# The Environmental Learning Center

ELC

# NATURE NEAR YOU

## Bugs! Bugs! Bugs!

6 hands-on STEM activities for ages 6-11

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# Nature Near You

## *Bugs! Bugs! Bugs!*

**Materials Included:**

- Critter viewer
- Fall trap container
- Potting soil
- Florida native flower seeds
- Small flower pot
- STEM challenge antennae supplies
- Mason jar with lid
- 5 pieces of string
- Tiny sponge
- Foam shapes
- Observation notebook & pencil

The fascinating world of bugs is closer than you might think. We invite you to use the activities and materials provided in this Bugs!Bugs!Bugs! kit to explore the world of insects and other arthropods living in your backyard, your neighborhood, or other natural areas near you.

While they may often go unnoticed by us humans, bugs play many critical roles in nature- from pollination to decomposition. The activities and materials in this kit will help you to take a closer look, investigate the special adaptations that make bugs so fascinating, and spend time discovering the lives of insects living near you.

Remember when you are observing bugs or any other wildlife to be respectful, to never touch or pick up any bugs unless you know it is safe, and to always return bugs to the habitat where they were found.

Get ready to become an entomologist, a scientist who studies bugs!

### VOCABULARY

- **arthropods:** an invertebrate animal of the phylum Arthropoda; such as an insect, spider or crustacean
- **adaptation:** a special skill or body part that helps an animal survive in its habitat.

Happy exploring!

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# BUG OBSERVATIONS

Scientists have named and described nearly one million species of insects! Sharpen your observation skills and see how many you can find living near you.

## Materials Needed:

- Critter viewer (provided)
- Pencil and observation notebook (provided)
- Field guide to local bugs (optional)

## Tips for Bug Observations:

1. Think about where you would expect to find bugs. You may want to look near trees or bushes, under rocks, or near water.
2. When you find a bug, practice respectful and safe observation by:
    a. Never picking up a bug unless you know it does not sting or bite
    b. If you decide to hold a bug, placing it in a flat hand or gently brushing it into the critter viewer.
    c. Always returning bugs to their habitats after viewing.
3. If you want an up-close view of a particular insect, use your critter viewer. Be sure to gently brush bugs into the viewer rather than pick them up with your fingers.
4. As you observe, think about what makes this bug unique.
    - *How many legs does it have?*
    - *How does it capture and eat its prey?*
    - *How does it move? Can it fly? Does it crawl*
    - *How does this bug defend itself from predators?*
    - *What kind of noise do you imagine your bug making?*
5. You may want to sketch the bug in your notebook to remember the details you observed.
6. Use a field guide to help you identify the bug, if desired. If you don't own a field guide, see if you can check one out at your local library. There are also many free apps for smartphones that can help you identify bugs.

## Things to consider

- **Time of day:** many insects like bees and butterflies can be spotted around midday when it is hottest outside. But some insects prefer dusk, like mosquitos. Which insects would you expect to see at night?
- **How many legs?** If you count six, you have yourself an insect. If you count 8, you've got yourself a spider.
- **How does it move around?** Does your insect have wings? Does it have powerful legs for jumping?
- **Noticeable antennae?** These feelers are an important part of how an insect senses the world around it.
- **What does it eat?** You can try and guess by observing the mandibles or mouth of your insect

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# BUG FALL TRAP

Insects and arthropods live all around us, often avoiding our notice. In this activity, build a fall trap to catch and observe the bugs living in the habitats beneath our feet.

## Materials Needed:

- Small container (provided)
- Critter viewer (provided)
- Pencil and notebook (provided)

## Instructions:

1. Select a location for your pitfall trap. Think about where you are most likely to find bugs. In a shady spot or a sunny location? By trees and shrubs or in grass? (Hint: You might want to set your trap in several locations and see if you find different critters.)
2. Dig a small hole the size of your container. Make sure the hole is deep enough that the top of the container is level with the ground.
3. Fill in the area around your container. You may want to add some camouflage like leaves and sticks around the sides so that your containers blends in with the environment.
4. Give it some time and then go check your trap. Remember to check your trap every 30-45 minutes so bugs are not trapped for too long.
5. Use your hand lens for a better look at any critters that you caught and sketch them on a piece of paper or in your notebook. If you would like, use your critter viewer to get an even better look. Remember to never touch any bugs with your hands unless you know they do not sting or bite.
6. Be sure to return and release any bugs your found to the area you found them in after you have finished your observations.


Fall trap


Antlion fall trap


Antlion

*Note: The pitfall trap that you are creating is very similar to the hunting style of the antlion. The antlion will dig a pit that an insect will fall into and not be able to escape!*

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# ANT PICNIC

All around us insects are hard at work, especially the ant. Did you know Florida has many different species of ant? In this activity, you can attract ants with tasty treats and try to identify them using the ant ID card.

## Materials Needed:

- Notecard or piece of paper
- Marker for labeling
- Ant ID card (provided)
- Snacks from your kitchen

## Instructions:

1. Take a minute to step outside and see if you can locate an ant on a mission. She could be in the grass, climbing up a wall or even walking down the sidewalk. This ant that you observe is a female forager ant, probably out looking for food to bring back to her whole colony.
2. Try and identify this ant using the ANT ID card. This can be difficult considering how small they are and how quickly they move.
3. To get a better look, place different kinds of food on a notecard (think sweet, salty, oily, a protein and a vegetable). Let the card sit outside, the longer the better to attract more ants.
4. When you return with your ANT ID card, see if it is easier to identify these ants by what they are eating. If you discover an ant that is not on the card, look it up online and let us know!

*Note: Ants are usually harmless but fire ants can bite and sting if bothered. The stings can be very painful and some people may be allergic. It is best to not disturb any ant colonies, both for your safety and for theirs.*

## VOCABULARY

- **forager:** searches widely for food
- **colony:** a community of plants or animals

## ANT ID card

**White footed ant**

*sweets*

**Ghost ant**

*dead insects & sweets*

**Big headed ant**

*protein, grease & seeds*

**Acrobat ant**

*sweets & protein*

**Crazy ant**

*protein*

**Pharaoh ant**

*fats & oils*

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# BUTTERFLY FEEDER

Did you know that butterflies can sense vibrations with their wings, smell with their antennas and taste with their feet? Take a closer look at how these amazing creatures use their senses as they sip from your homemade butterfly feeder.

## Materials Needed:

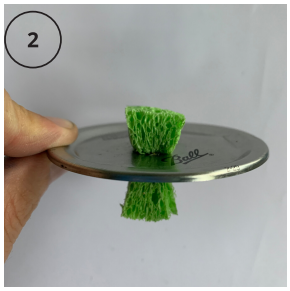
- Mason jar with hole in lid (provided)
- 5 pieces of string - 4 long, 1 short (provided)
- Sponge (provided)
- Foam shapes to create flowers (provided)
- Sugar & water

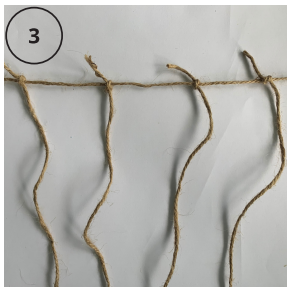
## Instructions:

1. First make some butterfly food! Ask an adult to help you with this part! Add nine parts water and one part sugar to a pot and bring to a boil until sugar is dissolved. Let it cool down while you prepare the feeder.
2. Take the sponge and pull it through the hole in the lid of the mason jar until it sticks out of the top by 1/2 an inch. Set aside.
3. Lay out the small piece of string, and tie the 4 longer pieces to it using a **double knot.** Make sure they are tight!
4. Now tie the small piece of string around the neck of the jar, again using a strong, **tight knot.**
5. Gather the 4 long pieces of string, and tie them all together with another **strong knot.**
6. Now you can add the cooled sugar water to the jar, and screw the lid on **tightly** so that it doesn't leak.
7. Use the colorful foam shapes to create flowers and attach them to your butterfly feeder. The extra color will help you attract more butterflies to your neighborhood.
8. Find a place outside to hang your butterfly feeder and observe who stops by to take a taste.

## VOCABULARY

- **olfactory:** relating to a sense of smell
- **pollinator:** anything that helps to carry pollen from one flower to another so it can reproduce






*Note: Butterflies are important pollinators and should not be captured without a butterfly net. Catching them with your hands can tear their delicate wings and affect a butterfly's ability to fly.*

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# GROW A POLLINATOR PLANT

Pollinators are an essential part of the life that we live. Without them our world would look much different; imagine no peaches, berries, almonds, coffee, chocolate, bananas, mangos...just to name a small few. Our entire Earth ecosystem relies on the work of these small creatures; insect pollinators include flies, bees, wasps, butterflies, moths and beetles. And by planting the seeds from this kit and growing these native flowers, you can feed the insects that feed you!

## Materials Needed:

- Soil (provided)
- Seeds (provided)
- Container (provided)
- Water
- Sunshine

## Instructions:

1. Gather some rocks and place at the bottom of your container, about an inch deep. This will help any extra water drain out through the bottom.
2. Take a handful of dirt from around your neighborhood and place over the rocks.
3. Fill the rest of the container with the soil provided.
4. Using your finger, poke 5 tiny craters into the soil. The hole should be as deep as your first knuckle.
5. Place a few seeds in each crater and cover with dirt.
6. Put container in a sunny spot and keep soil moist until the seed starts to sprout.
7. Once sprouted, only water when soil has completely dried out.
8. Each day, watch it grow!
9. You can transplant your pollinator plant outside once the plant seems hardy and is at least 4 inches tall
10. These native plants are adapted to our local climate and soil, and require very little care and watering once hardy and strong. But definitely keep an eye on them.

partridge pea

state wildflower coreopsis

blanket flower

## VOCABULARY

- **pollinator:** anything that helps to carry pollen from one flower to another so it can reproduce
- **pollen:** a fine powder from the male part of a flower that is needed to fertilize a female part of a flower to create a seed
- **nectar:** a sugary fluid secreted by plants to attract creatures who will help spread their pollen

*Note: To learn more about pollinators, and to download your very own pollinator poster visit:* https://www.fs.fed.us/wildflowers/pollinators/importance.shtml

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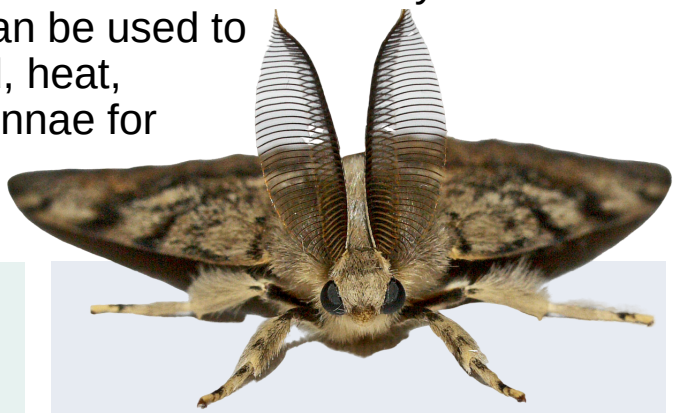
# DESIGN YOUR OWN ANTENNAE

Every insect has a pair of antennae, located on their head, in between their eyes. Often these body parts are called "feelers" but what they are "feeling" depends on the insect. Antennae can be used to touch, or to sense motion of the air and wind, heat, vibration (sound), and most insects use antennae for smell and taste.
What would you use your antennae for?



## Materials Needed:

- Building materials (provided)
- Glue (optional)

## Instructions:

1. Look at the examples below and decide which kind of insect you would like to be or which antennae you would like to create.
2. Go through your antennae supplies, and create a sketch of your antennae design in your notebook.
3. Use the two long pipe cleaners provided to make a "crown" that fits on top of your head.
4. Use glue or other sticky materials to assemble your very own antennae on top of the crown.
5. Do your antennae give you an extra sense?
6. Send us a picture of your creation!

## ANTENNAE USES

- **monarch butterfly:** this migratory butterfly uses its antennae as a solar compass to help find its way on its long journey from Canada to Mexico.
- **ant:** the antennae of an ant can be used to smell, touch and also communicate with other ants!
- **hawk moth:** this moth is nocturnal, meaning it comes out at night. Because of this, it needs helping staying balanced, which is exactly what it uses its antennae for!