



# The Forest Floor: A Living Layer

Activities for children and  
adults that build upon PlayTrail  
experiences outdoors



# The Forest Floor: A Living Layer

## **Activities for children and adults that build upon PlayTrail experiences outdoors**

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 PlayTrail 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.

## The layers of a forest

A forest is made up of layers of plants and trees. The lowest layer is the shady forest floor. Here, logs, moss, lichen, mushrooms, and fallen needles and leaves collect on the ground. This moist, nutrient-rich layer offers perfect living conditions for insects, slugs, worms, salamanders, birds, and the new seedlings of trees. The next layer is the herb layer where ferns, grasses, wildflowers, and young tree saplings occur. Deer and other browsers spend time munching at this level. A shrub layer composed of plants such as sumac, dogwood, and blackberry (depending on the region) grows higher than the herb layer. Many songbirds feed, rest, and nest at this level. Short trees often create a subcanopy layer, a perfect “jungle gym” for squirrels, jays, and warblers. Above this, the tallest trees create the forest canopy. This is the sunniest location in a forest. It is also where most of the forest’s photosynthesis (food-making) takes place.

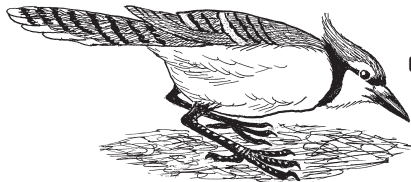
## A walk in the woods

Take a walk in a nearby forest or woodland. Find an area where plants and trees grow at varying heights. Have your child find the forest’s “rooftop,” or canopy layer, the “attic,” or lower subcanopy, the “upstairs,” or shrub layer, and “downstairs,” or herb layer, and the “basement,” or forest floor.

## Where the wild things are

While walking in the forest or woodland, look for wildlife, or signs of wildlife, at each layer.

Animals such as red squirrels and flying squirrels spend time high up in the canopy and subcanopy. Sometimes you can hear the chatter of a jay or songs and calls of different warblers. Where are



they coming from? One type of bird might be calling from within the subcanopy; another from the shrub layer. Who is hanging around the herb layer? The forest floor? The trunk and any cavities?

Each animal tends to spend time in a specific layer of the forest. This spreads the wildlife out, enabling certain animals to take advantage of specific food and space without directly competing with each other.

## Nature's Litter

The forest floor often is covered with duff, fallen trees and branches, mosses, fungi, and lichens. This shady, moist area is the nursery of the forest. Fragile young seedlings get their start in life here. Thanks to decomposers like mushrooms, the nutrients from dead plants (and animals) cycle back into the soil and into the seedlings' roots.

The duff is made up of fallen leaves and needles. This creates a protective habitat for slugs, millipedes, and smaller forest invertebrates like beetles, ants, pill bugs, and sowbugs.

## The stuff in duff

Setting a live trap on the forest floor can produce intriguing results for a young naturalist.

**Materials:** Plastic funnel, bait (banana slice, dog kibble, piece of broccoli), plastic jar, trowel, large sheet of white paper

**Procedures:** Dig a hole on the forest floor deep enough so your jar and funnel will be level with the ground. Drop the bait into the jar and place the funnel in the mouth of the jar. Set the jar in the hole and fill in the empty space around the jar with soil. Continue on your walk (after noting where your live trap is located) and then return the next day. Has anything fallen into the jar?

## Soil life

Empty the contents of the jar onto the piece of paper. Use the field cards below to start identifying your catch. When you are done with your inventory, return the animals back onto the forest floor.

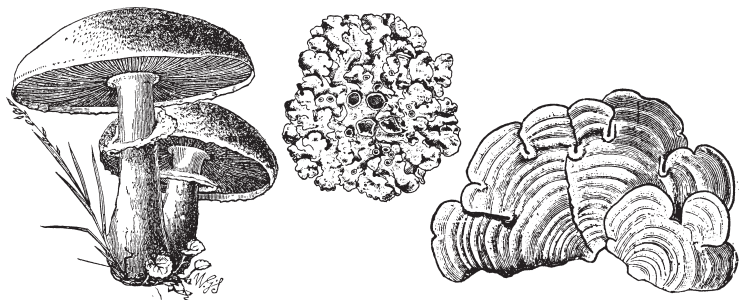


**Safety tip:** Since some soil invertebrates bite, pinch, or sting, do not touch the animals you collected in the jar.

# The wonderful world of fungi

Fungi represent a large collection of living things that are very different from plants. Fungi include yeast, molds, mushrooms, and toadstools. Since lichens are part fungi, they also belong on the list. Fungi grow without roots, stems, or leaves. They also lack chlorophyll and so, cannot produce their own food. Instead, they consume food by releasing enzymes that decompose other biological tissue. These decomposers are the trash collectors and recyclers of the forest. Without them, dead things would simply gather on the forest floor. The nutrients they contain would never be cycled back into the forest system.

Sometimes mushrooms grow in a circle known as a “fairy ring.” Although the exact cause of this growth pattern is still unknown, it is often associated with uneven grass growth above ground and fungal “roots” or mycelia below the ground. (But it’s more fun to think about fairy rings as the gateway to the world of elves!)



## Spore art

**Materials:** Store-bought mushroom; dark- and light-colored construction paper; glass bowl; knife; hairspray, polyurethane spray, or art fixative

**Procedures:** Show your child the cap of a store-bought mushroom. Explain that this activity only uses a mushroom from a market. Since some mushrooms are poisonous, no one should ever eat or touch a wild one. Cut the stalk from the cap of the mushroom with a knife. Show your child the gills on the underside of the cap. Mushrooms reproduce by releasing microscopic spores from within the gills. Select the piece of construction paper that best contrasts from the spores. Let your child place the cap on the paper (topside up) and cover it with the glass bowl. The next day remove the bowl and lift the cap without smudging the print underneath. You should be able to see a spore print that matches the position of all the gills. Let the print dry and then spray it with hairspray, polyurethane spray, or art fixative (in a well-ventilated room).

**Safety tip:** Since some mushrooms are poisonous, avoid eating, touching, and smelling all mushrooms you find in the wild.



**Conservation message:** Decomposers on the forest floor release nutrients forest plants need.

## Citizen Science

Biologists conduct large research studies to catalog how many different kinds of plants, animals, or even fungi exist in a region. 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 organism on a website. By doing this, ordinary people contribute important information to a central database that is analyzed by trained biologists.

There are several forest-based “citizen science” projects your family can become involved in. They include a project that identifies host resistance to nonnative insects, and another that evaluates the effects of tourism on forest lands. There is also a mushroom-based study called the Mushroom Observer that seeks information on large fleshy fungi such as mushrooms, as well as other fungi such as lichens, rust, and molds found in the wild.

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](http://www.thedailygreen.com). These projects often are conducted by natural history museums, botanical gardens, nature centers, the Forest Service, and the National Park Service.

## **More titles in the Playtrails series:**

*Ants: cooperative colonies*

*Bees: fantastic farmers*

*Birds: engineers by instinct*

*Butterflies: the magic of metamorphosis*

*Forest filtration: nature's air filter*

*Habitats: there's no place like home*

*Leaves: hidden colors*

*Pond Life: a busy ecosystem*

*Spiders: silk spinners*



by GameTime

**[www.gametime.com/playtrails](http://www.gametime.com/playtrails)**