

## Module 14: "Color in Nature"

### Lecture 37: "Why color in nature"

The Lecture Contains:

- ☰ Why Color in Nature?
- ☰ Color in Butterfly
- ☰ Coloration in Animal world

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## Why Color in Nature?

Human beings have consistently tried to match with the natural evolution and fit themselves with in the new environment. In the progress nature remained the most trusted partner. Man's constant evolution and progress has become possible due to the relationship with the Natural Environment. However, the relationship has gone through lot of fluctuating stages.

It is important to understand man's relationship with nature before we discuss on 'color in nature'. Human beings have consistently tried to match with the natural evolution and fit themselves with in the new environment. In the progress nature remained the most trusted partner. Man's constant evolution and progress has become possible due to the relationship with the Natural Environment. However, the relationship has gone through lot of fluctuating stages.

Charles Darwin proved through his research on 'natural selection' in 1859 that the coloration of various species is directly linked to their 'reproductive advantage'. The coloration of animal is not accidental. It is developed through evolution for thousands of years. Darwin writes, *"When we see leaf-eating insects green, and bark-feeders mottled-grey; the alpine ptarmigan white in winter, the red-grouse the colour of heather, and the black-grouse that of peaty earth, we must believe that these tints are of service to these birds and insects in preserving them from danger. Grouse, if not destroyed at some period of their lives, would increase in countless numbers; they are known to suffer largely from birds of prey; and hawks are guided by eyesight to their prey, so much so, that on parts of the Continent persons are warned not to keep white pigeons, as being the most liable to destruction. Hence I can see no reason to doubt that natural selection might be most effective in giving the proper colour to each kind of grouse, and in keeping that colour, when once acquired, true and constant."*

(Ref. Ref. [http://en.wikipedia.org/wiki/Animal\\_coloration](http://en.wikipedia.org/wiki/Animal_coloration) ; June 13, 2012)

In early stage human beings in 'Stone Age' survival had been the only way of living when man was under direct control of nature. At that formative stage man observed and learnt things from nature. Human beings did not interfere in nature's evolution process. Rather man observed and tried to fit themselves in the condition.

During the 'Bronze-Age' man slowly started understanding nature and took initiative to adjust to build a relationship with nature. Man tried to understand natural phenomenon and started adjusting in a friendly way. Man started worshiping nature's power (Sun, Thunder, Mountain, etc.). A friendship of mutual benefit has turned in to the attitude of 'stewardship'. Unfortunately the modern lifestyle has changed the good old relationship when man tried to play god. Modernity believes in progress by controlling nature. In result man has scarified ecosystem by destroying the ecological balance resulting in indefinite future.

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## Color in Butterfly

Human beings are amazed by nature's wealth of colors. Color from living beings to no living beings have gave enormous source of creativity. For example, there are more than 17, 500 species of butterflies in the worlds! Imagine the variety and the combination of colors butterflies can produce for our man-made color combinations. Here are a few examples for 'color combinations and the proportion of colors' that butterflies have



Swallowtails again



by COLOURlover

♥ 25

★ 28

💬 1

COLOURlovers.com



Papillon bleu deux



by COLOURlover

♥ 136

★ 105

💬 38

COLOURlovers.com



Mr. Green Butterfly



by COLOURlover

♥ 8

★ 12

💬 0

COLOURlovers.com



L'oeil de Caen



by COLOURlover

♥ 14

★ 22

💬 1

COLOURlovers.com



Monarch Butterfly



by COLOURlover

♡ 59

☆ 74

💬 13

COLOURlovers.com

Lemon Emigrant



by COLOURlover

♡ 22

☆ 25

💬 5

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Plate 1 Coloration of Butterfly

(Source: <http://www.colourlovers.com/blog/2007/06/01/colorful-beauty-in-nature-butterflies/> ; June 12, 2012)

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The amazing color combination of butterflies (plate 1) could become the source for many product designs. Nature has gifted us with such rich color combination that is developed through thousands of years of natural evolution. The natural evolution coloration has successfully defended the species towards sexual selection to protecting from the predators. Designers have to work with colors and apply logically in various products. Human being cannot imagine without color. Nature gives us the appropriate fodder to perceive nature's color, dissimilate and assimilate them for our applications. Nature is the greatest teacher in the vast fields of knowledge. Color is one of them where we have learnt to use for our purposes- fun, entertainment, survival and inspirations. Imagine the number of butterflies who have given us wonderful natural combination of colors could be applied in various designs. Similarly the wonderful range of flowers (plate 2) produce enormous scopes of color combinations that man could produce.

(Source: <http://alfandiphotoramblings.syedalfandiphotography.com/2011/11/photographing-colors-designs-of-nature.html> ; June 12, 2012)



Plate2 Nature's Color

Nature no dearth of color, it does not produce to satisfy anybody. It has its own purpose for survival.

(Read- <http://en.wikipedia.org/wiki/Mimicry> ; June 12, 2012)

In nature, coloration is an essential element for camouflage, physical protection, etc by creating natural pattern. Animal uses color for advertisement for their sexual selection, warning and mimicking for their survival. Choice of color in the animal world has specific need and purpose. Animal uses color for stunning the opponent and confuse.

Ref. [http://en.wikipedia.org/wiki/Animal\\_coloration](http://en.wikipedia.org/wiki/Animal_coloration) ; June 13, 2012)

Darwin's research has proved there are several reasons for the evolution of animal's coloration. In the process of their survival animal world has used color as one of their important defence systems. It provided- camouflage, physical protection, natural patten, advertising, sexual selection, warning system, mimicry, etc. Coloration has helped them for signalling in the above ways for their own survival. Animals use colors for their protection and also apply for attacking and divert attention. Following are some of such colorations that animal world uses.

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#### Coloration in Animal world

(Following plates sources: (Source: [http://en.wikipedia.org/wiki/Animal\\_coloration](http://en.wikipedia.org/wiki/Animal_coloration) ; June 13, 2012)

#### Camouflage



Butterfly Camouflage



Insect Camouflage  
Plate3 Color for Camouflage



Soldier Camouflages in nature

Camouflage is one of the most useful and strong defence systems that animal world uses. Camouflage (pale 3) helps- resembling something else, hidden, confuse or dazzle. In nature living beings have used camouflage for their survival. Camouflage allows animals to observe other species without their knowledge and take advantage of the situation. It allows to hide from the predator.

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