

Interactions Among Living Things



Symbiosis,
Competition,
Predator/Prey



Why Do Living Things Interact With Each Other?

Because, in order to survive, a living organism depends on other living things.



There's safety in numbers!

Organisms may interact to find food or shelter, avoid predators, or keep a mate.

How Do Living Things Depend On Other Organisms?

Some organisms cooperate with others of the same species; others cooperate with organisms of a different species.



All organisms depend on other organisms for food. Some may find their own food; others may eat the leftovers.

Many adult elephants help care for the young – not just the mother.



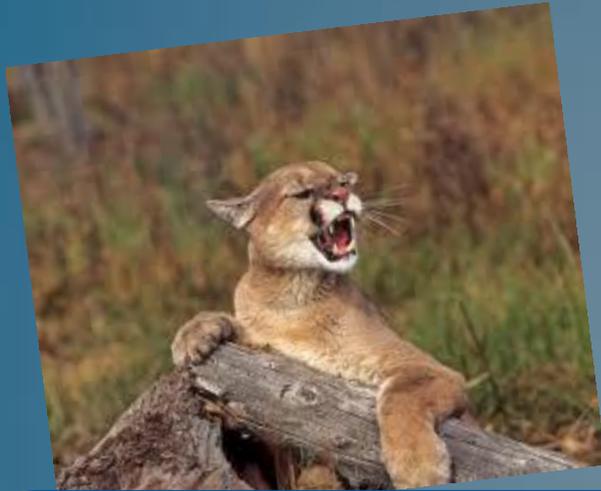
Some Animals Compete

Animals will compete with each other for food, water, shelter, territory and for mates.



This will more than likely involve fighting, and may cause some animals to escape to new territories.

Competition vs Cooperation



Some animals like lions, may reduce competition by joining together and forming a group – they hunt cooperatively.

Some animals like cougars, may solve the competition problem by living far apart from each other and keeping others out of its range.



Competition In Plants

Plants will compete with each other for space, nutrients, and water.

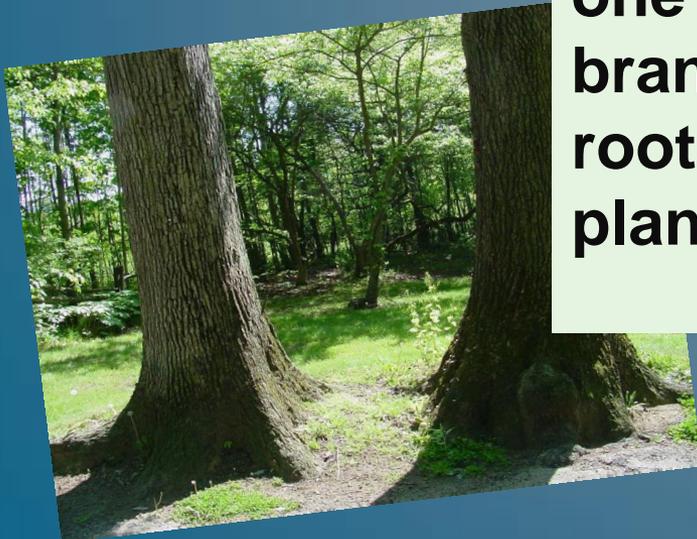


This vine is competing with the tree for space and sunlight, so it clings to the tree trunk, growing upwards to find the sun.

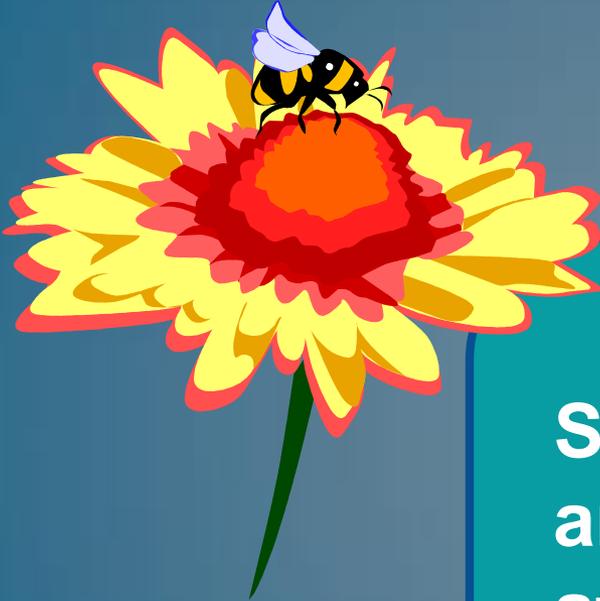
Competition In Plants



Competition may result in a plant that's taller than its neighbor, a plant with larger leaves, or one with longer branches and/or roots than nearby plants.



Competition In Plants



Some plants produce showy and fragrant flowers in order to attract more insects for pollination purposes, thus, they are competing for insects.



Cooperation

Many organisms cooperate within a species, or between species in order to survive.



Cooperation within a species can be seen in populations such as wolves, deer, antelope, and many other herd species.

These groups cooperate to find food, to provide protection to each other and their young, and to find and provide adequate shelter.



Predator/Prey Relationships

Predation is where one organism hunts and kills another organism for food.

The animal that gets hunted for food is the *prey*.



The animal that hunts for food is the *predator*.



Predator/Prey Relationships



Scavengers such as vultures are not predators since they do not hunt their food – they eat animals that are already dead.

Symbiotic Relationships

Many organisms develop relationships with organisms of another species in order to survive.



These relationships between *different* species are *close* and *permanent* relationships.

Symbiosis means *different species of organisms living together in order to survive.*

Kinds of Symbiosis



Ant-Aphid Symbiosis Darren Post

Mutualism, Commensalism,
and *Parasitism* are recognized
as the three kinds of symbiotic
relationships.



Mutualism Defined

- A symbiotic relationship in which *both species benefit* .

There are many ways in which species' survival can be enhanced through mutualism.

One may provide protection while the other provides food.



Mutualism

One may provide food while the other provides a means of reproduction.



One may provide food and the other may provide water, such as lichens, seen in the lower right corner.

How is the relationship between the bee and flower an example of mutualism?

The flower produces nectar and pollen, which attracts the bee.

The bee drinks the nectar and gathers the pollen, then visits another flower, leaving behind some of the pollen.



This pollinates the flower which allows the plant to reproduce.

Therefore...

The bee obtains food from the flower.

The flower would not be able to pollinate other flowers by itself without the help from the bee.

Both species benefit from this arrangement!



Commensalism Defined

- A symbiotic relationship where one benefits and the other is not helped *nor* harmed.

One organism may provide protection or food, but does not get harmed in the process - nor does it receive a benefit.



Barnacles living on a whale is an example of commensalism.

Commensalism

Another example of commensalism is when a bird makes its nest in a tree.



The bird does not harm the tree by preparing a nest in the tree branches.

Areas where there are few to no trees, have few birds.

But, the bird needs the tree to make a nest that is high up, and protected from predators.



Parasitism

Some organisms live on or in other organisms at the expense of the other organism.

Parasites cause harm, but usually do not kill their hosts. However, they may weaken their host.



Parasites feed off of the host – either as an adult, or when they are in larval form.



Ticks and fleas are parasites.



Parasitism

A leech is a parasite that sucks blood from its host.

Some bodies of water are infested with leeches, and they may be on your body when you emerge from swimming.

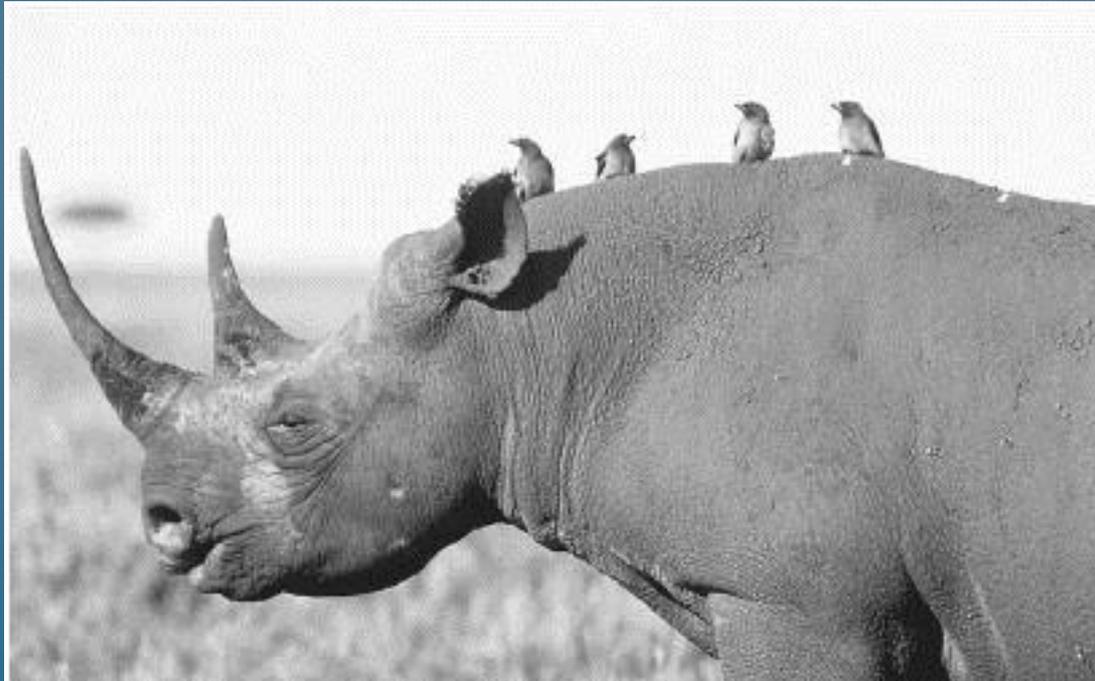


Review Practice

- Following are some descriptions of symbiotic relationships.
- Determine if the relationship is:
 - *Mutualism*
 - *Parasitism*
 - *Commensalism*

An oxpecker will perch on the backs of rhinoceros' and feed on ticks and blood-sucking flies that bother the animals.

Mutualism



Mistletoe grows on oak trees, obtaining support and food from the tree. Trees with lots of mistletoe are often weakened by the mistletoe.

Parasitism



Spanish moss grows on the branches of trees but does not obtain nourishment from the tree.

Commensalism



A clownfish lives among the tentacles of the sea anemone where it gathers bits of food left over from the anemone's meal. It chases off predators of the anemone.

Mutualism



Ants will 'farm' aphids, keeping them safe, giving them food, then eating the sugary residue they emit as feces.

Mutualism



Ant-Aphid Symbiosis Daren Post

A tick attaches itself to your dog and sucks its blood.

Parasitism



A moth lives in the fur of sloths, but does not feed on it. Its larvae will eat the dung of the sloth.

Commensalism



Lungworms live in the lungs of bighorn sheep causing them to be sick, or even die.

Parasitism



A barnacle attaches itself to a whale and rides along gathering food from the water.

Commensalism



Some protozoa live in the digestive tract of termites, digesting the wood which the termites eat. Termites cannot digest the wood without the help of the protozoa.

Mutualism



Some wasps will lay their own eggs inside the larvae of other insects. Once hatched, the larvae of the wasps feed on the body of the insect.

Parasitism



Lichens are organisms that are actually two organisms living together - algae and fungi. The fungi retain water for itself and the algae, and the algae makes food for itself and the fungi.

Mutualism



Bacteria live in the stomachs of cows helping them to digest the plants that they eat.

Mutualism



A bromeliad grows on the branches of trees but does not obtain nourishment from the tree.

Commensalism



The yucca moth lays its eggs in the flower of the yucca, but helps the yucca plant pollinate itself. The yucca moth larvae can only eat the seeds of the yucca. Many seeds are left over for new plants to grow.

Mutualism

