

An Emerging Butterfly

BUTTERFLIES



As it changes from an egg to an adult, the butterfly reinvents its form on several different occasions. This process or cycle is called Metamorphosis. The last phase of this process is when the adult butterfly emerges from the chrysalis. Within the chrysalis such tremendous changes have taken place that a new creature seems to have been created that appears nothing like the caterpillar that it once was. During the chrysalis phase the insect had to rely entirely on its stored fat for the energy needed to transform into a butterfly. The emerging butterfly shown here is a Blue Morpho, *Morpho peleides*, from Central and South America.

Ready to Hatch

1 Hours before emerging, the butterfly is still growing. At this moment, some of the Blue Morpho's structures can be seen through the skin of the chrysalis. The dark area is the butterfly's wings, and traces of the antennae and legs are visible toward the bottom of the chrysalis. It takes about eighty-five days after the egg is laid for a Blue Morpho adult to emerge.

First Stage

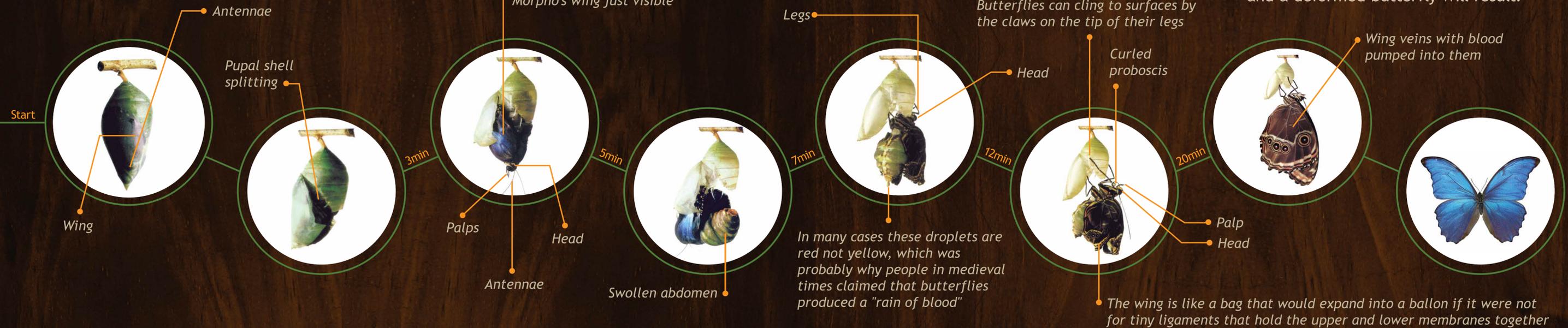
2 Once the insect has completed its metamorphosis and is ready to emerge, it begins to pump body fluids into its head and thorax. This helps to break the chrysalis along certain weak points so that the adult can begin to force its way out with its legs.

Head and Thorax Emerge

3 Once the skin of the chrysalis is broken, expansion can proceed more rapidly. The inflated appearance is due not only to the body fluids in the head and thorax, but also to the air the insect takes in. Although by now the antennae, head and palps (sensory organs for tasting food) are visible, the wings are still too soft and crumpled for proper identification.

Completely Free

4 Having pushed its way out of the chrysalis, the butterfly's body now hangs free. At this stage, the butterfly's exoskeleton (the outside skeleton of all insects) is soft and still capable of more expansion. If, for any reason, the butterfly is damaged at this stage, or confined (perhaps by a thoughtless collector), complete expansion is not possible; all the parts will harden and a deformed butterfly will result.



Steadily Growing Wings

5 With the butterfly now out of its pupal skin, the most important actions are the elimination of wastes from the abdomen and the expansion of the wings. As it pumps blood from its body into its wings, a butterfly will usually hang head-up so that the pull of gravity helps to stretch the crumpled wings. Once the butterfly has pushed its way clear of the chrysalis with its legs, it expels the waste liquid that accumulated in the body during the pupal stage.

Reaching Full Size

6 By now, the veins in the wings have almost been completely filled with blood, and it is possible to see the wings visibly expanding. The expansion must take place fairly rapidly or the wings will dry before they reach their full size. If this happens the butterfly may be unable to fly. The butterfly's wing patterns are now clearly visible, as are its head, palps and proboscis.

Waiting to Fly

7 After a period of ten to twenty minutes, the wings reach their full size. The butterfly now waits for its wings to harden properly before it attempts to fly. After about an hour, the butterfly begins opening and closing its wings to practice the movements necessary for flight. It usually flies straight to a flower or another food source for its first meal. Butterflies don't fly at night so if it is evening, they will rest and fly the following morning.

Fly Away Butterfly

8 An adult Blue Morpho butterfly now displays its dazzling color patterns as it opens and closes its wings. The eye spots on the bottom of the wings are not only for camouflage but also mimic a snake's eyes and are an anti-predator defense against rodents. The bright blue coloring on the top of the wings plays a part in their mating ritual.