



## June 2010 – Bugs!

Hopping, crawling, flying, grasshoppers, spiders, and damselflies - bugs are fascinating creatures to study! You'll find plenty of fun summer projects here.

## Bug Science Projects

### Bug Zoo

Keeping a "bug zoo" is a fun way to learn more about different kinds of insects.

What You Will Need:

- Clean, see-through containers with lids\*
- A hammer and nail
- Some screen or netting
- Rubber bands
- An adult to help
- An [insect net](#) to help catch the bugs you find.
- A [magnifying glass](#) to look closely at small legs, wings, and eyes. (This [insect jar](#) has built-in magnifiers that make it great for checking out insects you don't want to keep.)

\*Tip: plastic jars with shaker lids, like the ones spices and parmesan cheese come in, make great homes for larger bugs because the lids already have holes in them! Plastic jars that peanut butter or mayonnaise come in and small glass or plastic bottles from drinks like juice, iced tea, or soda work well as bug containers, too. You can also use [plastic tanks](#).

What To Do:

1. First, make several different habitats. You'll need one for each kind of bug you collect. To make a habitat, cover the bottom of a container with dirt and add a few small rocks or a twig. Insects that live in trees don't need dirt or rocks, instead you can put a small branch of the tree you find the insect on into its container.
2. Provide water for the bugs to drink. Get a cotton ball wet and put it in the bottom of the container. Some bugs, like butterflies and ants, prefer sweeter liquids. For those, soak a couple of raisins in water for 20 minutes before putting them into the habitat.
3. To give the bugs air, ask an adult to use the hammer and nail to poke small holes in the top of each container. Or, you can cover the container with a piece of fine mesh or screen and wrap a rubber band tightly around the opening. Just make sure the bugs you put inside are too large to get through the holes.

4. Now that your habitats are ready, it's time to start finding bugs! Some good places to look are in tall grass, near shrubs and bushes, in vegetable gardens, and in the branches and bark of trees. You can also turn over rocks to look for creatures like sow bugs and worms.
5. When you find a bug, gently move it to one of your habitats. Make sure the habitat is similar to the place you found the bug. If it was in the grass, the habitat should have some dirt, a few blades of grass, and maybe some leaves from a nearby plant. If it was under a rock, it should have lots of dirt and several rocks as well as a few leaves or blades of grass. Think carefully about each bug and what you think it might need while it's in your bug zoo.
6. Watch your zoo pets with a magnifying glass and take notes about each one in a [notebook](#). As soon as you're done observing (after a day or two), let each bug go in the same place you found it. You can always go out and find new ones to look at later!

## **Insect Attraction**

Find out what kinds of insects live in your yard with this project.

What You Will Need:

- small, clean container (a plastic yogurt cup or butter tub works well)
- small garden shovel
- "bait" such as jam, honey, or pieces of soft ripe fruit (like banana or mango)

What To Do:

1. Pick an area of your yard where you would like to observe bugs. Dig a hole in the ground big enough to hold the container so its rim is level with the ground.
2. Find some "bait" to attract insects. What kinds of things do you think most insects like to eat? Place a small amount of one or two of those things in the bottom and on the top rim of your container and set it in the hole. Fill any extra space around the container with dirt, but try not to get any dirt in the container.
3. Leave the area for about 30 minutes, then go back and check to see if any insects have come to taste the treat you left for them. You can leave your container out all day if you like, checking on it every hour to watch bugs come and go.
4. After you've observed for awhile, take the container out of the hole and set it on its side so the insects can get out.

What's Happening?

You probably noticed a few insects in your container. What did you see? Maybe some ants and small beetles or flying insects inside and some bees buzzing nearby? The insects could smell the sweet treat you placed in the container and made their way to it. Once inside the plastic dish, most of them probably couldn't climb up the sides (since they are slippery and there isn't anything for the insects to grab onto to pull themselves up), so they were stuck there.

If you checked your container more than once, did you see any different bugs the 2nd or 3rd time? If you didn't see many insects or want to experiment more, try putting the container in different spots and using different things as bait.

## Bug Book

Make a special book to store all of the information you know about insects! You can add to it as you continue to learn more and more about the many insects you'll find.

What You Will Need:

- three-ring binder
- three-hole paper punch
- plain white paper
- a pen
- crayons or colored pencils
- [journal template page](#) or a ruler



What To Do:

1. Decorate the outside of your book with pictures cut from magazines, stickers, or your own drawings (draw them on paper, then cut out and glue them to the binder).
2. Each page of the book will be for one insect and should include space to draw a picture, several lines to write things you know about the creature, and some lines to add things you find out later, too. You can either print out several copies of our [journal template page](#) or make your own.
3. Ask an adult to help you punch holes on the left side of each page and put the pages into the binder to make a book. You can always add more pages later if you want to.
4. Start the first page with your favorite bug. Draw a picture of it, write its name below, and then write anything you know about it, like where it lives (in a tree? in the grass?) and what it eats. You can also look in an [identification guide](#) if you want to find out more about a particular bug.
5. Whenever you learn something new about a bug in your book, add it to the page about that bug. If you need more space, you can add another sheet of plain paper behind the first one. If you have more than one page for the same creature, it helps to write the name of the bug in the top right-hand corner of the page so that you can tell which pages go together. When you learn about a new bug that isn't in your book yet, make a new page for it.

To learn more about bugs that you find, you can use these online identification guides for [common insects & spiders](#) and [caterpillars, butterflies, and moths](#).

## More Projects

Here are some insect science projects from other issues of this newsletter:

- Find out what ants like to eat and more with [these projects](#).
- In this [ladybug investigation](#), you'll find project ideas, games, and even an art project.

## Fun Facts

- Both lightning bugs and fireflies are actually beetles!
- Houseflies taste with their feet.
- A praying mantis can turn its head nearly all the way around, which helps it hunt.

## Silly Science

- What kind of bug is the best baseball player?
  - A spider - it's good at catching flies!
- Why do bees have sticky hair?
  - Because they have honeycombs.
- What do bees do with their honey?
  - They cell it.

## Way Cool Websites

- Watch a video about [insect symbiosis](#) (when two different creatures live together and help each other).
- Explore many different insects on [this site](#). You can view pictures, learn where they live, how big they are, and more.
- Play the "Name That Bug" [game](#).

## Teacher Tidbits

Summer is a great time to study bugs. The term "bugs" can include lots of different crawling, flying, hopping, and swimming creatures. Keep reading for more about "true bugs" and some basic "bug" knowledge to guide your kids this summer. If you're looking for more detailed information, check out our full [Insect Investigations](#) teaching tip for insect anatomy, habitat information, classification, and more activity ideas.

## What Is An Insect?



An insect is an animal that has three main body parts, two compound eyes, two antennae, and six jointed legs. Instead of bones, insects have hard exoskeletons, which protect their soft bodies like a coat of armor! Insects' three body parts are a head, a thorax, and an abdomen. Most insects have one pair of wings, but some have two pairs (four wings total). Their legs and wings are all attached to the middle body segment - the thorax. Insects breathe through tiny holes along the sides of their bodies called spiracles.

Insects are a very diverse group of animals. There are more than 1 million species of insects that have already been discovered, and probably at least that many more that have not yet been discovered and identified! Most insects hatch from eggs and go through several different stages of life, called metamorphosis. [Ladybugs](#) and [butterflies](#) experience complete metamorphosis. Some insects, such as praying mantises, hatch looking like tiny versions of their parents. They will grow by molting, or shedding their exoskeleton several times, growing

into a new slightly larger one each time. Once the insect is an adult, it will not grow or molt anymore.

Caterpillars are insects, but they look a little different than most insects. As you may already know, a caterpillar will soon spin a chrysalis or cocoon around itself and turn into a butterfly or moth! Caterpillars only have six real legs, but they also have some other pairs of legs called "prolegs." It also looks like they have more than three body parts. It turns out that they have 14 body segments, but the head is one, then there are three segments of the thorax, and ten segments of the abdomen. So they also have three main body parts, but the thorax and abdomen are separated into smaller segments.

## What Is a Bug?

Certain kinds of insects are called "true bugs." True bugs include aphids, water bugs, stink bugs, and plant bugs (like box elder bugs and cabbage bugs). True bugs have mouth parts that are used to suck (like a straw) and have outer wings that are usually slightly harder than the wings underneath. The outer wings often have some sort of pattern on them. They still have three main body parts, six legs, and two antennae, just like other insects.



Any creature that does not have all of the characteristics listed above is not an insect! What about spiders? They are a lot like insects, but spiders have two body parts and have eight legs, so they aren't insects. Spiders belong to a group of animals called arachnids. Scorpions and ticks are also arachnids.

Sow bugs and pill bugs, which are also called rollie-polies, centipedes, and millipedes have many more than 6 legs (they usually have 15 pairs of legs!), and lots of body segments. Some other animals that are related to insects and bugs are called crustaceans, which include creatures like crabs and lobsters. None of these are insects, though!

We often call all kinds of creeping, crawling, and flying creatures "bugs." Even though you now know they are not all insects and they are not really even bugs, it's okay to refer to them as bugs at times. The important thing is to know how to tell the difference between an insect and other kinds of creatures.

For detailed information about different types of insects, spiders, and more, check out this [site](#).

## More Insect Activity Ideas:

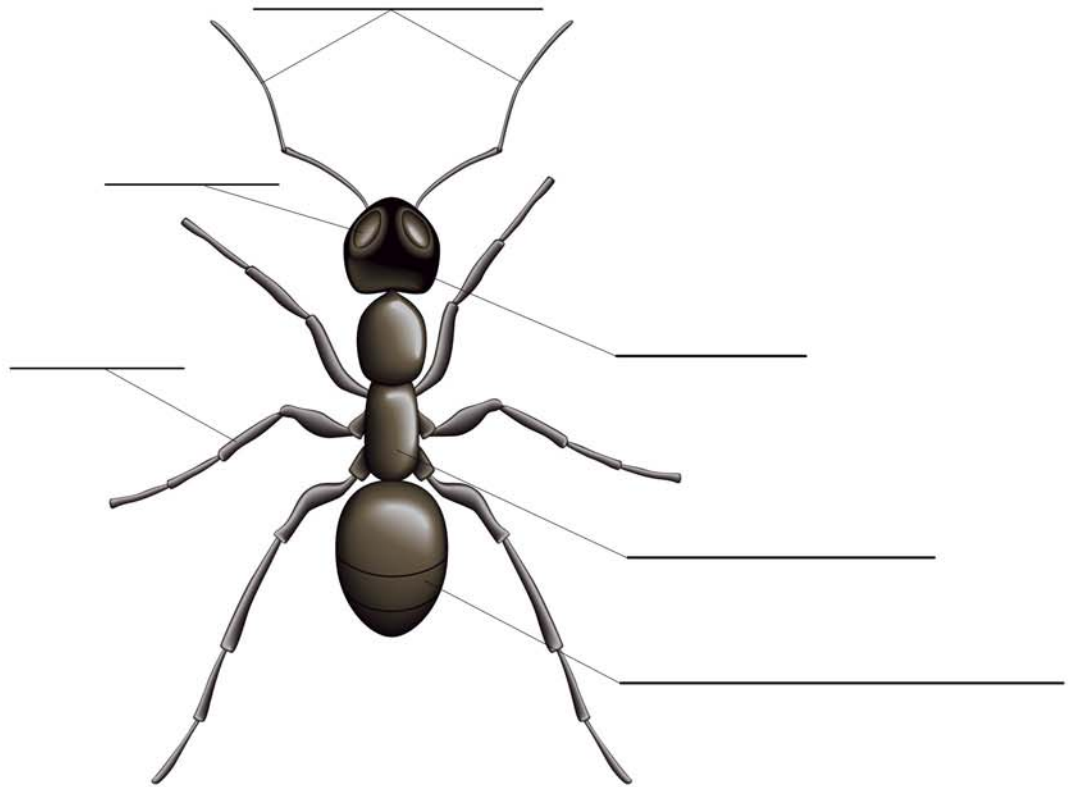
- Let kids find an insect for each color on [this chart](#).
- Make a [bug catcher](#) using a plastic cup, a straw, and some tubing.

## Printable Worksheet

Help kids review what makes an insect an insect with this two part worksheet below. In the top part they will label the parts of an ant; in the second part they will look at pictures of bugs and decide which body parts prove that they are not insects.

# Insects vs. Bugs

Label the ant with the body parts listed below it.  
These are the parts that make an ant an insect!  
Some insects also have wings, but this ant does not.



antennae (2)  
eyes (2)  
legs (6)

head  
thorax  
abdomen

Circle the parts of the bugs below that show you they are not insects:

