Interactions of Living Things

Lesson 15-3

- How do adaptations help an organism survive?
- What are competition and predation?
- What are the three types of symbiosis?

I. How do adaptations help an organism to survive?

A. Each organism has unique characteristics. These characteristics affect the individual's ability to survive and reproduce in its environment

B. Natural Selection

A characteristic that makes an individual better suited to a specific environment may eventually become common in that species through the process of natural selection

* Natural Selection -individuals whose unique characteristics are well suited for an environment tend to survive and produce more offspring.

*Offspring that inherit these characteristics also live to reproduce

*Natural selection results in adaptations

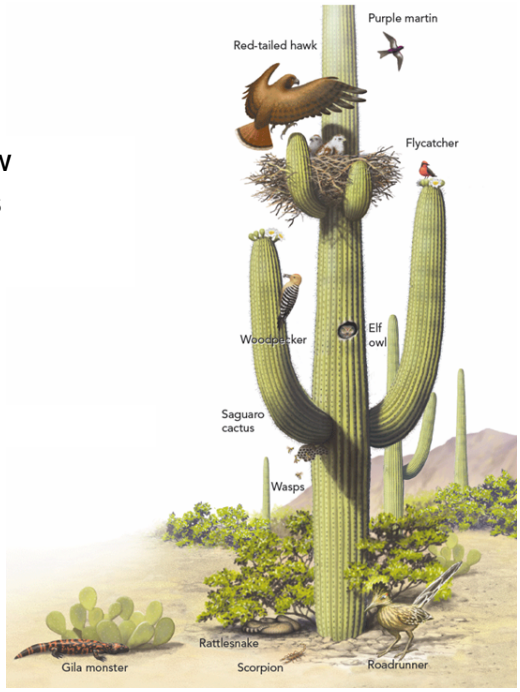
*Adaptations- the behaviors and physical characteristics that allow organisms to live successfully in their environment

ex. arctic fox has fur that turns from gray to white that helps with camouflage

*Individuals with characteristics poorly suited to a particular environment are less likely to survive

- poorly suited characteristics may disappear from the species
- if a species cannot adapt to changes in the environment, the entire species may become extinct

Saguaro Community
Look for examples of how organisms interact in this scene.



C. Niche

The role of an organism in its habitat is called its niche

- include what type of food it eats
- how it obtains it food
- what other organisms eat it
- also includes when and how the organism reproduces and the physical conditions required to survive

Niches
Organisms occupy many niches in an environment.

Every organism has a variety of adaptations that are suited to its specific living conditions and help it to survive

II. What are competition and predation?

A. Two major types of interactions among organisms are competition and predation

B. Competition

Different species can share the same habitat and food requirements

*If two species occupy the same niche, one the species might eventually die off

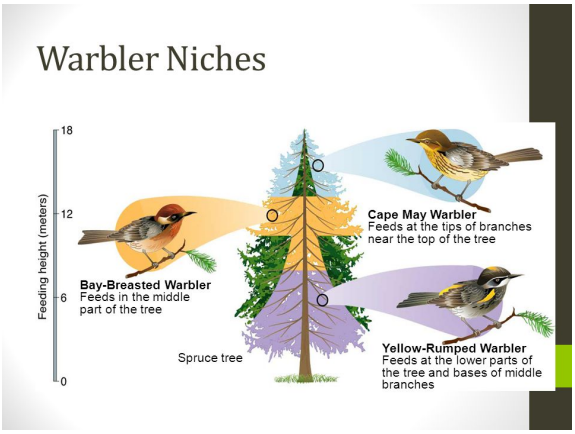
*The reason is competition

*Competition is the struggle between organisms to survive as they attempt to use the same limited resources

* In an ecosystem, there are limited amounts of food, water, and shelter

* Organisms that share the same habitat often have adaptations that enable them to reduce competition

ex. warblers



C. Predation

An interaction in which one organism kills another for food or nutrients is called predation

*Predator- organism that does the killing

*Prey- organism that is killed

*Predation can have a major affect on prey population size. If there are too many predators in an area, the result is the decrease in the size of the prey population

* A decrease in the number of prey results in less food for the predators.

*Without enough food, the predator population can decline

*Generally, populations of predator and prey rise and fall in related cycles

D. Predator/ Prey Adaptations

Predators have adaptations that help them catch and kill their prey

ex. cheetah - speed

owls/ bats - nocturnal senses

jellyfish - poison tentacles

sundew plant- sticky bulbs on its stalk

Predator Adaptations – General

Predators have adaptations to catch and consume their prey.

birds of prey have keen eyesight and sharp beaks and talons

camouflage allows predators to blend in with their surroundings

venomous snakes have poisonous venom to subdue their prey

treefrogs have special pads on their feet so they can cling to vertical surfaces

kingsnakes are immune to the venom of venomous snakes

Prey Adaptations

Organisms have many different adaptations that help them avoid becoming prey

ex. warning colors, false colors, mimicry, protective covering, camouflage

8. Prey Adaptations – General

Prey have adaptations to **detect** and **prevent being eaten by** predators.

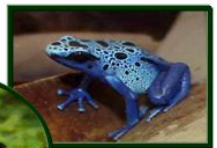
speed & keen senses

camouflage

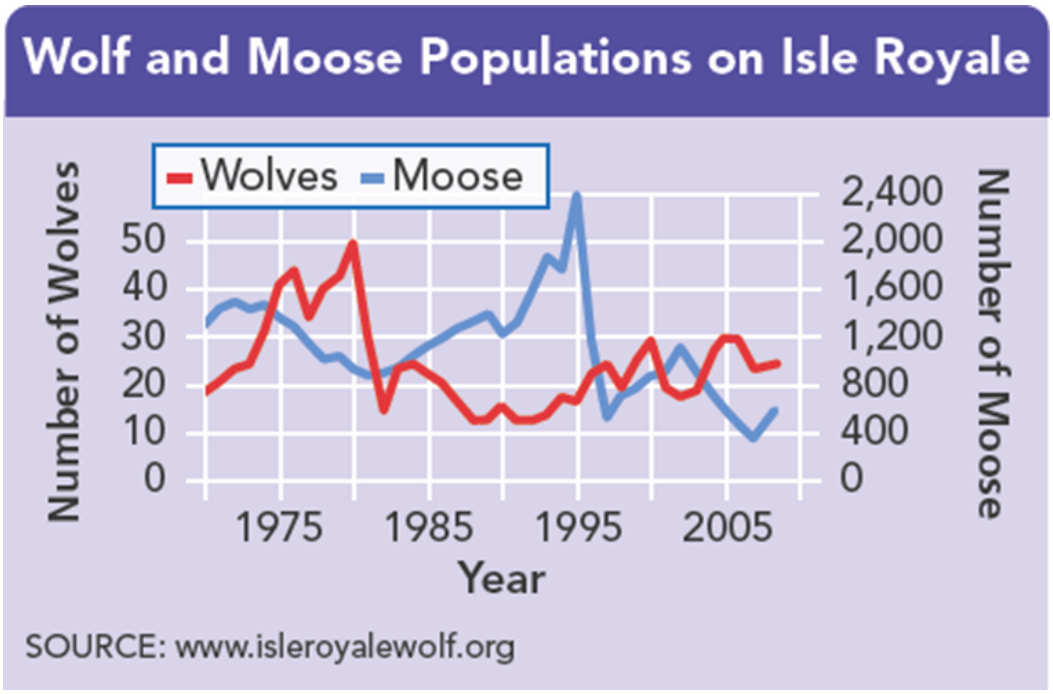
venomous coral snake

mimicry

scarlet kingsnake



warning colors & patterns



Predator-Prey Interactions
On Isle Royale, an island in Lake Superior, the populations of wolves (the predator) and moose (the prey) rise and fall in cycles.

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III. What are the 3 types of symbiosis

A. In addition to competition and predation, symbiosis is a third type of interaction among organisms

*Symbiosis is any relationship in which two species live closely together and at least one of the species benefits

* The three main types of symbiotic relationships are mutualism, commensalism, and parasitism

B. Mutualism

In some relationships, two species may depend on each other.

*Mutualism is a relationship in which both species benefit

ex. Acadia trees and stinging ants

oxpecker and impala

hummingbird and flower

Mutualism

- An interspecific interaction that benefits **BOTH** species
- They exchange **food** or provide **shelter** or protection, but may still be able to live an independent life

In return for shelter, the clownfish cleans the anemones, chasing away their predators and dropping scraps of food for the anemone to eat

C. Commensalism

Commensalism is a relationship in which one species benefits and the other species in neither helped or harmed.

*not very common nature , because one species is usually helped or harmed a little

ex. bird building a nest in a tree

D. Parasitism

A relationship that involve one organism living with, on , or inside another organism and harming it.

*Parasite- the organism that benefits

*Host- the organism that it lives in or on

*Parasites are usually smaller than their host

*Parasites don't usually kill their host. If the host dies, the parasite could lose its source of food or shelter

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Parasites	Hosts