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**Butterflies: The *Vanessa Altissima***

Nature has existed for millions of years before human beings began roaming the earth; it has evolved in different ways in order to develop creative means of survival. Human beings have found inspiration by looking towards nature and its ecosystems in order to develop new engineering methods. Indeed, the field of biometrics has provided a great deal of solutions to many of our most problematic engineering difficulties. Qualcomm Incorporated, for example, studied the unique properties of butterfly wings in order to develop better screen display. By studying the specific patterns of butterfly wings, they developed a system which reflects light in function of different wave lengths. The same principle can be applied to create more legible and brighter screens which requires less energy consumption.

 Indeed, the pattern formations of butterfly wings are unique and inspirational. Butterfly wings are formed during the pupation period; while the larva is still inside the chrysalis. Wing pigmentation is secreted during the last faces of pupation; but epidermal cellular interaction happens in earlier faces and determines the color of each wing disc and pattern of the adult butterfly. It is believed that the pattern of pigmentation is organized around a hypothetical center which serves to provide information regarding the appropriate position and synthesis of pigmentation. The patterns that are formed through pigmentation are unique to each species or families of butterflies. In fact, examining these patterns is usually necessary in order to determine the family to which a butterfly belongs.

The cycle of life of butterflies happens in various faces. Butterflies generally lay their eggs on plants. When the eggs hatch, larvae or caterpillars are released; these find nourishment in leafs or stems. Each species requires particular types of plants as nourishment, so much so that the extinction of said plant can lead to the extinction of that particular family of butterflies. When they have grown enough, caterpillars find a secure place and form a chrysalis around themselves. During this phase they do not feed and they go through huge metabolic and morphological changes which jointly are called metamorphosis. The adult butterfly leaves the chrysalis by breaking its external framework.

Most adult butterflies feed on nectar and flowers through an extendible opening which evolved from mouth pieces typical to many insects. This mouth piece is composed of a sort of flexible and extremely sensitive “coiled tongue” capable of introducing itself in a flower; its large angle of inclination helps the butterfly feed itself from different angles without having to move its skeleton. Once the butterfly has finished feeding itself, the tongue coils inward and fits perfectly into the butterfly’s head. Males and females find themselves through visual guides provided by unique flutter patterns and through their sense of smell. After fertilization, the female lays hundreds or even thousands of eggs. The life span of butterflies is extremely short –usually it is only long enough to ensure reproduction –in fact, sometimes it doesn’t last more than a day.

The Vanessa genus of butterflies, also known as the “painted lady” comprises 20 distinct species including the most common and widespread butterfly on earth: the *Vanessa cardui* which occurs on every continent except South America. There are 5 species endemic to the neotropical region of latinamerica: the myrinna and braziliensis in Brazil; the carye in Argentina; the terpsichore in Chile, and the altissima.

The origin of the name of the *Vanessa* genus is uncertain. Some argue that it comes from the girl’s name Vanessa; others believe that it is a variant of the Ancient Greek word for mystic divinity, *Phanessa* (it is well known that the enthomologist who named this genus, [Johan Christian Fabricius](http://en.wikipedia.org/wiki/Johan_Christian_Fabricius), liked to use the names of classical divinities to create new scientific names.) All butterflies from the Vanessa genus have similar pink and orange patterns, with white and black uppersides, olive and grey undersides, and a row of post-median ocelli of varying sizes on the hindwings.

The *Vanessa altissima*, from the Nymphalidae subfamily comes from the Vanessidi tribe, of the *Vanessa* genus, also known as the Andean Lady, is a genus of the brush-footed butterfly; and is one of the smallest species of butterflies on the planet. Its wingspan is only 50mm. It is a high-altitude butterfly typical of the Andes region in Latin America; particularly in Ecuador, Peru and Bolivia. It can be found at an altitude of between 1800 and 3300 meters above sea level. It nourishes itself from nectar, fruits, and organic materials in early phases of decomposition. Male *Vanessa Altissimas* are usually found in groups of two or three. When they settle they usually keep their wings widespread in order to absorb moisture from the surface of rocks. Its home is typically cloud forest habitats, especially in areas of scree (by rock falls and mountain streams). However, in cities such as Quito –Ecuador’s capital –this species can be found easily in parks and gardens, on mountain roads, or in the vicinity of streams and ditches.