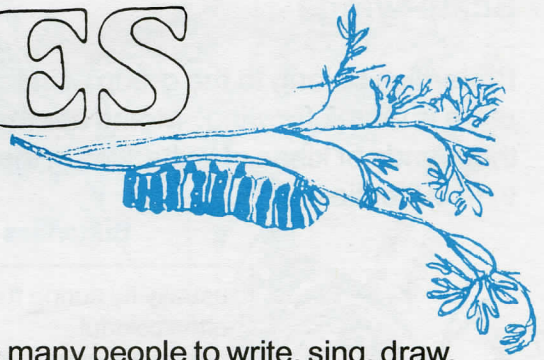


# NATURE DETECTIVES

Summer 2004



## Butterflies Flutter By

The beautiful wings and fluttery flight of butterflies inspire many people to write, sing, draw, paint, sculpt, and take photographs. Designers make clothing and jewelry patterned after butterfly wings, and some folks decorate their homes and yards with butterfly images.



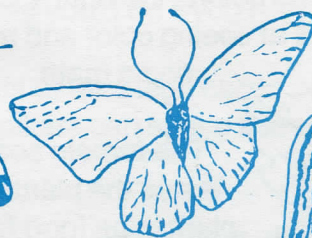
*Who would name you butterfly?  
That name is simply wrong!  
I will call you flutter-by,  
And sing for you a song*

Make up more words and a musical tune to go along, and you will have your own butterfly, flutter-by song...

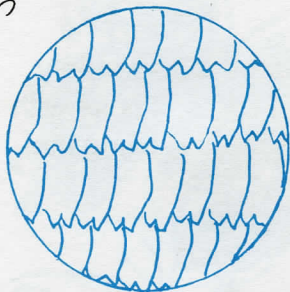
## Wings of Many Colors

Pick a sunny day with no wind and go butterfly searching. It is easiest to get close to butterflies in the early morning before their flight muscles are warmed up. Keep your shadow off the butterfly, and try looking at the wings from different angles. Does the direction you are looking change the colors in the wings?

Butterfly wings are made of teeny scales that overlap like itty-bitty roof shingles. Some colors, like black, brown, red, orange, yellow, and white, are the colors of the scales no matter how you look at them. Other colors, such as blue, green, and purple, depend on how light reflects off the wing scales. From some angles, these colors can't be seen at all.



SCALES



As butterflies flap through wind and weather and are chased by predators, the wing scales wear off and the butterflies become ragged and less colorful. Never grab for a butterfly with your hands. Powdery scales fall off easily when touched, and the oil from your hands damages them, too.

Almost two hundred different kinds of butterflies live in Boulder County. They do more than look pretty. Butterflies carry pollen from flower to flower, helping plants make seeds. Butterflies or their caterpillars are important food for the predators that eat them. Butterflies that taste good tend to be the fastest fliers and can fly faster than birds.



## Scale-wings

Butterflies belong to the group of insects named *Lepidoptera*. *Lepido* is Greek for scale and *ptera* is Greek for wing. Moths are the other members of the scale-wing group. There are thousands of kinds of butterflies in the world, and there are nine times more kinds of moths than butterflies!

### Butterflies

### Moths

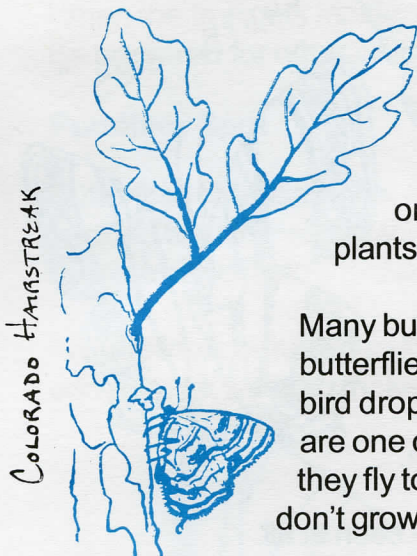


usually fly during the day  
often colorful  
antennae, usually slender, with slight knob at end  
wings held out behind back at rest

usually fly at night  
usually dull colored  
antennae, often feathery, with no round knob at end  
wings flat over back at rest

## Butterfly Work

A butterfly has just one job. Its job is to find a mate and lay eggs. It seeks another butterfly with the right pattern of wing colors, the right scent, and the right dancing flight. Good thing butterflies are experts at seeing color and movement because most have only a few days to find a mate.

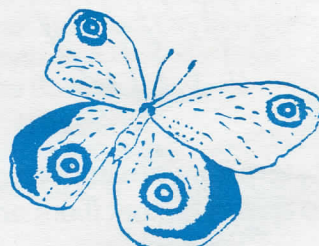


The female searches by taste for a plant to lay her eggs. She tastes the plants with sensors on her feet until she finds the exact plant to be food for her baby caterpillars. Monarch caterpillars eat only milkweed leaves, just as most caterpillars eat certain kinds of plants and no others.

Many butterflies drink sugary flower nectar for their food. Not everything butterflies eat sounds as yummy as nectar. Mourning Cloak butterflies sip bird droppings and tree sap. Hairstreak butterflies eat tree sap too. They are one of the few butterflies that fly in rain because they suck in raindrops as they fly to dilute the sap. Luckily, butterflies don't have to eat a lot since they don't grow during their short adult lives. They just need energy to do their work.

## Butterfly Defense

Butterflies can be well camouflaged by looking like leaves or tree bark. Some will suddenly open their wings to startle predators with bright colors or even eye-shaped spots. Those with eye spots are often found with a little bite hole near the eye spot. A bird thinks it is biting the head and only comes away with a tiny piece of the wing, and the butterfly escapes. Birds may think the back end of a Gray Hairstreak butterfly is the head. When the wings of this butterfly are closed, hair-like scales on the wing tips look like antennae. The bright red-orange colors of the poisonous Monarch butterfly serve as a reminder to enemies that Monarchs taste bad.

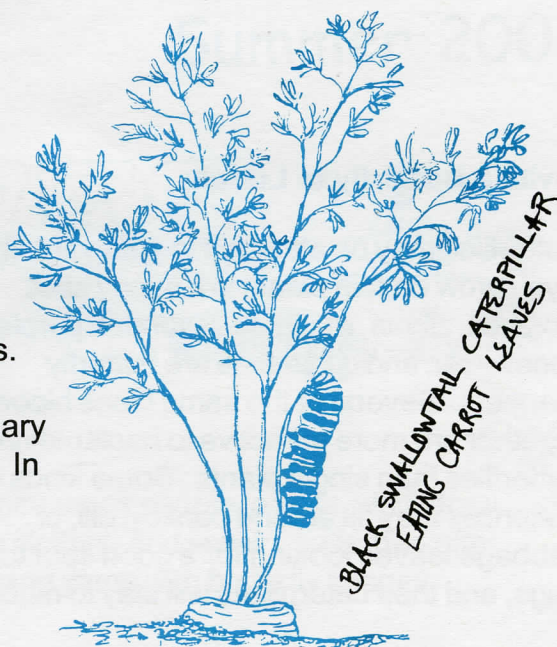


EYE SPOTS



## Caterpillar Defense

Yucky-tasting Monarch caterpillars eat toxins in milkweed and pass that toxicity on to the adult butterfly. Some caterpillars are the color of the plants they eat to avoid being seen by their enemies. Other kinds have eye spots on their tails to confuse predators. Some caterpillars' bodies secrete a sugary waste product called honeydew that ants like to eat. In return for their sweet meal deal, the ants guard the caterpillars from spiders, parasitic wasps and flies.

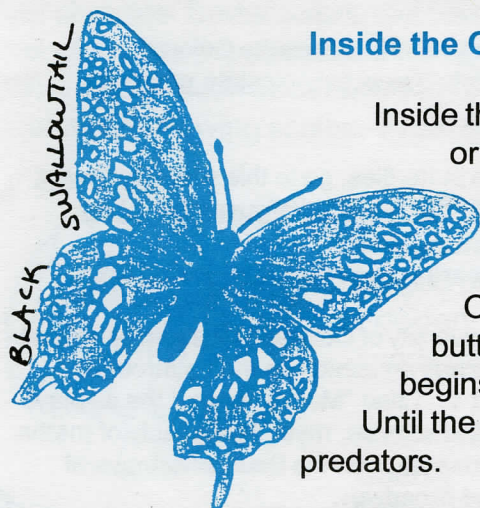


## Caterpillar Work

Eat, eat, and eat more, that is the job of a caterpillar. The first thing it eats is its own egg case. It eats to grow huge and store all the energy needed to turn into a butterfly. The weight of a caterpillar can multiply 3000 times or more by the time it is ready to become an adult butterfly. Imagine how big you'd be if you grew that much.

Besides their six regular legs, caterpillars have lots of fake legs called prolegs. Prolegs help the caterpillar hold on to leaves and twigs. Caterpillars can spin a line of silk, like spider silk, to help them rappel from leaf to leaf.

A caterpillar grows until it becomes tight inside its skin. At this point, the cap around the head pops off, and the rest of the skin splits down the back. The caterpillar crawls out of its old skin and may gobble it up. The new skin has more growing room. Caterpillars shed four to seven times before they are ready to become butterflies. When the last covering is shed, the new outside is harder and no longer looks like a caterpillar. Now, it is called a chrysalis, and it might look like a leaf or even like a piece of jewelry.



## Inside the Chrysalis: From Soup to Butterfly

Inside the chrysalis, the caterpillar body dissolves into a thick soup or jelly, and amazingly, this soup completely re-shapes into the butterfly body. Depending on conditions such as temperature, the change can take days or months.

Once the butterfly is fully formed, the chrysalis splits, and the butterfly comes out head-first. Its body is fat with fluid, which it begins to pump through veins in its crumpled up wings.

Until the wings are fully expanded and dry, it is an easy target for predators.

The butterfly's tongue is in two straight pieces. The butterfly fits the pieces together and rolls the tongue up under its face. It is ready to unroll as soon as the butterfly finds food to drink.



## Invite a Butterfly to Lunch

Butterflies may be attracted to your yard or porch if you grow certain plants in a sunny spot. Cosmos, zinnia, marigold, lavender, purple coneflower, and columbine are butterfly magnets. Several of the same types blooming together are more attractive to nectar-loving butterflies than single plants. Some kinds of butterflies may flit around parsley, dill, or cabbage leaves looking for a good spot to lay eggs, and their caterpillars will stay to nibble the plants.

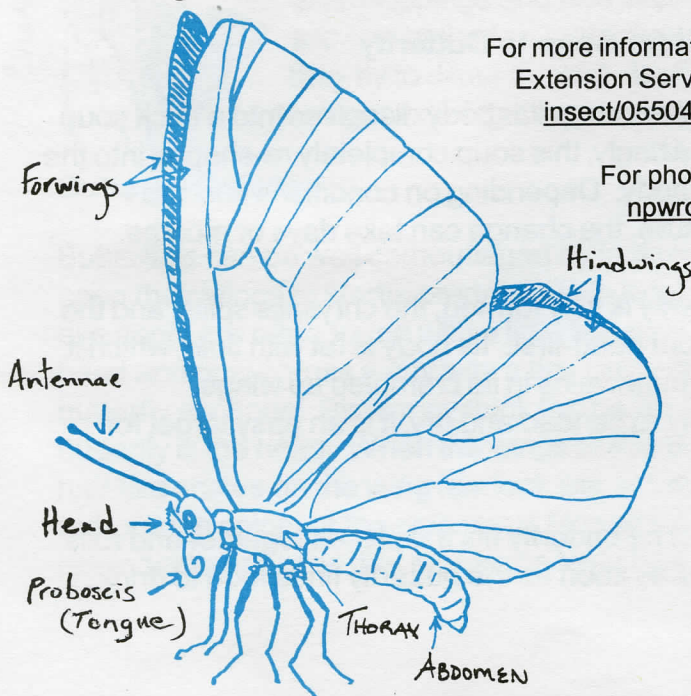
If you have no room for plants, you can try a butterfly juice stand. In a sunny spot, set out a wedge of melon or peeled banana or strawberries. The fruit has to be very ripe to ooze juice because butterflies only drink the liquid. To make the fruit juicier, mix 2-3 teaspoons sugar in 1/2 cup water and pour the mixture over the ripe fruit. When the fruit gets moldy, replace it with fresh ripe fruit. Be prepared for other visitors such as flies or wasps at your juice stand.



## Puddling Spot

Butterflies often gather at a mud puddle or wet stream bank. They are not thirsty. They are sucking up minerals dissolved in the mud. The activity is called "puddling," and it is done more by male butterflies.

Try making a butterfly puddling spot. Put a layer of sand in a pie pan or other shallow dish and add enough water to make it moist. Put it in a sunny spot and don't let it dry out.



For more information on attracting butterflies, see the Colorado Extension Service web page. <http://www.ext.colostate.edu/pubs/insect/05504.html>

For photos of Colorado butterflies, go to this site. <http://www.npwrc.usgs.gov/resource/distr/lepid/bflyusa/co/toc.htm>

## Discovering the Nighttime Relatives

The University of Colorado Museum of Natural History has an exhibit on moths through August 1. Titled "Moth Matters," the displays cover the science, myth, and beauty of moths. The Museum is on the Boulder campus at 15<sup>th</sup> and Broadway. The phone number is 303 492-6892. <http://cumuseum.colorado.edu>

