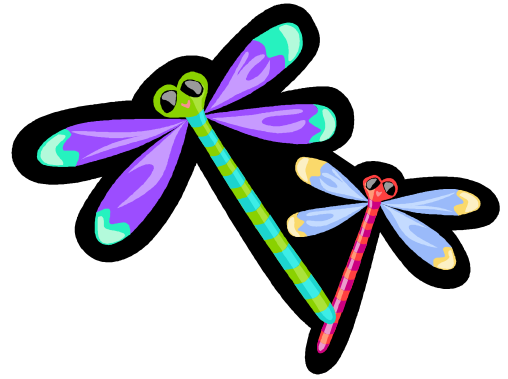


## “Ch-Ch-Ch-Ch-Ch-Changes!”



The title of this article is inspired by a song, “Changes” performed by rock star David Bowie. The theme of the article is actually about changes that take place in insects as they progress through their life cycles. These changes are known as metamorphosis, from two Greek words, “Meta” (meaning “Change”) and “Morphos” (meaning “form”). Not all changes in body form are accomplished in the same way by various insects.

Basically, there are three major patterns in the life history of insects from egg to adult.

The simplest form of development is actually no change at all except in size and maturity. This process is called “Ametamorphosis”, meaning “no change in form”. The young hatchlings from the egg look exactly like the adults. Insects with this type of maturation process are very primitive, have no wings and have a very general body plan. Silverfish and firebrats (a silverfish relative) are examples of insects with this type of metamorphosis.

A second change of form is known as “incomplete” or “gradual” metamorphosis. In this process, the immature insect “sort of” resembles the adult, usually in coloration and body structures except for the fact that it has no wings. The adult is almost always winged. Insect examples are: grasshoppers, true bugs, mantises, dragonflies, mayflies and a great many other common insects we see in our gardens.

The third type of change, and perhaps the most fascinating, is complete metamorphosis. There are four distinct body forms in the life cycle of these creatures. As with all insects, they start off as eggs, which hatch into a worm-like form bearing auxiliary feet, chewing mouthparts and simple dots for eyes. This stage feeds voraciously on plant material and finally forms a resting stage, or pupa. Inside this pupa, the tissues of the insect transform into the adult form which looks nothing like the worm-like larva and has a completely different body plan. Probably the best example of this change is the life history of a butterfly, which begins life as an egg, hatches into a caterpillar, eventually forms a pupa, or chrysalis, and then finally emerges as a magnificent winged creature. It has

transformed from a lowly worm to an agile flying form with delicate scales on its wings, a straw-like mouthpart that can only feed on a liquid diet, large compound eyes and lives a life of grace and beauty.

Insects are very exceptional creatures that are very fascinating considering the variations of their life histories. Next time you see an insect that sneaked into your house or is found next spring in your garden, think about what it went through to transform into what it is today. David Bowie’s song was rather unusual and strange, but so are the changes that take place in the insect world!

