

Using Toys to Study Common Insects (and Their Relatives)
Found on Kentucky Trees
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Students can study giant-sized toy bugs and read this guide to learn about the characteristics of some of the most common insects (and their relatives) that live on trees. This guide is most useful for students in grades five through seven, or anyone who wants to learn more about insects.

Teachers: To develop this guide, we used the Bugs Party Bucket (available at Toys R Us and at Amazon.com). There are many types of toy insects available, but we chose this set because all of the toys are anatomically accurate, and because the set is easy to find and inexpensive (less than \$10). Each Bugs Party Bucket contains a slightly different assortment, but there should be one or more of each type of creature discussed in this guide. Also, some of the insects in the set are not mentioned in this guide because these insects do not occur in Kentucky. You can use other toy insects for this exercise, but make sure they are anatomically accurate.

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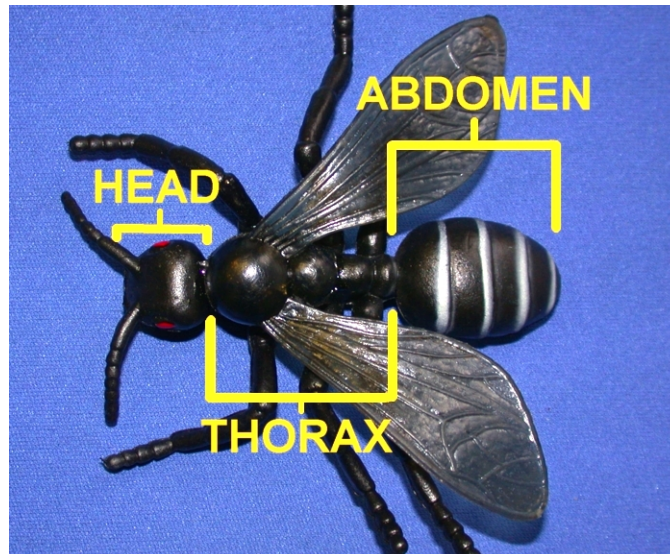
Other partners on the project included the Crowe's Chase Advisory Board, the Kentucky Department of Fish and Wildlife Resources, and the American Printing House for the Blind.

Common Insects (and Their Relatives) Found on Kentucky Trees

Examine larger-than-life toy bugs and read this guide to learn about the characteristics of some of the most common insects (and their relatives) that live on Kentucky trees.

How to Distinguish Insects from Their Relatives: All insects have six legs, with three on each side of the body. Insect relatives always have more than six legs. Spiders, for instance, have eight legs. Centipedes and millipedes have more than ten legs.

Basic Insect Anatomy: If you pick up the large toy winged ant, you can feel the body parts that insects have. Insects have three body sections: head, thorax, and abdomen. The head section has the ant's eyes, mouth, and antennae. The thorax has the ant's legs and wings. The abdomen is smooth and bare and contains digestive and reproductive organs.

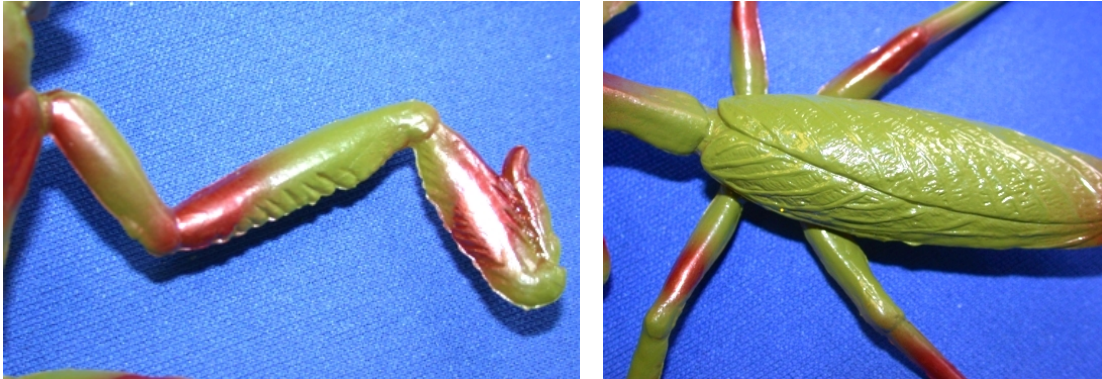


INSECTS

1. **Praying Mantid** - actual size: 4 inches long.



Praying mantids use their long back and middle legs to stand still on tree leaves and wait for flying insects (such as moths) and crawling insects (such as caterpillars) to get close enough to grab with their front legs. On the toy mantid, you can feel the rough edges of the front legs (below left). On a live mantid, these sharp, spiny edges help the mantid hold onto prey. Praying mantids have large wings, but they do not fly very often. They usually keep their wings folded over their abdomens (below right).



Learn more about Kentucky mantids at the Kentucky Critter Files:
<http://www.uky.edu/Agriculture/CritterFiles/casefile/insects/mantids/mantids.htm>

2. Ladybug – actual size: ¼ inch long.



Ladybugs are types of beetles, and like all beetles, they have a hard shell that covers their backs. The shell is made of two halves that meet in a straight line down the middle; each half is one of the beetle's front wings. Underneath are the soft back wings, which are used for flight. Ladybugs are predators, and they often crawl over tree leaves hunting for aphids, ants, and other small insects.

Learn more about Kentucky ladybugs at the Kentucky Critter Files:
<http://www.uky.edu/Agriculture/CritterFiles/casefile/insects/beetles/lady/lady.htm>

3. Ant and Winged Ant – actual size: ¼ inch long.



Ants often make homes in the dead wood of old trees. They also crawl over leaves and branches to find food. Ants prey on other insects, and they also eat nectar and pollen on flowers. Although most ants do not have wings, queen ants and male “drone” ants have four wings. On the toy winged ant, you can feel the small pair of rear wings (below).



Learn more about Kentucky ants at the Kentucky Critter Files:
<http://www.uky.edu/Agriculture/CritterFiles/casefile/insects/wasps/ants/ants.htm>

4. Blue Bottle Fly – actual size: ½ inch long.



Flies visit trees to collect nectar from flowers and to gather water that has collected on the leaves. The blue bottle fly has large eyes that help it to avoid predators. You will also notice that this fly has only two wings. All true flies have only two wings, one on each side. Most other winged insects, such as butterflies, bees, wasps, and beetles, have four wings.

Learn more about blue bottle flies and its relatives at the Kentucky Critter Files:
<http://www.uky.edu/Agriculture/CritterFiles/casefile/insects/flies/houseflies/houseflies.htm>

5. Honey Bee – actual size: ½ inch long.



To make honey and other food for their hive, honey bees visit trees to gather nectar and pollen from the flowers. The honey bee is very similar in size and shape to the blue bottle fly, but there are some important differences. Bees have four wings, and you can feel these in the bee toy. The small rear wings lie underneath the front wings and are defined with a raised line. Also, bees have stingers and flies do not (even though you can't feel the stinger on the toy bee).

Learn more about Kentucky bees at the Kentucky Critter Files:
<http://www.uky.edu/Agriculture/CritterFiles/casefile/insects/wasps/bees/bees.htm>

6. Cicadas – actual size: 2 inches long.



Cicadas depend on trees more than most insects. As adults, they lay eggs in tree limbs. When the eggs hatch, the nymphs fall to the soil and burrow underneath where they feed on tree roots. Cicadas have large eyes that help them avoid predators. They also have four wings. You can only feel two wings on the toy cicada because the front and rear wings overlap on top of one another when the cicada is not flying.

7. Grasshopper – actual size: 1 ½ inches.



Grasshoppers are most common in meadows but they sometimes visit trees to feed on the leaves. Grasshoppers are easy to identify because of their large back legs, which they use to jump high into the air to escape predators. Grasshoppers also have large wings. When grasshoppers are not flying, they keep their wings folded flat over their backs. On the toy, you can feel the large wedge-shaped wings that meet in a straight line over the abdomen (below).



Learn more about Kentucky grasshoppers at the Kentucky Critter Files:
<http://www.uky.edu/Agriculture/CritterFiles/casefile/insects/grasshoppers/grasshoppers.htm>

8. Dragonfly – actual size: 3 inches long.



Dragonflies are usually found around ponds and streams, but they will often perch in nearby trees to watch for prey. Dragonflies are some of the best predators in the insect world. Their four large wings help them fly fast and their large eyes help them see flying prey. Dragonflies are able to catch flying insects out of the air.

Learn more about Kentucky dragonflies at the Kentucky Critter Files:
<http://www.uky.edu/Agriculture/CritterFiles/casefile/insects/dragonflies/dragonflies.htm>

RELATIVES OF INSECTS

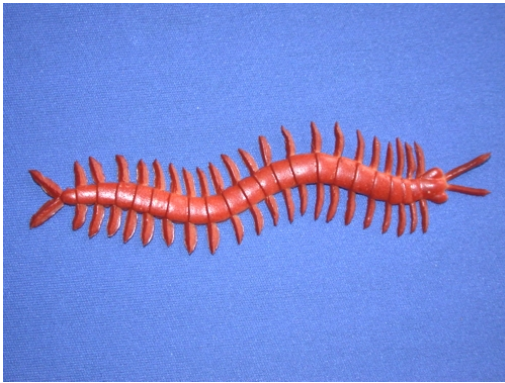
1. Wolf Spider – actual size: $\frac{3}{4}$ inch long.



Wolf spiders are hairy and brown with eight long legs. They have almost the same shape as tarantulas. Wolf spiders often hunt on the bark of trees for ants and other insects. On the toy spider, in addition to the legs you can find two small “feelers” near the mouth. These feelers are called “palps” and work like antennae. Unlike insects, however, spiders do not have true antennae.

Learn more about Kentucky wolf spiders at the Kentucky Critter Files:
<http://www.uky.edu/Agriculture/CritterFiles/casefile/spiders/wolf/wolf.htm>

2. Centipede – actual size: 2 inches long.



Centipedes normally do not climb trees, but they do live under the loose bark of dead trees. Centipedes are long and wormlike with many body segments and one pair of legs on each body segment. Like spiders, centipedes are predators and have venomous fangs. They feed on termites and other insects that live in dead wood. A centipede has two antennae on its head and two “feelers” on the end of its body. These feelers look and act like antennae, but they are actually the back legs.

Learn more about Kentucky centipedes at the Kentucky critter files:

<http://www.uky.edu/Agriculture/CritterFiles/casefile/relatives/centipedes/centipede.htm>

3. Scorpion – actual size: 2 inches long.



Many people do not know that scorpions live in Kentucky. Kentucky scorpions are small and live under the loose bark of dead trees, just like centipedes. Scorpions use their crablike front pincers to grab prey. If the prey is large and hard to catch, they may also sting it with the stinger on the end of their abdomens. Scorpions are close relatives of spiders and likewise have eight legs (the pincers are not legs; instead, they are kinds of “palps.” Remember that the wolf spider used its palps like antennae.)

Learn more about Kentucky scorpions at the Kentucky Critter Files:

<http://www.uky.edu/Agriculture/CritterFiles/casefile/relatives/scorpions/scorpion.htm>