



Butterflies: The Magic of Metamorphosis

Activities for children and
adults that build upon PlayTrail
experiences outdoors



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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 the 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.

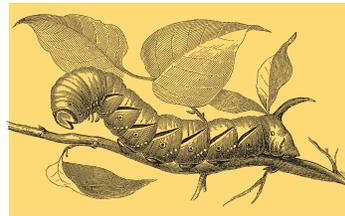
Butterflies: The Magic of Metamorphosis

The colorful wings that flutter in your garden probably belong to a butterfly. A butterfly is an insect that flies mainly in the day. Its counterpart, the moth, flies mainly at night. Butterflies do remarkable things. Some, like the monarch, migrate long distances. Others, like the common buckeye, display eyespots on their wings to deter predators. Still others, like the viceroy, mimic a bad-tasting butterfly, like the monarch, to avoid being eaten.

Yet what all butterflies hold in common is their amazing life cycle which follows a complete metamorphosis. Hatched from a tiny egg, a caterpillar (larva) eats a huge amount of plant matter and grows continuously. It sheds (molts) its exoskeleton four to five times to allow for all the growth. The caterpillar then starts to spin silk, attaches itself to a branch, and becomes a chrysalis (pupa). This is a resting stage. In a matter of days, what was once a fat, hungry caterpillar transforms itself from a pupa to a butterfly. It emerges from the chrysalis cuticle ready to pump fluid into its damp, limp wings and then take flight.

Eating machines

Do you remember spinning in the chrysalis spinner or climbing on the model caterpillar on the Playtrail? Much like a caterpillar entering the pupal stage, you had to wiggle your way into the spinner.



A caterpillar eats nearly nonstop for two or three weeks, gobbling “food plants” that are specific to its species. In two months’ time, the average caterpillar increases its body length nearly 2,000%. The food it eats produces an awful lot of caterpillar poop, or frass.

Go on a caterpillar safari in the late spring or summer. Search for signs of caterpillars—leaves with holes or black frass on the ground. If you find a caterpillar, watch it eat. Its jaws work like scissors and its mouth works like a grinder, mashing leaves into green pulp.

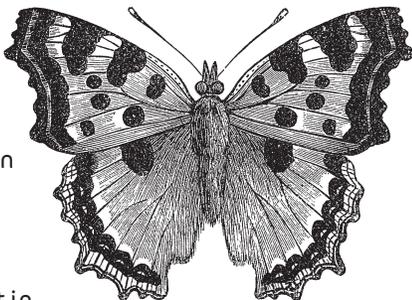
Safety tip: Avoid handling any caterpillar with hairs or bristles. Sometimes those bristles are stinging hairs that can get into your skin and hurt!

Growing Up Caterpillar

If you happen to find a caterpillar, such as a common banded woolly bear (the caterpillar of a tiger moth) you can raise it indoors. A large glass jar, equipped with a long twig and a screen lid, works well. Make sure you know what the caterpillar was eating when you discovered it and fill the jar with plenty of it each day. If you have a woolly bear, and you are not sure of its food, try dandelion or plantain. Once your caterpillar grows big and fat, it will become a pupa. Once it emerges as an adult and dries its wings, it will be ready to be released.

Tips for raising a butterfly or moth

Always have plenty of food for your caterpillar. Make sure your jar has a place from which the butterfly or moth can hang (like a screen lid) can hang from while it pumps fluid into its wings. Release it once it starts to flutter its wings. Keeping it in the jar too long will cause injury.



Sipping and Slurping

When a butterfly lands on a flower, it uncoils its long tongue, or proboscis, and uses it like a straw to sip nectar. Butterflies also sip water and some even sip sap or the liquid from rotting fruit.

A butterfly detects scents, wind, and sources of nectar using its antennae. While butterfly antennae come in different shapes and colors, most of them are knobbed at the tip. Most moths, on the other hand, have feathered antennae without knobs.

When a butterfly lands on a flower, it collects pollen. A butterfly may not collect as much pollen as a bee, but it moves it over a wider area. In this way, a butterfly plays an important role as a pollinator.

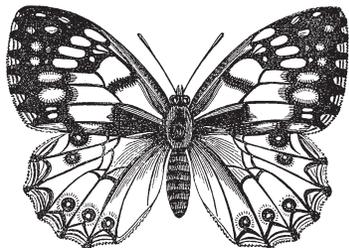
Making a nectar station

In late spring, summer, and early fall when butterflies are still active, offer your fluttering guests a fruit banquet. Cut up a mango, strawberries, and a banana. Place the fruit on a plate perched in direct sunlight outside. The fruit needs to rot! As it does, it will produce a gooey sweet syrup that attracts butterflies.

When a butterfly arrives at your banquet, watch it unfurl its long proboscis to sip the nectar.

Hanging out at the pool

You can make a small mud-puddling station on the ground near the fruit banquet. Fill a shallow bowl or flower pot saucer with sand. Pour water into it so the sand is completely moist. Sprinkle a few grains of salt on the sand and add a few pieces of fruit from your nectar station. Butterflies, particularly males, will be attracted to the water, salt, and gooey fruit.



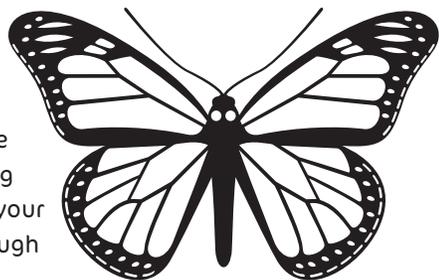
Flutter ring

Each stroke of a butterfly's wings creates lift. It also creates a lurching pattern that is far from a smooth flight, making it difficult for predators to predict the path. A butterfly doesn't fly as much as it flutters.

Materials: Scissors, a pipe cleaner, tape, and brightly colored construction paper

Procedure: Cut out a piece of construction paper using the template as the guide. Fold the butterfly in half along the body and crease the fold. Poke a hole through two circles near the head. Thread a pipe cleaner from the bottom of the model

through the holes. Leave space for a child's finger. Place your child's finger through the pipe cleaner and twist the pipe cleaner in place once or twice. Fold the remaining strands of pipe cleaner so they lay flat on the butterfly's body and become its antennae. Trim the pipe cleaners to size and make them knobbed. By moving your hand up and down, your butterfly will flutter through the air.



Butterfly-friendly plants

Over their life, butterflies look for two different food types: nectar plants and larval food plants. Nectar plants produce nectar-rich flowers. Larval food plants supply leaves and sometimes flowers and seeds that specific caterpillars will eat. When a butterfly is ready to lay eggs, she will look for those plants that offer food for the caterpillars once they hatch from eggs. Sometimes there is only one food plant the larvae of a butterfly will eat. Monarch larvae, for example, only eat the leaves of milkweed.

Butterfly Gardening

You can create a butterfly garden in a space as small as a patio. Using the following plant guide (or information from butterfly gardening books or the Internet) take a trip to a garden supply store with your child and pick out a few plants for your garden or deck. Do some research in advance so you know the needs and growth patterns of the plants you are interested in, as well as the butterfly species in your region.

Nectar plants:

Aster, bee balm, black-eyed Susan, butterfly bush, butterfly weed, day lily, marigold, milkweed, purple coneflower, Queen Anne's lace, sunflowers, verbena, and zinnia

Larval food plants and butterflies:

Aster (pearl crescent), baby tears (red admiral), everlasting (American painted lady), lupine (silvery blue), mallow (painted lady), milkweed (monarch, queen), Queen Anne's lace (black swallowtail), snapdragon (buckeye), violet (fritillaries)

With your child, plant your plants in pots or in the ground in a sunny, wind-protected place. Visit them on a regular basis through the seasons and keep a butterfly garden journal.

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, ordinary people contribute important information to a central database that is analyzed by trained biologists.

There are several butterfly-based "citizen science" projects your family can become involved in. 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. The following citizen science butterfly monitoring projects can be found online: Monarch Larva Monitoring Project, Monarch Watch, Journey North, Project Monarch Health, Vanessa Migration Project, and the annual butterfly count conducted by the North American Butterfly Association.

Conservation message: Monarchs, as well as painted ladies and red admirals, migrate each year. Protection of their winter and summer habitats, as well as their food sources, is key to their survival.

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Pond Life: a busy ecosystem

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