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Coloration and Mimicry

- Coloration is an adaptation where the animals develop different colors and color patterns for protection, warning, **frightening** the enemies, capturing prey, recognizing mates so on.
- **Classification**
 - **1. Protective coloration**
 - The animals develop color patterns to conceal themselves from the predators. It is also called as **concealing coloration** or **cryptic coloration**.
 - Eg. 1. Countershading in sharks and Dolphins



Sharks and Dolphins use countershading to blend in with their environment. By being darker colored on the top and lighter underneath. They help to themselves conceal from their predators and prey

From above, looking down to the ocean floor it appears darker and from below looking up to the surface it appears lighter color

- Eg 2. A number of stick caterpillars, the larvae of moths, resemble twigs in their color, shape and posture.
- Their color remarkably resembles their background.



- **2. Aggressive coloration**

- The animals develop color pattern to threaten or frighten other animals.
- Eg. Eyed hawk moth uses the eye spots to threaten the predators.



3. **Warning coloration**

Animals with effective chemical defenses often exhibit bright **aposematic coloration** .

Eg . Poison Dart frog

Aposematic coloration seems to be adaptive because predators often avoid prey that have bright color patterns.



- Could you identify the animal in the above showing image.Canyon tree.....

Mimicry

- Term introduced by **Bates**.
- The resemblance of one organism to another or to any natural object for the purpose of concealment, protection or for some other advantage.
- The organism which exhibits mimicry is called **mimic**.
- The organism which is mimicked or imitated is called a **model**.

CONDITIONS

- The mimics and models should occur in the same area.
- Mimics should be lesser in number than the models.
- The models should be unpalatable or harmful
- The imitation should be clear and visible.

There are 3 types in mimicry

- **1. Protective mimicry**

When mimicry offers protection of the mimic, the mimicry is called

Eg . 1. The leaf insect **Phyllium** lives among green leaves on trees.

- Its wings and legs are green like the color of leaves.
- Its legs are flattened and the wings have a venation similar to leaves.
- Thus, the insect cannot be distinguished from the leaves and it helps the insect to escape from predators.



- Ex 2. Stick insect
- Also called as walking stick mimics exactly the twigs.
- Stick [insects](#) have long, cylindrical bodies, that are stick-like in both shape and [colour](#).
- Their natural [camouflage](#) makes them difficult for [predators](#) to detect;



2. Warning mimicry

- There are some harmless or palatable animals which mimic the harmful or non-palatable animals. By this mimics warn the enemies and protect themselves.
- Eg . The non-poisonous snake *Lycodon* mimics the poisonous krait in its color pattern.

(c) Batesian mimicry: A harmless species mimics a harmful one.



◀ Hawkmoth larva

▼ Green parrot snake



Batesian Mimicry

- It is form of protective mimicry in which a species that is edible or harmless closely resembles an inedible or harmful species and therefore is avoided by predators.
- Example- Monarch butterfly and Viceroy butterfly. The Monarch butterfly is inedible and viceroy butterfly is edible.



Viceroy Butterfly (mimic)



Monarch Butterfly

3. Aggressive mimicry

- In this mimicry, the mimics possess some lure to attract the prey.
- Eg. In **angler fish Lophius**, the first fin ray of the dorsal fin is produced into a fleshy appendage ended with a bait.
- The bait hangs in front of the mouth and swings in all directions.
- If another fish tries to capture this bait, the angler fish swallows it in no time.



Mullerian mimicry

- In **Müllerian mimicry**, two or more unpalatable species, such as the cuckoo bee and yellow jacket, resemble each other.



Presumably, the more unpalatable prey there are, the more quickly predators learn to avoid prey with that particular appearance.

Advantages

- Based on a reduction in the number of trials required by a young predator in learning to avoid inedible species.
- Both the individuals are not destroyed by the predators.

Chameleon

- Scientists believe that chameleons change color to reflect their moods. By doing so, they send social signals to other chameleons. For example, darker colors tend to mean a chameleon is angry. Lighter colors might be used to attract mates.
- The chameleon's amazing adaptation is that it can move its eyes in two different directions.
- It does that because it looks around to see if there are any predators lurking .If it sees one when it is on a tree it can quickly camouflage into the colour of the tree and the predator won't see it.
- That is another one of its adaptations that helps it survive, when the chameleon sleeps it camouflages on the tree so any nocturnal animals/predators don't eat it.

Could you explore chameleon exhibit what type of behaviour?

Thank you