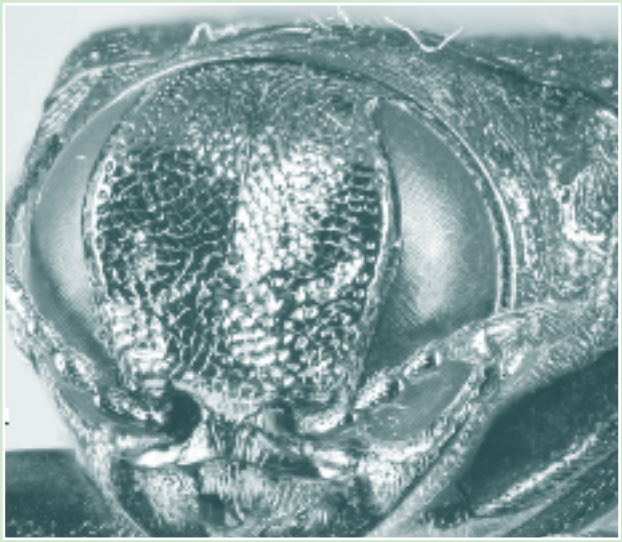

**Figure 9.** Emerald Ash Borer's compound eyes. Photo by Ken Walker, Museum Victoria Pest and Diseases Image Library, Australia, courtesy of http://Bugwood.org

**Figure 10.** Check out the segmented body on the Walking Cicada. Photo by Whitney Cranshaw, Colorado State University, courtesy of http://Bugwood.org

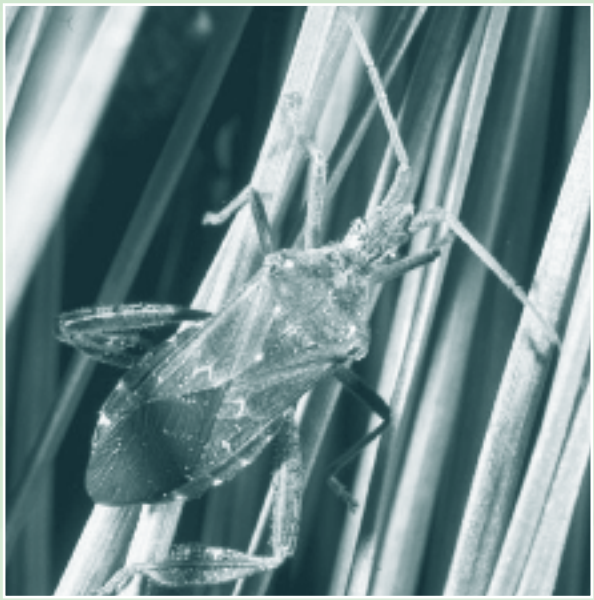

**Figure 11.** Check out the jointed legs on this Leaffooted Pine Seed Bug. Photo by Larry R. Barber, Forest Service, courtesy of http://Bugwood.org

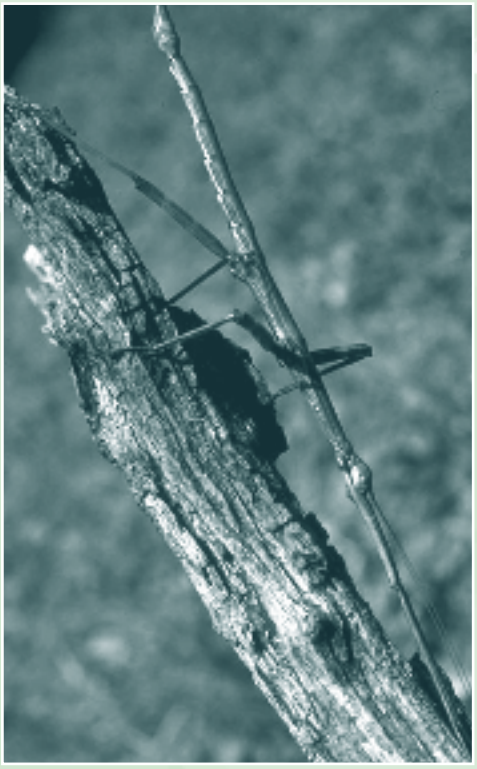

**Figure 12.** Check out this bizarre Walkingstick. Photo by Herbert A. "Joe" Pase III, Texas Forest Service, courtesy of http://Bugwood.org

Arthropods are divided into chelicerates (kə-**lis**-ə-rāts), meaning "claw-horned ones," and mandibulates (ˈ**man**-də-bəl-ləts), meaning "jawed ones." The bodies of chelicerates are divided into two parts: a fused head and thorax, and an abdomen. They have no antennae, and most have four pairs of jointed legs. They are named for their first pair of appendages, which are modified as clawlike fangs used for feeding. The chelicerates include the arachnids, the marine horseshoe crabs, and the sea spiders.

The mandibulates have one or two pairs of appendages that function as antennae on their head, with the next pair modified as jaws for feeding. Included in this group are the crustaceans (crabs, lobsters, crayfish), the millipedes and centipedes, and the insects.

Arthropods are so diverse and come in so many different shapes and sizes and specialized features! You now get to create your own aPod by thinking about the characteristics that all arthropods share and making your own creature.

**Figure 13.** Check out the Chaco golden knee tarantula's specialized fangs! Photo by David Cappaert, Michigan State University, courtesy of http://Bugwood.org

- Use a piece of paper and markers or crayons.
- Review and reflect on the characteristics that all arthropods have in common.
- Design your own aPod.

Once the aPod is finished, write at least two paragraphs about your aPod's life history. Where does the aPod live? What does it eat? How does it move about (fly, crawl, jump, etc.) Be creative and have fun!

## National Science Standards

**Science as Inquiry:**
Abilities Necessary To Do Scientific Inquiry;
Understanding About Scientific Inquiry

**Life Science:**
Structure and Function in Living Systems;
Regulation and Behavior;
Populations and Ecosystems;
Diversity and Adaptations of Organisms

**Science in Personal and Social Perspectives:**
Populations, Resources, and Environments;
Natural Hazards;
Risk and Benefits

**History and Nature of Science:**
Science as a Human Endeavor;
Nature of Science

## Additional Web Resources

National Science and Technology Center: Soil Arthropods
http://www.blm.gov/nstc/soil/arthropods/index.html

**Teachers:**
**If you are a Project Learning Tree-trained educator, you may use Activity #80, "Nothing Succeeds Like Succession" or #24, "Nature's Recyclers," as additional resources.**