Bugs: Small but Mighty

Activities for children and adults that build upon Play Trail experiences outdoors

playtrails®

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Getting children comfortable in the outdoors may be one of the greatest gifts we can offer the next generation. Given what we know about the physical and psychological consequences of a sedentary, electronic media-dominated lifestyle, it also might be one of greatest health tips we can offer. A childhood rich in outdoor experiences provides an inexpensive antidote for a number of medical problems, including depression, attention deficit disorder, and obesity.

But there is more. Letting young children freely explore their world outdoors can instill a lifelong connection to the environment. It can also help cultivate an ethic of caring for the environment.

The role of adults in this process focuses less on teaching and more on coaching. While most children want to explore their world, some may be hesitant or even fearful. Parents and other caregivers need to be there to offer encouragement and guidance without stifling the important work called play.

Tips for Adults

We offer the following tips to help make the most of your Play Trail explorations.

1. Find activities in these booklets that are appropriate for your child's age and interests, as well as environments that are readily accessible to you.
2. Share the booklet with your child in advance.
3. Let your child initiate the exploration, but be ready to offer suggestions in the event encouragement is needed. Consider the booklet's investigations to be jumping-off points that pique curiosity.
4. Avoid the tendency to teach. Share the information you glean from these booklets as "incidental" points of interest.
5. Model positive behaviors and respectful attitudes toward nature.
6. Respect your child's fears. Never force a child to touch something they do not want to touch. Courage and interest come about through positive, graduated experiences.
7. Foster play and accept the fact that dirty hands, mud-caked shoes, and wet clothes often come with it.
8. Avoid the tendency to "helicopter." Too often, we over-protect and stifle explorations inadvertently.

Bugs

Bugs. The word generates a range of reactions. Some children respond with intrigue and others with fear. Some adults respond with interest and others with disdain. It's all a function of personal experience and perspective. Play Trail equipment is designed to promote active play and discovery in the outdoors. The Bugs Play Trail goes a step further, striving to have children (and caregivers) replace the standard "yuck" with a "wow, what is it?" response when encountering the wonderful world of bugs.

Bug Safari

A backyard or patio provides habitat for bugs and a perfect setting for a bug safari. Grab a magnifying lens, clear plastic container, trowel, and small paintbrush. Look for earwigs, ants, and crickets (as well as pillbugs, sow bugs, worms, and snails) under leaves and stepping stones. Look for caterpillars on leaves and butterflies near flowers. Look for aphids and ladybug beetles on roses, hibiscus, and citrus trees. Use the trowel to push fallen leaves aside or lift stepping stones. With the paint brush, gently push a bug into the container for viewing. Be sure to return your bug to its home when you done observing it.

If you go on a bug safari at night, keep in mind a porch light often works as a beacon for nectar-thirsty moths and hungry praying mantids.

Beating around a Bush

Your bug safari can be extended by looking for bugs in a bush. Shaking and sweeping, your goal is to gather your bug catch on the white sheet and then study it.

Materials: broom, white sheet, basic insect field guide, if available

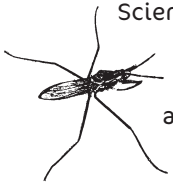
Procedure: Place the white sheet under the bush. Use the broom to "sweep" the leaves, gently knocking any bugs onto the white sheet. You can also gently shake the bush to shake loose any bugs. Once bugs land on the sheet, study your catch. Let your child count the numbers of different kinds of bugs. What bug shows up the most? The least? What is the prettiest bug? The weirdest looking bug? What is the biggest bug? The smallest?

If you have an insect field guide, use it to identify your catch. Share any interesting facts with your child.

When you are done with this activity, carefully pick up the sheet and shake the bugs back into the bush.

Safety tip: Some bugs can sting, bite, or pinch. It is best to watch them, but not touch them unless you are sure of their identify and behavior.

Insects and Spiders



Scientifically speaking, true bugs belong to an order of insects called Hemiptera. These animals have modified mouthparts for sucking and piercing and wings that fold over each other. Water striders, cicadas, and aphids are all true bugs.

Informally speaking, the word *bugs* simply lumps together small, creeping, crawling animals. Bugs, therefore, include animals with two main body parts and eight legs (spiders and relatives) as well as those with three main body parts and six legs (insects). It includes animals that have eight eyes (spiders) as well as those that have two compound eyes and "simple" eyes called ocelli (most insects). In other words, the body parts of bugs are all over the map!

Conservation message: Bugs are animals, just like pandas and puppies. Though some bugs are harmful, most are helpful. They pollinate our food crops, control problem bugs, supply food for other animals, like birds and bats, and help decompose organic material and cycle nutrients. Whether you like bugs or not, they share our world and help us survive.

Body Parts and Bug Eyes

Find an image of an insect and another of a spider from a magazine or book. Compare the two images and challenge your child to identify any differences between the animals. Count aloud the number of main body parts, legs, and eyes. Ask you child what the difference is between an insect and a spider.

Go on a second bug safari, this time to study insect anatomy. When your child sees an insect, challenge him or her to identify the body parts: three pairs of legs, one pair of antennae, one or two pairs of wings. Ask them why a worm isn't an insect. How about a pillbug?

Bug Jobs

Bugs play different roles in the environment. As a bug finds food or becomes food for something else, it is performing a service, often one we benefit from!

Pollinators: Butterflies and bees that sip the nectar of flowers are transferring pollen and fertilizing seeds. Many of the fruits and nuts we enjoy are the result of their work.

Trash collectors: Flies, wasps, and cockroaches eat decaying organic matter. In the process, they help break down the dead bodies of plants and animals and release nutrients back into the soil.

Hunters: Spiders and predatory insects, like the ladybug beetle, praying mantid, and green lacewing, control insect pest populations. Having these animals hang around your garden is a good thing!

Build a Bug House

Bugs make for wonderful short-term house guests if contained in a terrarium. You and your child can build a terrarium using household materials. Your house guest can come from your garden or a pet store.

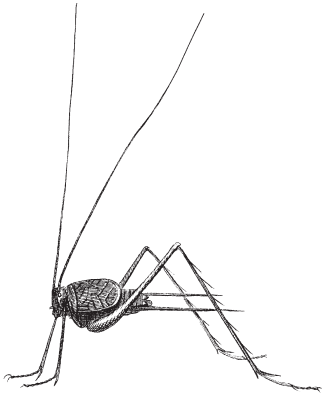
Materials: a clear plastic container, an appropriate substrate (soil, sand, or other media), water sufficient for your house guest, "terrarium furniture" such as small branch, small garden plants, appropriate food for your guest, and a water mister for maintaining moist conditions, if needed

Procedure: Look outside for a suitable terrarium tenant. If you cannot find one, you can usually find mealworms and crickets at a pet store. In small quantities, they are inexpensive and they make fine temporary house guests. With your child, research the needs of your animal. If you decide on crickets, they like sand, and even newspaper and egg cartons. Mealworms like wheat bran or cornmeal. Thin slices of apple, carrot, potato, and yam work well for food. Crickets also like to eat dry dog kibble. You can add a moistened piece of a sponge as a source of water.

Hosting a House Guest

Talk with your child about caring for the terrarium. Over the course of a week, make sure you and your child spend time each day observing the animals and seeing how the terrarium meets their needs. How do the animals' bodies and behavior help them eat and move? Have there been any changes in their life cycles? The crickets, for example, might lay eggs and the mealworms (which are the larvae of the darkling beetle) might change into pupae.

After a week or so, release any animal you collected back outdoors. The crickets and mealworms can be released here as well. Bluebirds love to eat mealworms. If it is appropriate and acceptable to your child, the mealworms could be placed on a plate where birds might see them.

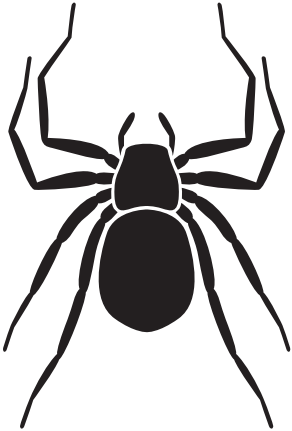


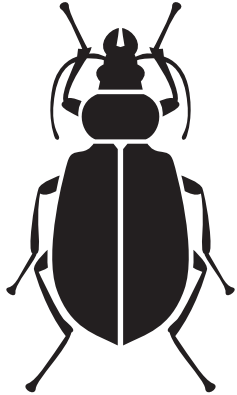
Build a Bug

Materials: construction paper, scissors, glue stick or glue

Procedure: For younger children, have an adult use the templates to sketch the outline of each body part on construction paper and cut the parts out in advance. In no particular order, arrange all of the parts on a flat space and challenge your child to build a bug—something no one has ever seen before. Have him or her select and glue various body parts onto a sheet of construction paper.

When your child has created the bug, ask him or her what the bug is named, where it lives, and what it eats. What "job" does it have in nature?





Citizen Science

Biologists conduct large research studies to catalog how many different kinds of animals exist regionally or even nationally. Sometimes they just focus on one particular species. Often they ask for help because the scope of their research is so large. "Citizen science" invites individuals to record their observations about a certain kind of animal on a website. By doing this, everyone can contribute important information to a central database that is analyzed by trained biologists.

Your family can become involved in several "bug-based" citizen science projects. The best way to find out about active ones in your area is to look them up on the Internet or check them out at www.thedailygreen.com. They include the Great Sunflower Project, Bee Hunt, Bee Spotter, Bumble Bee Nest Survey, Monarch Larva Monitoring Project, Monarch Watch, Journey North, Project Monarch Health, *Vanessa* Migration Project, the annual butterfly count conducted by the North American Butterfly Association, and Spider WebWatch.

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