



SUMMER ACTIVITIES

Bug Hunt: Insects, Worms, Caterpillars and Butterflies



OVERVIEW

Insects and other bugs live with us in nature. They are essential parts of the garden ecosystem. While some bugs pollinate, others help make compost to build soil. Some bugs may eat our garden plants, and others protect them. All tiny critters are part of the food chain, eating each other and being eaten to support ever-larger circles of life. The overarching theme of this activity is to interact with various critters in the garden in a peaceful and respectful way, and to understand that all animals have a place in the earth's interdependent web of life.

OBJECTIVES

After this experience, children will be able to:

- describe different places they might find bugs and worms in the garden.
- discuss the ways in which bugs differ from each other.
- explain what bugs do to help the garden.
- describe the steps for a caterpillar to become a butterfly.
- identify some insects and other decomposers that live in the soil, compost and under logs.
- define a food chain and identify some animals that provide food for each other (i.e., plants provide food for caterpillars and birds eat caterpillars; nematodes eat bacteria in the soil; some insects eat nematodes).



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ESSENTIAL QUESTIONS

- What are some bugs we find in the garden and in the compost pile?
 - What are some kinds of arthropods that we see?
 - How does a caterpillar become a butterfly?
 - How do bugs help in the garden (decompose, pollinate, and provide food for animals) •
- What is a food chain?

BACKGROUND

What kinds of bugs will we find in the garden?

Arthropods

Arthropods are invertebrates with jointed legs. They make up about 75% of all animals on Earth and have a major role in maintaining ecosystems as pollinators, recyclers of nutrients, scavengers and as food for other animals. Many animals we see in our gardens are arthropods. Spiders, ants, centipedes and pill bugs are a few examples. Arthropods are divided into four major groups:

- insects;
- myriapods (including centipedes and millipedes);
- arachnids (including spiders, mites and scorpions);
- crustaceans (including pill bugs, prawn and crabs).

About insects

Insects have an exoskeleton, a hard, shell-like covering on the outside of their bodies. Insects have three main body parts: head, thorax, and abdomen. They have a pair of antennae on their heads, three pairs of legs and two pairs of wings.

About pill bugs

Pill bugs are the only crustaceans that spend their life on land. They have hard, armored shells and can roll up into a ball, which is why they are often called rollie-pollies. Most pill bugs live for up to two years and are active at night. They are decomposers who eat decaying plant matter.



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About worms

Worms are not arthropods. They are invertebrates without legs that breathe through their skin and they can have one or two body cavities where they ingest food and excrete waste.

Worms are divided into three groups: flatworms, segmented worms and roundworms, all of which have a long, soft body with no legs. Earthworms are segmented worms (also called annelids), which means they have the same, repetitive set of organs in each segment. They are essential decomposers that aerate the soil, recycle plant matter, and provide nutrients for plants. Unsegmented worms (also known as nematodes or roundworms) play an important role in the nitrogen cycle and effectively regulate bacterial populations in the soil.

(Source: [Australian Museum: What are arthropods?](#))

MATERIALS

- Books: *Bugs A to Z*, *I am a Caterpillar* and *Insects are My Life*
 - Magnifying glasses
 - For bug collection: containers with lids that have holes poked in them. Plastic food containers work well, or clear plastic jars with lids.
 - Bug hunt field notes sheet
 - Clipboards
 - Crayons/colored pencils
 - Posters or worksheets with names of different insects and list of characteristics (optional) •
- Drawing paper or field notes sheets to draw and identify bugs

PREPARATION

Gather supplies for bug collection, observation and drawing. Print out *Bug Field Notes* sheet, *Soil Food Web* and *Compost Critters*. Take a look around the garden to get an idea where different types of bugs are active. Locate some rotting logs or a pile of decomposing plant matter. Become familiar with the names of the bugs you think you'll find.



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PROCEDURE: FACILITATOR'S ROLE

- Read a few companion books, show pictures from the *Compost Critters* or other bug books. Lead discussion of what bugs can do to help the plants and the soil.
- Help children lift rocks and logs to look under them.
- Guide children to look at plant stems, leaves and flowers for insects that are eating them or pollinating them.
- After collecting some bugs in a container, return to a table or group space and help children examine the bugs with magnifying glasses.
- Ask children to describe some different colors, shapes, sizes and names of bugs.
- Ask leading questions: Where might bugs be hiding? Does it have legs? Is it slimy? Fuzzy? Long? Does it have wings?
- Use a large chart paper or individual worksheets for children to record their findings for different bugs, i.e., how many legs, what color, does it crawl or fly, does it live underground or above, etc. See how many characteristics children can identify with a bit of prompting.
- Help the children return all the bugs to their original habitats.

PROCEDURE: CHILD'S ROLE

- Listen to the books. Make comments, share previous knowledge, and ask questions.
- Talk about different bugs in the garden and hypothesize where they might be found.
- Hunt in the garden for many types of bugs and collect them in containers with aerated lids.
- Identify plant characteristics that may indicate the presence of bugs (holes in leaves, slimy foam).
- Examine the bugs under magnifying glasses. Learn the names of the bugs.
- Compare the bugs and their different roles in the garden.
- Help to fill out a chart which categorizes the characteristics of different bugs.
- Return all bugs gently to their original location.

ADAPTATIONS FOR AGE AND ABILITY

Older children can observe and record more details about their findings. Spend more time with the different groups of arthropods and their specific characteristics. Look at several types of worms (red wigglers in the worm compost bin, earthworms in the ground, and tiny round worms if you find them).

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FOLLOW UP

One time, we found a huge Tomato Hornworm Caterpillar and decided to put it in a jar to watch it pupate over the next few weeks. We put compost and tomato leaves in the jar to mimic its habitat. We read a book on caterpillar metamorphosis and brought the jar with the caterpillar into the classroom for observation. Although this was exciting, we quickly decided it was not right to remove the animal from its habitat. Since it had burrowed into the soil and built its cocoon after just 2 days, we returned it to the spot we had found it and buried it underground. We will not repeat this activity. Instead:

We suggest finding caterpillars in their habitats, observing them in situ, and watching daily to see if they form cocoons. Then watch the cocoons daily to see if you can spot the butterflies and moths emerging. It is important for children to understand that they should leave animals safely in their natural surroundings.

RESOURCES

A printable *Soil Food Web Poster*, *Compost Critters Identification Sheet* are in the *Resources* section at the end of this book. A link to an excellent interactive bug identification website is below.

Books

Bugs A to Z by Caroline Lawton

From Caterpillar to Butterfly by Deborah Heiligman

I'm a Caterpillar by Jean Marzollo

Insects are My Life by Megan McDonald (out of print: available from online sellers and libraries)

It's a Good Thing There Are Insects by Alan Fowler

Leave that Cricket Be, Alan Lee by Barbara Ann Porte

Waiting for Wings by Lois Ehlert

Where Butterflies Grow by Joanne Ryder

Online

[Bug Hunt Identification-interactive webpage](#)

[Free Printable Bug Hunt Field Notes](#)

[Insect Scavenger Hunt](#)