



THE LIFE CYCLES of Butterflies

From egg to maturity, here's a visual field guide to America's six favorite butterflies.

WRITTEN BY JUDY BURRIS AND WAYNE RICHARDS



Photographer: Andrew Drake

THERE'S SOMETHING VERY SPECIAL ABOUT BUTTERFLIES. Maybe it's their gentle nature, striking colors, and graceful flight. Butterflies have symbolic meaning in many cultures, and they've inspired artists and poets over the centuries. They've been written into fairy tales, woven into tapestries, and painted on pottery. Butterflies touch the hearts of young and old alike. And if one actually lands on you, you somehow feel honored, as if you were singled out as an especially trustworthy companion.



Tiger Swallowtail
(*Papilio glaucus*)

Have you ever seen a group of large butterflies gathered at a puddle? They could be tiger swallowtail males, sipping the salts and minerals they need for reproduction. You'll recognize them by tigerlike yellow and black stripes across their wings, and the long, thin, black "tail" that extends from each lower wing.

1. Look for a single, round, green egg laid on the top of a leaf. The egg blends in well with the surrounding foliage.
2. At first the caterpillar is brownish with a white midsection. Some people mistake caterpillars at this stage for bird droppings.
3. As it sheds its skin, the caterpillar becomes a beautiful light green with two small yellow-orange and black eyespots. The front of the caterpillar looks swollen compared to the back.
4. Caterpillars use silk to fold a leaf to hide in. This isn't the first stage of making a chrysalis; it helps the caterpillar escape the notice of a predator.
5. The caterpillar turns dark brown when it is ready to pupate. A silk thread holds it upright on a stick as it prepares to shed its skin one last time.
6. The chrysalis may be green or shades of brown. In the autumn it enters diapause until spring, when the butterfly emerges. These two chrysalises look like branches on the twigs.
7. The male tiger swallowtail is yellow with bold black stripes, like a real tiger.

Field Notes

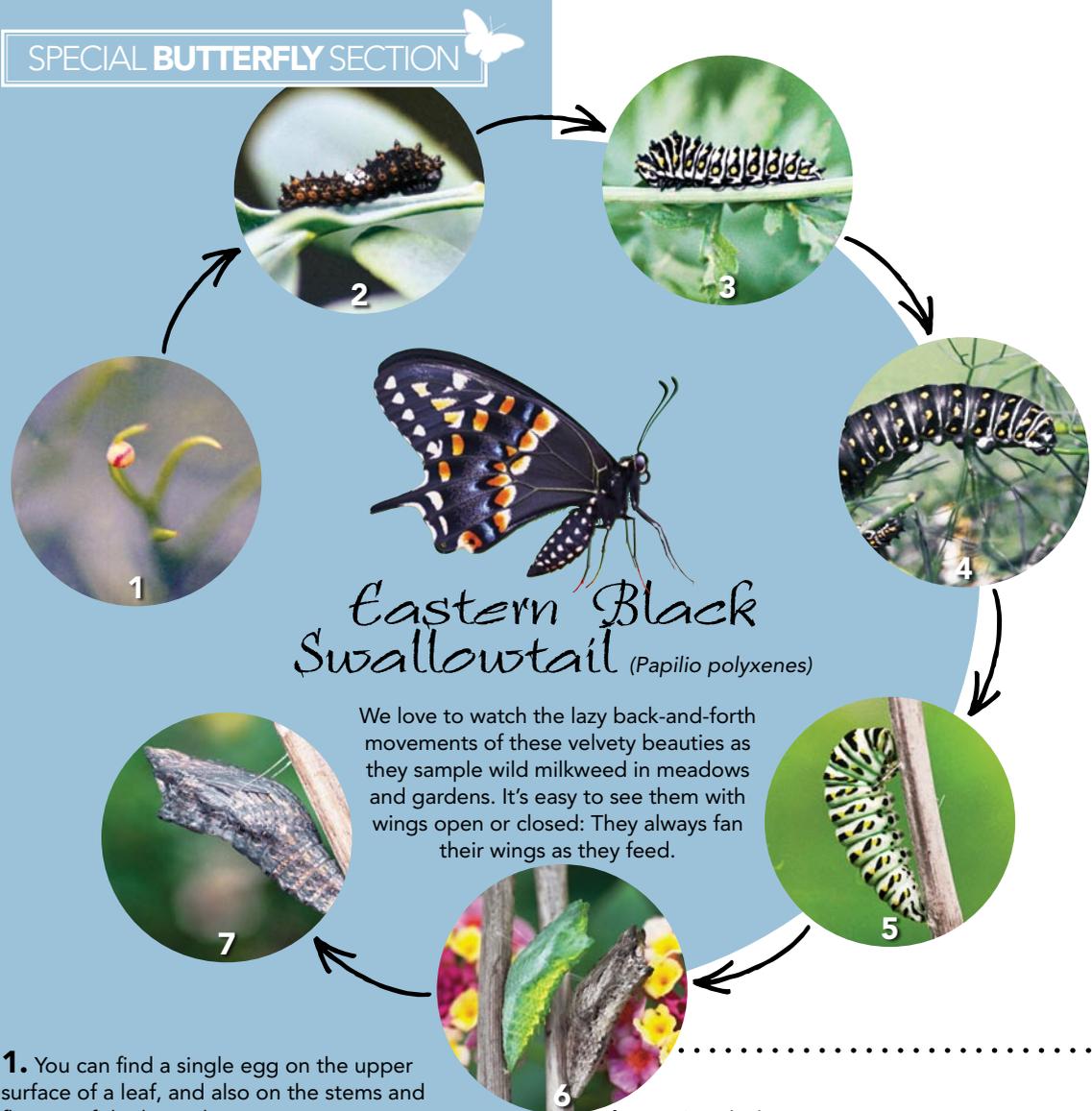
- A disturbed tiger swallowtail caterpillar will sometimes rear up and head-butt anything that gets close.
- This butterfly's long tongue enables it to reach into tubular flowers and sip nectar that other butterflies can't reach.
- Most tiger swallowtails lay eggs in treetops, one egg to a leaf. Locating the eggs and caterpillars can be difficult unless you keep your trees pruned. To find a caterpillar, look for a curled-up leaf being used as a hiding place. Partially eaten leaves may also give away the caterpillar's location.
- Several types of trees, including sweet bay magnolia and tulip poplar, are common hosts. The sweet bay is a relatively small tree with a rather sparse leaf count. The tulip tree, on the other hand, can grow to be several stories tall and requires more space in your yard.

Host Plants

Sweet bay magnolia
Tulip poplar

Nectar Plants

Coneflowers
Mexican sunflower
Petunia



Eastern Black Swallowtail *(Papilio polyxenes)*

We love to watch the lazy back-and-forth movements of these velvety beauties as they sample wild milkweed in meadows and gardens. It's easy to see them with wings open or closed: They always fan their wings as they feed.

1. You can find a single egg on the upper surface of a leaf, and also on the stems and flowers of the host plant.
2. In its earliest stages, the caterpillar is dark and covered in tiny spikes. It has a patch of white on top, called a saddle.
3. As the caterpillar matures, it gradually loses its spikes and becomes striped and spotted.
4. Usually the caterpillars are green with black bands, but sometimes we see a black one like this. All have yellow spots on each body segment.
5. When the caterpillar is ready for the next phase, it hangs upright on a twig and spins a silk thread, or girdle, around its body.
6. The chrysalises may vary in color from bright green and yellow to dull brown and tan. In the fall they go into diapause until spring.
7. Just before the butterfly is ready to emerge, the chrysalis turns clear and you can see the wing markings.

Field Notes

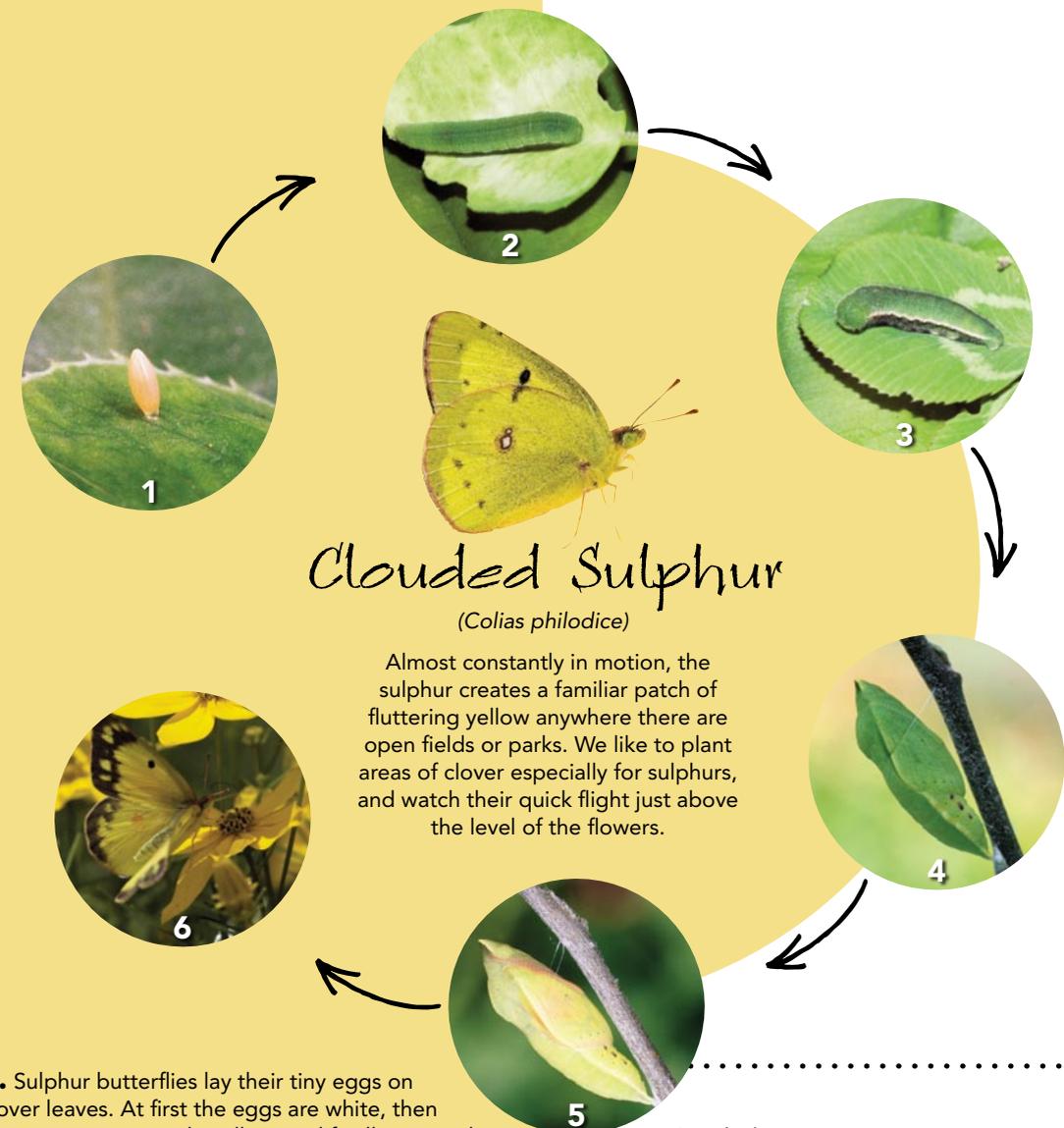
- Like other swallowtail caterpillars, the black swallowtail caterpillar (also known as the parsley caterpillar) has a forked orange scent gland, called an osmeterium, that pops out to emit a nasty odor when the caterpillar feels threatened.
- The black swallowtail's coloration is much like the pipevine swallowtail's. The fact that the pipevine swallowtail tastes bad may deter some of the black swallowtail's predators.
- The male black swallowtail has a row of large, light-color spots across the middle of his wings.
- The female has much smaller spots across her wings, and she wears a larger patch of beautiful blue scales on each lower wing.
- Many kinds of plants are hosts to the black swallowtail, but we've had the most luck with fennel, dill, and Queen Anne's lace (also called wild carrot).

Host Plants

Dill
Fennel
Queen Anne's lace

Nectar Plants

Butterfly bush
Orange butterfly weed



Clouded Sulphur

(Colias philodice)

Almost constantly in motion, the sulphur creates a familiar patch of fluttering yellow anywhere there are open fields or parks. We like to plant areas of clover especially for sulphurs, and watch their quick flight just above the level of the flowers.

1. Sulphur butterflies lay their tiny eggs on clover leaves. At first the eggs are white, then become cream or pale yellow, and finally turn red before the caterpillars hatch.
2. The bright green caterpillar is almost invisible to the casual observer because it likes to lie along the middle vein of the leaf.
3. This small species grows to be only about an inch long. You could have a lawn full of them and not even know it.
4. The pale green chrysalis is suspended from a twig by a thin silk thread; it is also attached by a patch of silk at the rear end. At this stage you could easily mistake the chrysalis for a leaf.
5. Before the butterfly emerges, its chrysalis takes on a pink tint and the wing pattern inside becomes visible. See the dark pink "zipper" at the top? This section splits open to allow the butterfly to crawl out.
6. The open wings are bright yellow with black trim; each sports a black dot. Females, like the one shown here, have yellow dots in the top black wing margin; males do not.

Field Notes

- Clouded sulphur caterpillars are as green as grass and almost impossible to find on their host plant. Unless you actually witness a female sulphur butterfly laying her eggs, you will probably never see the tiny eggs or the resulting caterpillars.
- More of a challenge to photograph than other species, we find the sulphur skittish, and its flight pattern seems to go all over the place!
- Puddles are attractive to sulphurs; they like the salts they find there.
- Females may be yellow or white. You can tell a cabbage white butterfly from a sulphur by the pink edges around the sulphur's wings and the characteristic silver spot on the hind wing's underside.

Host Plants

White clover

Nectar Plants

Dandelion
Milkweeds
Tall verbena



Painted Lady

(*Vanessa cardui*)

The lovely painted lady is a regular visitor to our flower gardens. This dappled beauty makes frequent stops to sip nectar or to tease us by perching on a shoulder or hat brim. The playful antics of this social butterfly add a bit of fun to a hot day of gardening.

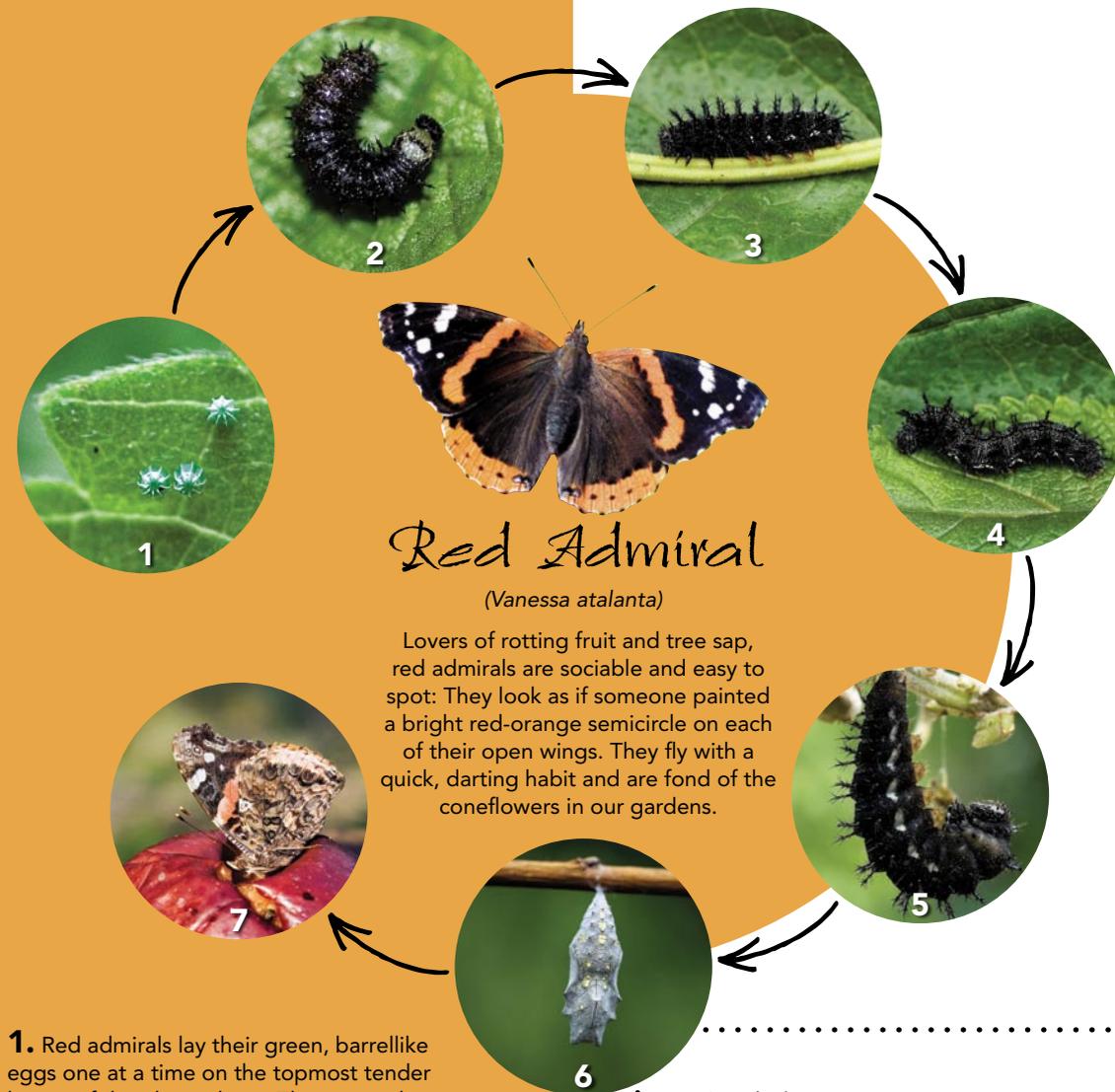
1. The painted lady female lays her eggs one at a time on the top surfaces of leaves. The eggs are a lovely blue or green and have ridges all around.
2. The caterpillars don't seem to mind eating together as a group. As they munch, they spin loose webs of silk around the leaves, which help them hide from predators.
3. The fully grown caterpillar is mostly black and has lots of pale hairs and branched spines.
4. When it is time to pupate, the caterpillar hangs upside down from a twig or plant stem and sheds its skin one last time.
5. The tan chrysalis is covered in shiny gold dots that make it look more like a piece of jewelry than an insect.
6. The orange wing markings are visible through this chrysalis. The butterfly will be ready for eclosion (emergence) soon.
7. See the four eyespots on the lower wing? They prove that this is a painted lady; the American lady has only two.

Field Notes

- Professional breeders and schools often choose to raise painted lady caterpillars because they can be fed an artificial diet. This saves the trouble of growing particular host plants and makes the painted lady easy to rear.
- Because its favorite host plant is wild thistle, the painted lady used to be called the thistle butterfly. Their worldwide presence has allowed the painted lady to take up residence throughout North America, Asia, Africa, and Europe. We don't suggest planting thistle in your garden, however, because it can irritate your skin and tends to be invasive.
- In autumn painted ladies fly south because they can't survive the harsh winter weather up north. We see them in our yards in greatest numbers in September.

Host Plants
Hollyhocks
Thistle

Nectar Plants
Coneflowers
Tall verbena



Red Admiral

(*Vanessa atalanta*)

Lovers of rotting fruit and tree sap, red admirals are sociable and easy to spot: They look as if someone painted a bright red-orange semicircle on each of their open wings. They fly with a quick, darting habit and are fond of the coneflowers in our gardens.

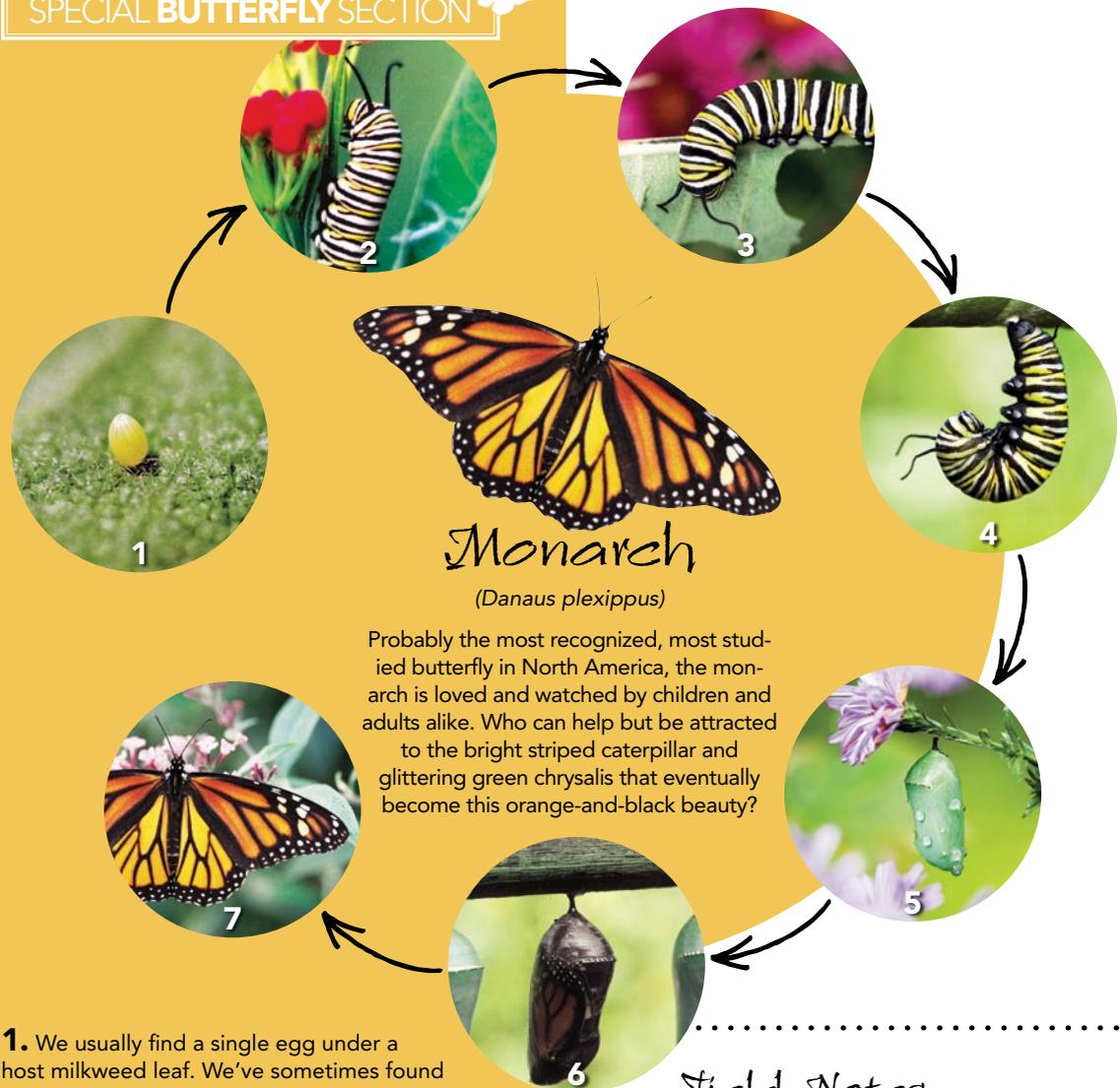
1. Red admirals lay their green, barrel-like eggs one at a time on the topmost tender leaves of their host plants. These eggs have been laid on a false nettle.
2. Tiny at first, the blackish caterpillar has a black head covered in hairs.
3. As the caterpillar grows, it develops many branched spines that may help protect it from predators.
4. More-mature caterpillars may have orange spots around their spines. You may also find caterpillars that show patterns of white or yellow.
5. Unlike those species that wander far away, the red admiral caterpillar may stay on its host plant until it becomes a butterfly. When it is fully grown and ready to enter the chrysalis phase, the caterpillar hangs upside down to shed its skin.
6. The chrysalis is various shades of brown, decorated with shiny metallic gold spots.
7. Mottled brownish wings provide good camouflage in the woods. Instead of eyespots, this butterfly has blue heart shapes on its inner wings.

Field Notes

- The caterpillar may spin silk threads onto a host plant's leaf, folding it over to create a tent to hide in.
- Adult butterflies drink flower nectar but prefer to sip rotting fruit juices and tree sap. If the rotting fruit has fermented, the butterflies can get drunk!
- Because they crave salt in human sweat, don't be surprised to find a red admiral sitting on your shoulder in the garden.
- Red admirals fly south, sometimes in large numbers, when the weather starts to cool down in the fall. In the spring they wander back to the northern states looking for food.

Host Plants
False nettle
Pellitory

Nectar Plants
Butterfly bush
Coneflowers



Monarch

(*Danaus plexippus*)

Probably the most recognized, most studied butterfly in North America, the monarch is loved and watched by children and adults alike. Who can help but be attracted to the bright striped caterpillar and glittering green chrysalis that eventually become this orange-and-black beauty?

1. We usually find a single egg under a host milkweed leaf. We've sometimes found them on milkweed flowers and seedpods.
2. The bright stripes warn predators that this caterpillar is not a tasty treat.
3. After it hatches, the caterpillar eats the milkweed's leaves. The plant's toxic glycosides are absorbed into the caterpillar's body, and do not hurt it.
4. When the caterpillar is ready for the next phase, it hangs upside down from a patch of silk that it has spun.
5. The pale green chrysalis is adorned with shiny golden dots. The chrysalis matches the color of plant leaves.
6. Just before the butterfly emerges, the chrysalis becomes transparent and the wings can be seen.
7. The monarch's wing veins, deep black against a burnt orange background, are visible whether the wings are open or closed. Large and small white dots are sprinkled around the edges of the wings and all over the monarch's black body.

See Resources on page 108.

Field Notes

- Four black filaments adorn the caterpillar's body.
- Monarch caterpillars absorb toxins from milkweed plants into their bodies. The toxins will sicken birds, lizards, and mammals, but predators like wasps and spiders are immune to them.
- The green chrysalis of the monarch looks almost identical to that of the queen butterfly.
- The only butterfly that migrates north and south every year is the monarch, although no monarch makes the trip in both directions.
- Host plants for the monarch are those belonging to the milkweed family. The wild milkweeds do not transplant well and should be collected only as seedpods in the fall.
- A group called Monarch Watch tags monarchs before they migrate so they can be tracked when they reach Mexico.

Host Plants

Bloodflower
'Ice ballet' milkweed
Pink swamp milkweed
Wild milkweed

Nectar Plants

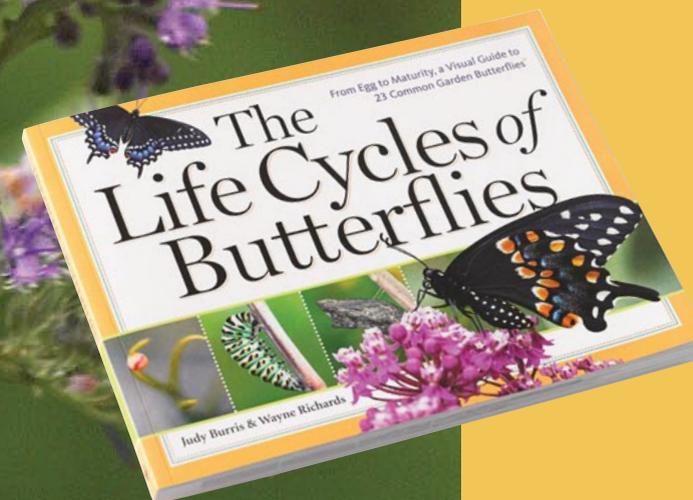
Orange butterfly weed

To progress from egg, to caterpillar, to chrysalis, to gorgeous winged creature, all in the course of a week, is a rare and wonderful achievement.



Text and images are excerpts from *The Life Cycles of Butterflies: From Egg to Maturity, a Visual Guide to 23 Common Garden Butterflies* by Judy Burris and Wayne Richards. Storey Publishing; 2006; \$16.95

To order a copy, call 800/441-5700.



Photographers: Marty Baldwin (monarch); Jason Donnelly (book)