

Bugs, Butterflies, Worms, and Spiders



OBJECTIVES:

- Increase awareness of our natural environment and creatures that live within it.
- Gain an appreciation for the inter-connectedness of all living things.
- Build vocabulary through the use of new terms.

GROUP SIZE:

6–8 children per adult volunteer

TIME FRAME:

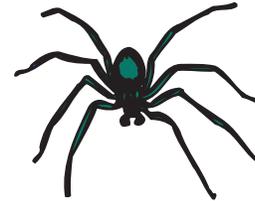
This lesson is designed for a group meeting between 30 and 60 minutes. Each activity will take about 5–15 minutes to complete.

BACKGROUND:

Insects are the most abundant life form on earth comprising 80 percent of the animal kingdom. Worms are also very abundant, as are annelids, such as leeches. Worms and annelids are not insects. All insects have a head, thorax and abdomen, six legs (three pairs of legs), one pair of antennae, eyes (sometimes one or more pairs), and most adult insects have wings. Some insects grow in very different ways than people. These insects are said to undergo complete metamorphosis. This means that their bodies completely change as they grow. The baby insect is usually an egg, then becomes a worm-like larvae, grows into a pupa (which may be covered by a cocoon), and then becomes an adult. The adult doesn't look like the baby insect in any way. Other insects grow like people. These insects are said to undergo incomplete metamorphosis. The adult will look quite similar to the baby, only bigger. Insects do not have bones, but have a hard outer covering called an exoskeleton.

Spiders, ticks, mites, and scorpions (four pairs of legs), crayfish, sow bugs, pill bugs, and fairy shrimp (five pairs of legs), millipedes or thousand leggers, and centipedes or hundred leggers are not really insects. These are insect “cousins.” Some insects are harmful to people, animals, and crops, but many insects are helpful.

Spiders are not insects. They are arachnids. Spiders have eight legs, lack both antennae and wings, which most insects possess, and have two body parts. Almost all spiders spin webs and are able to do so from birth. Webs are produced from a special organ called spinnerets, which are located on the underside of the abdomen. Spiders spin webs in order to catch insects to eat. There are three types of webs that are spun by spiders. Sheet webs resemble a sheet of



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horizontal paper, funnel webs look like a funnel with the spider's hiding place in the middle, and orb webs look like a wheel. The silk used to weave webs is very strong. A strand one inch thick would be stronger than steel cable. Spiders lay eggs from which baby spiders, called spiderlings, hatch. Most spiders live only one or two seasons. Most spiders are shy, harmless, and beneficial because they eat insect pests. They live in dark and damp places. The only dangerous spiders are the brown recluse, black widow, and tarantula (tarantulas are sold as pets).

References:

Lyons. Wm F., *Ext Publication 2060-95*.

Wilson, C. M., Broersma, D. B., Provonsha, A. V. (1977). *Fundamentals of Applied Entomology*. Prospect Heights, Illinois: Waveland Press.

LIFE SKILL AREAS

- Children will learn that insects are different from other forms of animal life.
- Large-motor skills will be developed through participation in group games.
- Decision-making abilities will be practiced.

HELPS TO THE VOLUNTEER

Try these suggestions:

- Choose one or two of the following activities from each section. Assist children in learning about the world outside their back door. Provide them with the opportunity to learn about one of the most abundant forms of animal life—insects.

LEARNING ACTIVITIES

1. Getting Started

ACTIVITY Storytelling—"Monarch Marvin"

Materials: A copy of the *Monarch Marvin* story. If desired, use a puppet or other props when telling the story. Story can be found at the end of this curriculum piece.

Application:

- How can we tell if a creature is an insect?
- What are the three parts all insects have in common?
- How many legs do all insects have?
- How many legs do spiders have?
- Name some insects that are helpful.
- Name some insects that hurt our crops or gardens.
- Name some insects that can bite or sting.
- What is your favorite kind of insect?
- Why are insects important to our environment?
- Where do insects live?
- What do insects eat?



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ACTIVITY “Bug Collecting”

Materials: clear plastic jars with screw-top lid, one for each child

Children love to catch fireflies (lightning bugs). Fireflies are most abundant in early evening (around dusk) in late June and July. Give each child a plastic jar complete with a screw-top lid having pre-punched holes and let them enjoy catching and placing fireflies in the jar. After each child has collected a few fireflies, gather the children together for discussion.

Application: With everyone looking at their flies ask the following questions:

- Can you find the three body parts—head, thorax, and abdomen? Have the children point these areas out to one another and to adult and teen volunteers.
- Can everyone count six legs on their fireflies ?
- How many wings do the fireflies have?
- How many antennae does each one have?
- Can you see the fireflies’ eyes?

Once the discussion has ended, let the children enjoy watching the fireflies light for a brief period of time and then encourage the children to release the fireflies. These do not make pets and will die if kept in the jar overnight.

ACTIVITY “Bouncing Spiders”

Materials: black yarn, one 12-inch piece and four 6-inch pieces per child, and black play-dough (or any color would work).



Play-dough recipe: Mix 1 cup flour, 1 cup salt, $\frac{1}{2}$ cup warm water, and $\frac{1}{2}$ cup oil in a pan. Add more flour if it is too moist or water if too dry. Divide play-dough and add food coloring.

Preparation: Lay the shorter pieces of yarn together. Tie these together, in the middle, with the 12-inch piece.

Give each child a small piece of the play-dough. Instruct them to form a ball with the dough around the center of their strings allowing four “legs” to stick out of each side. Allow the spiders to dry until the next meeting, at which time the children can play with their creation.

Application: How many legs do spiders have? Is this a different number of legs than a ladybug? Where would your spider live? What would your spider eat? How would your spider catch its food?

Additional Fun: Involve the children in singing *The Itsy Bitsy Spider*

2. Digging Deeper



ACTIVITY “Caterpillars”

“Is a caterpillar ticklish? Well, it’s always my belief; that he giggles as he wiggles ... across a hairy leaf.”

Materials: cardboard egg cartons (one for every two children), markers, crayons or paint, pipe cleaner (one per child), two wiggle eyes or two pompoms per child (optional), and glue if using wiggle eyes and/or pompoms

Preparation: Cut the top off of each egg carton. Cut the bottom section in half, lengthwise. For each egg carton, one will now have two pieces when turned over will resemble a bumpy caterpillar. Poke two holes in the end section of each caterpillar, using a nut pick, corkscrew, or similar object.

Have the children decorate each section of their caterpillar with markers, crayons, and paint. Give each child a pipe cleaner. It should be stuck through one prepunched hole and up through the other hole to form the antenna. Have the children glue on wiggle eyes or pompoms for eyes. Draw mouth with crayon or marker. Allow for individual work. Praise neat work.

Application: Ask the children what type of insect the caterpillar could become. All caterpillars become moths or butterflies.

ACTIVITY “Butterflies”

Materials: washable marker, slide-on type clothespin, and rectangular-shaped piece of tissue paper, cellophane or facial tissue per child

Preparation: Cut out rectangle pieces of a soft, crushable paper.

Give each child the supplies needed. Demonstrate to the children to fold their paper like a fan. Gather the folded paper in the middle and slide it down into the clothespin, allowing the ends to fan out to resemble wings. Help each child draw two eyes and a mouth onto the rounded end of the clothespin.

Application: Remind children that many caterpillars become beautiful butterflies and some caterpillars become moths. This is one way insects grow. It takes lots and lots of energy for a caterpillar to become a butterfly. Ask the children what they need to do to grow up to be beautiful adults. Many caterpillars are considered pests, eating foliage of flowers and vegetables.



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ACTIVITY “Take a Web Walk”

Materials: none

At dusk or early morning is the best time to observe webs. Webs are most plentiful in late summer. Walk with the children as you try to find the three types of webs.

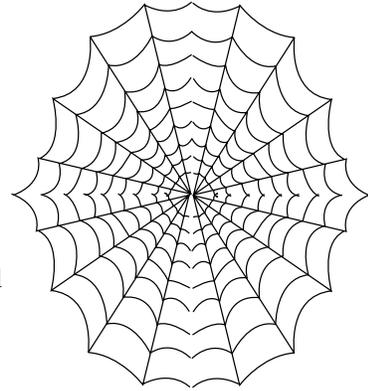
Application: As webs are discovered, discuss how one can tell the differences to categorize the webs as sheet, orb, or funnel. Where were the best places to find webs? Were any spiders and/or egg sacs found? What do spiders do if their web is bumped or shaken?

3. Looking Within

ACTIVITY “Webs for Your Window”

Materials: piece of wax paper or construction paper, permanent black marker, and a piece of plastic wrap per child

Preparation: Have a few examples prepared for the children to look at for ideas.



Place the clear plastic wrap on top of either a sheet of construction paper or wax paper. Instruct the children to draw a spider web onto the plastic sheet. Caution them to not press too hard with the black marker. (Hint: to draw a web, start with making a drawing resembling a cut pie. Connect these “spokes” using a semicircle line drawn from spoke to spoke. Doing so will form an orb type of spider web). Allow the marker to dry for about 1 minute. Take the plastic sheet off the paper and press it against a glass window, stretching the plastic wrap so it will adhere to the window.

Application: Why is it possible for spiders to build webs? Do any other type of insects spin silk like a spider? Why are webs needed by spiders? Why do people not like webs?

Additional Reading: A chapter or two from *Charlotte’s Web*, by E. B. Brown

ACTIVITY “Designer Bugs”

Materials: paper, crayons, tape (if you wish to hang the finished projects for display), and lots of imagination

Children should be seated at tables, desks, or on the floor. Give each child a piece of paper and some crayons. Explain that they are to draw and color an insect. This insect can be their favorite type of insect or they can invent an insect that answers the question “If I were an insect I would look like...” When finished, praise these works of art and hang for all to admire.



Application: No one's picture is going to look exactly the same. Just like no two people are exactly the same. That is what makes us special, being different from one another. Celebrate each picture by pointing out the differences and that each person's creation is absolutely wonderful... just like them.

ACTIVITY "If I Were a Spider"

Materials: Use background information at beginning of curriculum piece as needed.

Instruct the children that you are going to play a pretend game. The leader will make a statement and the children are to either answer the question vocally or by movement.

Examples:

If I were a spider... I would crawl like this (motion).

If I were a spider... I would eat (vocal).

If I were a spider... my favorite time of the year would be (vocal).

If I were a spider... my babies would be called (vocal).

If I were a spider... I would live (vocal).

If I were a spider... I would be this color (vocal).

If I were a spider... I might be afraid of (vocal).

Application: Playing this game will provide the advisor an idea of what the children have learned about their spider friends.

4. Bringing Closure

ACTIVITY "Good Bug, Bad Bug"

Materials: tape, one poster with a smiling face, and one poster with a frowning face (or be creative and make smiling and frowning bug faces).

Tell the children that you are going to say the name of an insect. Each child needs to decide if this insect is a good (smiling face) or a bad (frowning face) insect. As each name is called, the children go and stand underneath the poster which he/she thinks best describes this insect. The advisor may wish to discuss each choice. Example: A Honeybee is a good insect because it makes honey which is yummy to eat. (smiling face) Mosquito - ouch! These bite and can spread disease. (frowning face). Mosquitos may be bad to humans, but birds and bats love them.

Application: Discuss each insect—how it affects the environment and how every living thing has a job to perform to help keep nature in balance.



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ACTIVITY “Going on a Worm Hunt”

Read the story found at the end of *Bugs and Butterflies* called, *Going on a Worm Hunt* to the children. Involve them in acting out the story as it is read.

Materials: any type of container like a bucket, coffee can with lid, etc., in which to place the worms, and a small amount of soil

Earthworms are very beneficial to the environment. Without earthworms burrowing through the soil and decomposing leaves and mulch, the soil could become very hard. This would make it difficult to prepare the soil for planting crops, grass, or trees. Worms act like a natural “plow” for the soil. The holes they dig create passages for air and water. The leaves and mulch they eat is made into plant food. While some children may find worms to be rather slimy to pick up, worms do not bite and will not harm anyone. Children will also practice gross and fine motor skills by trying to be quicker than the worms during the “hunt.”

Give each child a flashlight (or pair the children in groups of two or four). Each child or group of children will need a can or bucket in which to place their catch. Instruct the children that worms live in moist places, like underneath old leaves, logs, around outdoor decorations, in flower beds and gardens. Earthworm collecting is best in early spring (late April and early May), after and during a light evening rain. Worms quickly hide after having a flashlight shone on them, so show the children that they have to be quick. Also remind the children to pull the worms out of the soil slowly as to not break it into pieces. If the worms are not going to be used for fishing, release the worms once the hunt is concluded.



Application: Ask the following questions:

- Did everyone see that the worms have little body segments that look like ridges?
- Which end is the head and which is the tail?
- Where did you find the most worms? Why do you suppose the worms liked living in this location?
- Why are worms “good” or beneficial?

ACTIVITY “Spider Friends”

Materials: none

Children can play individually or in groups. Ask the children to tell you all the good things spiders do for nature and for people. Write their responses where all can see using simple terms (remember most children in K and 1st have limited reading ability). Discuss each response. Some items that could be mentioned are: spiders eat lots of insects that can damage crops or flowers, spiders eat insects so the insects don’t bother us and our homes so much, spiders eat insects that can bite or sting, spiders build webs that are pretty to look at, many spiders are very colorful and fun to see.



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Application: After discussing why spiders are fun and helpful to have around us, expand discussion to address that spiders need not be killed every time one is spied and that most spiders are more afraid of us than we are of them. Try to create a “be nicer to spiders” attitude.

5. Going Beyond

ACTIVITY “Monarch Magic”

Materials: big, clean glass jar with a metal lid; monarch caterpillar; and a supply of milkweed leaves.

Set up and use at two to three meetings in late July and August.

Preparation: Review the first lesson: *Monarch Marvin*. Use a hammer and pound several holes into the metal lid of the jar.

Application: In late July or August, go to a field where milkweed plants are growing. Look underneath the milkweed leaves to look for a monarch caterpillar. When you find one, gently pick it up. Then pick four to five leaves off the milkweed plant and place these leaves in the jar. Now, gently lay your caterpillar on the leaves in the jar and put on the lid. (Make certain air holes were punched into the lid.) Do not place your jar in the sun. Each day have someone watch the caterpillar as you replace the old milkweed leaves with fresh ones. Put the caterpillar back in the jar. When the caterpillar is full grown, it will hang upside down from the lid of the jar. It will shed its skin and form a chrysalis. Do not touch the chrysalis.

In about two weeks, one will be able to see through the chrysalis. The butterfly will be emerging soon. Once it breaks out of the chrysalis, leave it alone in the jar for a few hours for the wings to grow and dry.

A monarch butterfly is not a pet. Take your jar outside, remove the lid and allow the butterfly to take its time to climb up and onto your finger. When the butterfly is ready, it will fly away. (Or you can just take your jar outside, open the lid and allow the butterfly to fly away.)

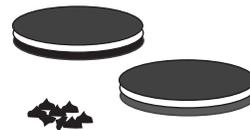
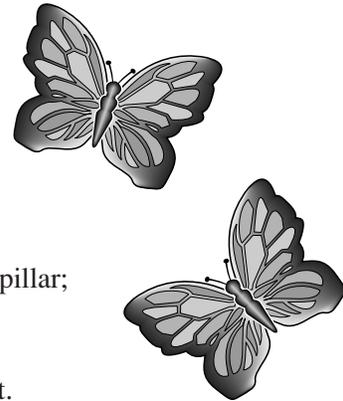
ACTIVITY “Create a Spider Cookie”

Recipe I

Materials Needed: sandwich-type cookie, frosting, cream cheese or peanut butter, shoestring licorice, plastic knife, and a tube of icing or small chocolate chips

Preparation: Gather all needed ingredients and make certain children have washed their hands.

Give each child two cookies, one plastic knife, eight strips of licorice, and a small amount of spread placed on a paper plate. Demonstrate to the children how to place a small drop of



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the spread onto the center of one cookie, arrange four “legs” on each side and top with the remaining cookie. Press lightly. Make “eyes” on the top side of the spider using either small amounts of the tube icing or attach small chocolate chips with a tiny amount of the spread.

Recipe II

Materials: black or green olives, sliced; round snack cracker; whipped cream cheese; and eight pretzel sticks per child for spider legs

Using the same directions as Recipe I, create a more nutritious spider cookie using these ingredients.

Application: If we were a spider, would we eat cookies? If not, what would we eat? What would be some other items we could use to create spider cookies?

MONARCH MARVIN

A very short story by Barbara Parker-Phares

Hi boys and girls! Allow me to introduce myself. I am the beautiful, talented, and quite famous Monarch Marvin! Yes, I am quite well known—king of the butterflies. I guess that is why I am called a monarch butterfly. See my picture: quite good-looking, don't you think?

You have probably seen me and my brothers, sisters, aunts, uncles, grandparents—well, just about all my relatives, flying around looking for food and fun. We really like living in Pennsylvania in the summertime.

I was told that today you are learning all about insects and who better to learn from than me—king of the butterflies. Let's start right now.

Butterflies are the type of insect that undergo big changes as we grow. The big word for this is *complete metamorphosis*. This means that each time we grow, we look very different than we looked before this growth started. People, your pets, and the plants in your garden do not grow in this manner. If you look at the pictures of you taken when you were a baby, you will look similar to how you look now. If you remember your pet as a baby and now it is full grown, it probably looks the same only bigger. Butterflies are different. We have four very distinct stages of growth. These are the *egg, larva or caterpillar, pupa in a chrysalis or cocoon*, and *adult*.

The mommy monarch butterfly looks for a place to lay her eggs. Her favorite home for eggs is a plant called a milkweed. Usually, the mommy monarch will lay one egg on each milkweed plant. In about 3–4 days, the egg will hatch.

Out of the egg comes a very hungry caterpillar. If any of you have a teenage brother, you know what an eating machine is like! Well, when I was a caterpillar; I could even eat more than your teenage brother! I was a caterpillar for about 15 days. During this time I increased my weight almost 3,000 times. Now I tell you, eating all that food was WORK!

I bet right now you are growing really quick, and Mom and Dad have to buy you new clothes and shoes quite often. Well, caterpillars don't wear clothes, but when we're growing so much we even get too big for our skin! We simply shed our old skin and grow a new skin. It doesn't even hurt. This is called molting. As caterpillars, we are so very hungry that we even eat our old skin. Don't want to waste any good food!

I told you it was lots of work to eat so much and after about 15 days of eating a caterpillar is simply tired. It is time for a nap. The next chore is to find a safe and secure place to “sleep.” When you live outside all the time, you have to make certain you have a safe place for sleeping!

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I found a really neat place to nap and began making a new home. Using thread I made myself in my lower jaw, (caterpillars can't buy thread at the store), I spun a bed around myself, called a cocoon or chrysalis, and fastened the end of it to a twig. When a caterpillar is in this "bed," it is called the pupa stage. Caterpillars stay in this stage for 9–15 days. During this time, our bodies completely change. Inside the chrysalis we become like a living soup and rearrange ourselves into a beautiful butterfly.

At the end of the pupa stage, one can see through the chrysalis and notice our lovely orange wings. The next day sleeping time is over and we will be coming out to greet the world!

Out of the chrysalis and into the world! At first, I just hung onto the twig and let my wings dry and become inflated. This took several hours. When I felt strong enough, I decided to test my wings and look around the milkweed patch. What FUN! I flew everywhere and saw all my relatives. We even had a milkweed picnic to celebrate!

Most adult monarch butterflies live 3–4 weeks. This is a long time in the life of a butterfly. Those monarchs, like me, who were the last ones born in the summer, take a long trip to Mexico and stay there all winter. We live about eight months before coming back to Pennsylvania to lay eggs for the next generation of monarchs to begin.

GOING ON A WORM HUNT



This is a take off on the famous *Going on a Lion Hunt* story.

Adapted by Barbara Parker-Phares

It had been a beautiful day, but unexpectedly the skies darkened. A thunderstorm rumbled in the distance and lightening flashed across the summer sky. Suddenly there was a gust of wind, so strong that it rattled the windows and blew dead leaves from last year's autumn across the porch of the old, damp house that the campers had run into for protection from the rain. With a booming clap of thunder, the skies opened and out poured the rain. Within minutes, small puddles of water formed around the yard.

Inside the campers huddled, watching out the window as the rain splashed down to the ground. Again the lightening lit up the sky, which was welcomed as the electricity had failed and the only light left to the campers was their flashlight.

The campers were becoming somewhat bored and a tiny bit scared, so their counselor suggested that they play a game. It appeared that it would continue raining for some time.

Tell us a story exclaimed one camper. Thinking that would be fun, the counselor began...

Come with me he said and I'll take you hunting. On a special hunt that only brave campers are allowed to go. All you will need is your imagination.

Let's start by opening the door. (Act like a door is being opened.) Let's go outside. Don't be afraid. Out we all go into the night on a worm hunt.

Let's walk through the woods, but be quiet, we don't want the worms to hear us. SHHHH! Walk very quietly. (Act like you're walking.)

Do you see any worms yet? (Look around.) NO...no worms. Let's keep going.

Look, the path in the woods grows thicker. We'll have to step very high to get through the brush. (Act like stepping very high.) Do you see any worms yet? (Look around.) NO... no worms. Let's keep going.



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Oh, no—tall grass. Let's use our hands and part the grass so we can keep looking. (Act like walking while parting the grass.) Do you see any worms yet? (Look around.) No... no worms. Let's keep going.

You're not scared are you? (Shake heads no.) Didn't think so. Let's look for those worms!

Oh—a BIG, BIG hill. Let's climb up the hill. Clear to the top. (Act like climbing a mountain.) Down the other side. (Run down the other side.) Don't be afraid. It's really, really high! See any worms? (Look around.) No.... no worms. Let's keep looking.

At the bottom of the hill is a large pond. Can everyone swim? Thought so. Let's swim across. (Act like swimming.) Oh no, swift water! (Swim faster.) Dead fish! (Hold nose and throw it out.) Climb onto the bank. (Act like crawling out.) Whew... that was tough. See any worms? (Look around.) No... no worms. Let's keep looking.

Hey, a big, dead log. No one is afraid of a BIG, DEAD log are they? (Shake heads no.) Didn't think so. Let's turn it over and look for worms. (Have children help you turn it over—complete with grunts from such heavy work.)

WORMS! THOUSAND OF WORMS! Ahhhhhhhhh!!!!!!



Quick, down the bank. (Crawl quickly.) Into the water. (Swim really fast.) More dead fish! (Throw these out of the way.)

Up the other side of the bank. (Crawl quickly again.) Up the hill. (Climb hand over hand.) Don't fall! Stay together! Run down the other side. (Run and pant.) AHFFF! WORMS! HUNDREDS OF WORMS!

Through the tall grass. (Quick sweeping hand motions to clear the way.) WORMS! (Look over shoulder like they are chasing you!) Over the thick brush. (Step high.) Down the path. (Run even faster.)

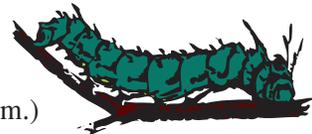
I see the house. Hurry there are WORMS! (Look over shoulder.)

Run fast! Got the door. (Act like opening the door.) Oh, no... the door is stuck! (Act like pulling really hard.) WORMS.... HUNDREDS AND HUNDREDS OF WORMS! (look like the worms are chasing you—motion to children.) Help me! Let's get the door opened! (Everyone pulls really, really hard.)

There... the door is open. Hurry, everyone inside! Close the door (Act like closing the door and placing back to the door to secure it.)

Finally, safe and sound. Boy.... that was a lot of WORMS!

But I did save this one for you ! (Open hand and show off a worm.)



(By this time the kids will probably be really excited! Allow the kids time to calm down and look and touch the worm.)

Was that fun? Want to go again? Okay, lets all go outside and learn to hunt worms. This time we won't even have to swim across the pond.

Now take the kids on a real worm hunt, using the activity titled *Going on a Worm Hunt*.

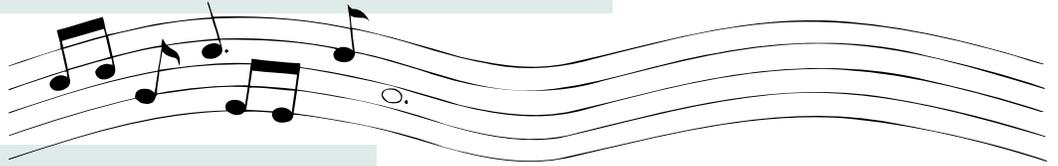
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BED BUGS AND MOSQUITOES

(To the tune of *I'm Going to Kentucky, I'm Going to the Fair* or any other tune the volunteers may know.)

I woke up this morning and there upon the wall
The bed bugs and mosquitoes were playing a game of ball.
The score was 19–20,
The 'squitoes were ahead...
The bed bugs hit a home run and
knocked me out of bed....

SINGING....



Einy, meany, miney, moe...
Catch a bed bug, bed bug
By its toe.
And if it hollers, hollers, hollers,
Let it go.

SINGING...
Einy, meany, miney, moe!

Reading Adventures

This listing of reading materials can be used as background information, for sharing before the group activity to set the stage for learning, or for sharing afterwards to reinforce the activity

The Very Hungry Caterpillar, by Eric Carle

The Lonely Firefly, by Eric Carle

The Ugly Duckling, by Hans Christian Anderson

Have You Seen Bugs?, by Joanne Oppenheim