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A life of Transformation

Butterflies are part of a group of insects that undergo complete metamorphosis: they have four different stages in their lives, all of which are different in many aspects. Catterpillars (or larvae) emerge from eggs and spend their time eating huge amounts of plants. Chrysalis (or pupae) remain almost completely immobile and it is only after the adult emerges and flies that further feeding happens, through a liquid-sucking organ called a proboscis. How does all this happen?

Heliconius erato, ecuadorian amazon

The butterfly life cycle: *Heliconius erato*

1

A female butterfly deposits her eggs on an appropiate host-plant. This is determined by a combination of visual, olfatory and tactile cues. Eggs have all kinds of shapes, and sizes, and are unique to each family or genus.

2 & 3

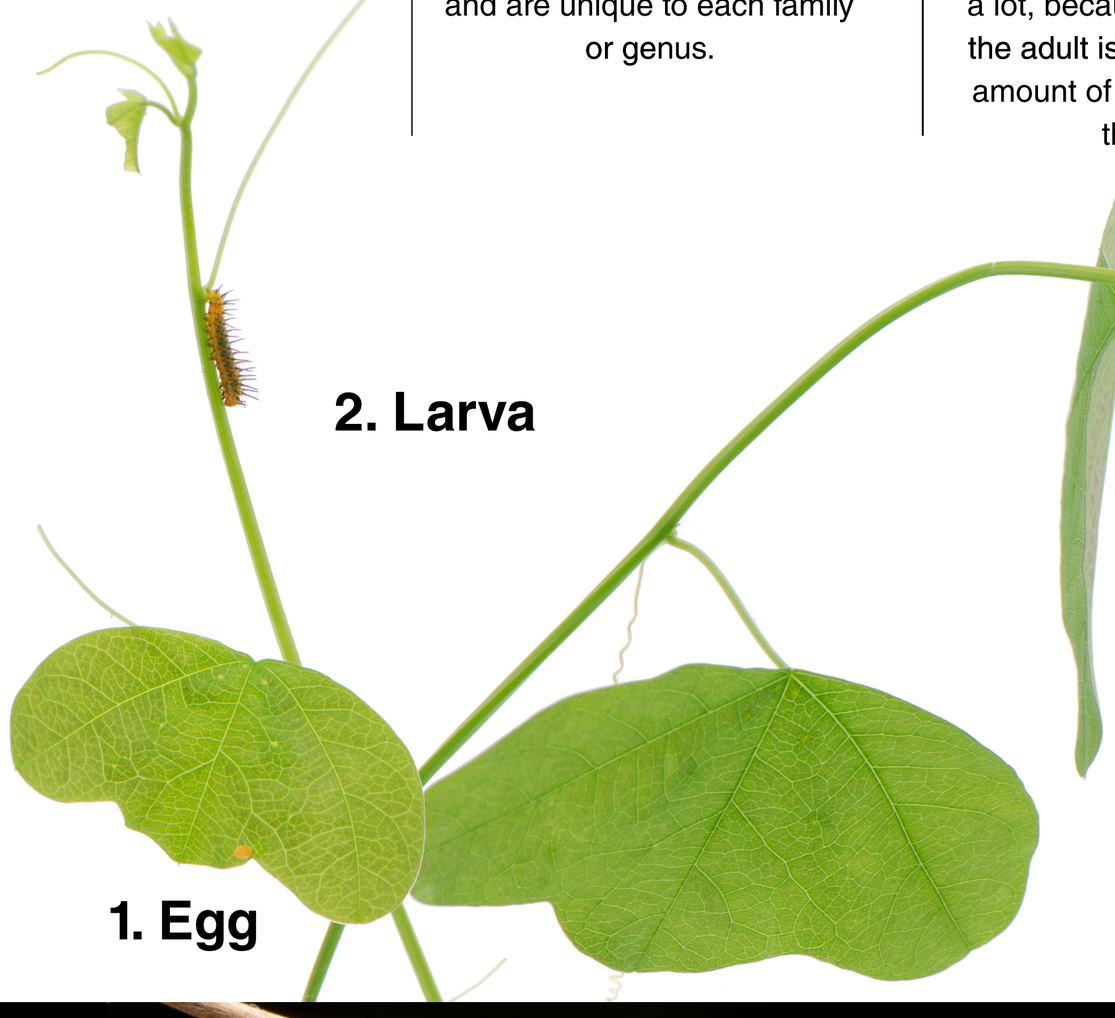
The larva uses its mandibles to gnaw through the top of its tough shell and start eating the leaves, which provide protein, fat, carbohydrates and vitamines. The larva needs to eat a lot, because the final size of the adult is determined by the amount of food consumed by the larvae.

4

The chrysalis forms under the exoskeleton and is finally revealed when the larval skin is cast off. The pupae are usually camouflaged, typically resembling dead leaves. It must remain unnoticed while the larval tissue is modified and the adult forms inside.

5

The pupal case splits open to allow the butterfly to emerge. It must cling to a stem to expand, dry and harden its wings. Once it is ready, the butterfly starts flying to find a mate and begin a new cycle.



The hostplant is specific for each butterfly species.

Long Lives

Most butterflies need several days to a couple of weeks to complete their lifecycle. North American Monarch butterflies (*Danaus plexippus*) are an example of a butterfly with variable life spans. Some generations live only a few weeks while other generations may live for months. In temperate zones many species of butterflies overwinter in the larval or pupal stage by entering a dormant state, but some also overwinter as adults.

Seasonal Abundance

Most tropical butterflies are seasonal, and may have population explosions triggered by changes in temperature, rainfall or seasonal abundance of a hostplant. The Small-Spotted Owl-Butterfly (*Brassolis isthmia)* can become a major pest on coconut crops. Their larvae form nests of up to 2000 individuals, which feed at night and can cut through the petiole of a palm tree in a few seconds, killing the leaf. It can take years for the plants to recover from this kind of attack.