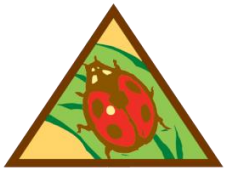
Brownie Bug Badge



Many people use the word “bug” to describe a variety of creepy crawly creatures to include bees, mosquitoes, spiders, caterpillars and more. In actuality, many of these creepy crawlies fall into one of the following three categories:

- Bugs: Have needle-shaped mouth parts designed to poke and suck fluids. Examples are a stink bug, cicada and water bugs.
- Insects: Have six legs, two sets of wings, sensory antenna and a three-part body (head, thorax and abdomen). Examples are a mosquito, bee and butterfly.
- Arachnids: Have eight legs and a two-part body (cephalothorax and abdomen). Examples are a tarantula, deer tick and centipede.

For the purpose of this badge, we will call all of our creepy crawly friends bugs – even those that aren’t true bugs. Complete each of the following five steps to earn your bug badge!

STEP 1: CREATE A BUG POSTER

Let’s start by learning about bugs. There are over 1 million different kinds of bugs in the world. Pick one bug and teach others about it.

1. Watch a video by about insects at https://www.youtube.com/watch?v=iJlfBNyBKQA *(source Happy Learning)* or visit https://www.dkfindout.com/us/animals-and-nature/insects/ to read about them.
2. Make a Bug Poster to share with your family or troop. Draw one of the bugs about which you learned and answer the following questions:
    - Where does your bug live?
    - How long does your bug live?
    - What are the body parts of your bug?
    - What are some good things about your bug?
    - What are some not so good things?
    - Who are your bug’s enemies?

STEP 2: MAKE A BUG CRAFT

It's time to get creative. Make one of the below crafts or try making your own silly or sparkly bug.

1. **Sock Caterpillar**

a. Stuff a sock with a filler such as polyfill from an old pillow, rice, yarn balls, crumbled newspaper or even other socks

b. Tie with rubber band, string or yarn

c. Attach pipe cleaners to the band at the head of your caterpillar to make antennas. Twisty ties can be substituted if you don't have pipe cleaners.

d. Glue on googly eyes or other eyes of your choice. You can also add a nose and mouth.

2. **Coffee Filter Butterfly**

a. Flatten 2 coffee filters. Stack one on top of the other

b. Color the top one with washable markers

c. Use a squirt bottle filled with water to spray the filter 2 or 3 times. Do not soak it, just make it damp. The color from the top one will transfer to the one on the bottom.

d. After the filter dries, bunch it up in the middle and wrap a pipe cleaner around the center or clamp it with a clothespin.

e. Gently "fluff" the wings.

f. Curl the ends of the pipe cleaner for the butterfly's antennas

STEP 3: GO ON A BUG SAFARI

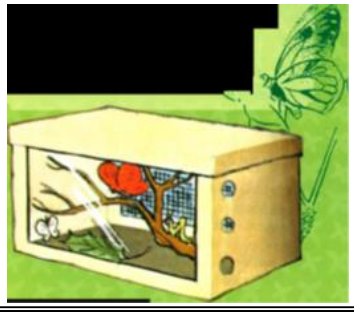
The best place to see bugs in action is to visit them where they live. Pack up your gear and go on a bug safari! Take a walk around your yard or a local park. Check out all of the bugs you see. Complete either item 1 or 2, or both if you are feeing extra adventurous!

1. Do your research so you are properly prepared before you go on your safari.
   - What do you need?
   - What should you wear?
   - Where will you go?

- Do your parents or caregivers have any special rules to follow on your bug safari?
- Read and complete the Orkin Activity Bug Book that is full of tips and fun activities to help you make the most out of your adventure: https://cdn.orkin.com/downloads/orkin-activity-book.pdf
- Check out the Orkin Insect Identification Guide. It is a great tool to help you identify the bugs you see: https://cdn.orkin.com/downloads/orkin-insect-id-guide.pdf
- Try to identify at least 3 different bugs while on your safari and try to figure out what they are doing and why.

OR

2. Make a bug observation box as outlined in the Brownie Bug Badge Guide:
    a. You can take a closer look at a bug in action by making a bug box. Try using it to watch grasshoppers, centipedes, lightning bugs, or moths. Check with an adult first to make sure your bugs don't bite!
    b. Cut a rectangle out of one of the long sides of a shoe box -it should be about 6 inches long by 3 inches wide.
    c. With the cutout side facing you, tape or glue on a piece of plastic wrap to create a window. Make sure the window is tight enough that the bugs can't escape.
    d. Poke three small breathing holes (smaller than your bugs, so they won't get out) into each side of the box.
    e. Make a home for your bugs along the bottom of the box, using materials from the place you found them and without destroying their home. You might add grass, twigs, small rocks, or leaves.
    f. Add bugs! Be gentle so they don't get hurt.
    g. Re-cover the box. After you've had an hour to watch, carefully place the bugs back where you found them.



This bug box illustration is from the Cadette Girl Scout Handbook, 1963.

STEP 4: EXPLORE WHERE BUGS LIVE

Bugs and insects live in many different places and climates. You can find insects in trees, plants, nests, burrows and even in the water.

1. Read the Insect Habitat worksheet from TeacherVision that is at the end of this document. Talk with your family about the different places bugs live.

STEP 5: GO ON A VIRTUAL FIELD TRIP

Going on field trips is always fun. Visit a local entomology or bug museum if you are able. Everyone can go on these two field trips from the comfort of your home:

- **O. Orkin Insect Zoo at the Smithsonian National Museum of Natural History in Washington D.C.:** https://www.youtube.com/watch?v=WQqw32xLycs
- **Butterfly Wonderland in Scottsdale, Arizona:** https://www.youtube.com/watch?v=rQu51agv4GU

Fun Bug Facts

- Ants can lift and carry more than fifty times their own weight.
- Mexican Jumping Beans, sometimes sold commercially, actually have a caterpillar of a bean moth inside.
- While gathering food, a bee may fly up to 60 miles in one day.
- Bees are found on every continent except Antarctica.
- Fruit flies were the first living creatures to be sent into space.
- A bee's wings beat 190 times a second, that's 11,400 times a minute.
- Caterpillars have 12 eyes.
- Mosquitoes are attracted to smelly feet.
- Butterflies taste with their feet.

- Grasshoppers existed before dinosaurs.

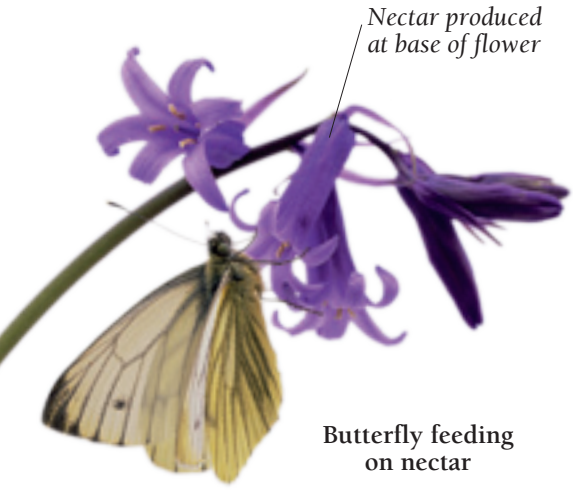
Congratulations, you finished your Brownie Bug Badge!

Insect habitats

You can find insects almost anywhere on land, from hot deserts to snowy mountains. Some insects burrow in wood or soil, some live in caves or buildings, and many are found in fresh water. The ocean depths are the only habitat where insects cannot survive.

Plants

Habitats covered in lush green vegetation, such as forests and fields, have the most insects. Flowering plants and trees give insects somewhere to hide and provide them with a huge variety of food, including leaves, seeds, fruit, and nectar.



Butterfly feeding on nectar

Key Facts

- Insects live on every part of plants—even the roots.
- Flowers are often buzzing with bees and butterflies, which visit to drink nectar. This sugary liquid contains lots of energy.
- In a forest, most insects live out of sight in the treetops or among fallen leaves on the ground.
- Grasslands are home to vast numbers of insects, especially ants, termites, and grasshoppers.

Fresh water

Lakes, ponds, marshes, rivers, and streams are full of insect life. Some insects never leave water, while others grow up there and then fly away to live in new areas. Insects have several different ways of surviving in water. They may swim to the surface to gulp air, or they may have a system for breathing under water, like fish.

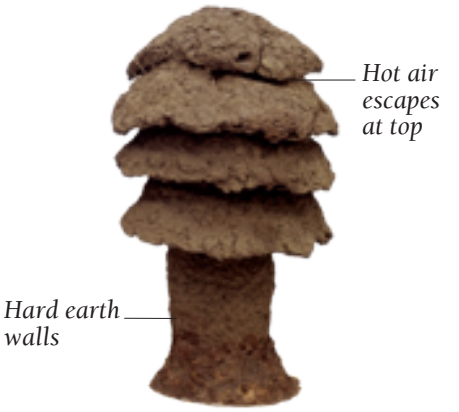
Key Facts

- Diving beetles store bubbles of air under their wings so that they can breathe under water.
- Young dragonflies, called nymphs, breathe by sucking water into their abdomens to extract oxygen. The adults are flying insects.
- Mosquitoes start life under water and their larva (growing stage) has a breathing tube that it pokes above the surface like a snorkel.

Great diving beetle

Nests

Insects are skilled architects that make some very impressive nests for their eggs and young. A nest offers protection against predators and the weather. Some insects build a simple nest on their own. Other insects, such as ants, termites, and honeybees, build complex nests.



Termite nest

Wasp nest

Key Facts

- The simplest nest is a burrow in the soil made by some wasps.
- Many termites make tower-shaped nests out of soil. The earthen walls gradually bake hard in the sun.
- Termites control the temperature inside their nest by opening and closing ventilation holes.
- Wasp and bee nests usually have a single entrance hole to make them easier to guard against enemies.