

Today you need: textbook, spiral,  
pen or pencil, worksheet

Lesson: **Symbiosis day #1**

- **Vocabulary:**
- **1. symbiosis-**
- **2. predation**
- **3. Mutualism-**
- **4. Commensalism-**
- **5. Parasitism-**
- **6. competition**

# SYMBIOSIS

Living Together



# Objectives:

- Students will learn the definition of symbiosis.
- They will explore the 3 types of symbiotic relationships and examples of each.
- They will answer questions, identifying the type of symbiotic relationship.
- They will show their understanding by writing examples of the 3 types between their friends and family members.

# symbiosis

- The relationship between 2 living organisms



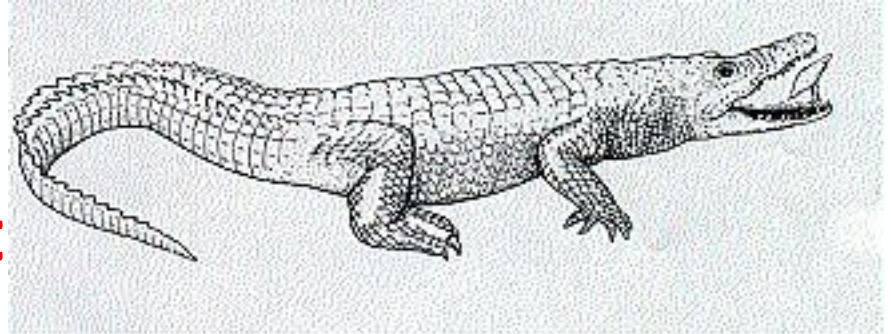
# Copy this chart

<b>Type</b>	<b>Host</b>	<b>Symbiont</b>
<b>Mutualism</b>	<b>Benefits (+)</b>	<b>Benefits (+)</b>
<b>Commensalism</b>	<b>Neither benefit nor harm</b>	<b>Benefits (+)</b>
<b>Parasitism</b>	<b>Harmed (-)</b>	<b>“parasite” Benefits (+)</b>

# Three Types of Symbiosis

## 1. Mutualism

- both species benefit



## 2. Commensalism

- one species benefits, the other is unaffected

## 3. Parasitism

- one species benefits, the other is harmed

# Mutualism

<http://www.youtube.com/watch?v=25Jk8mz4-Ww>

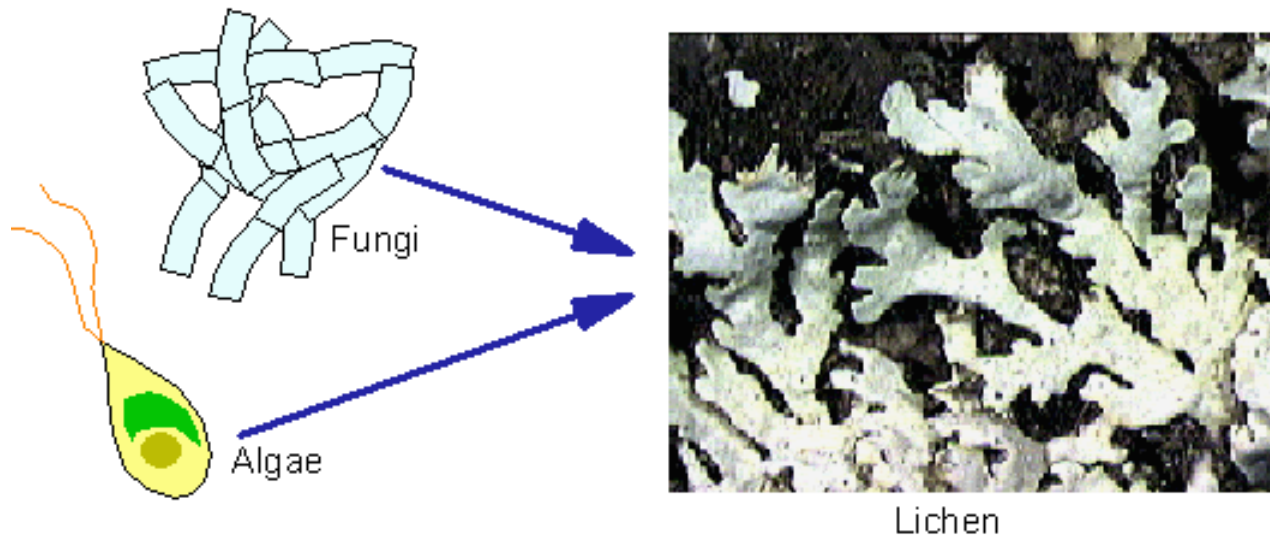
- **Both organisms benefit from the relationship**



## Otters and Kelp

**The otters help the kelp by eating the sea urchins which endanger it. The kelp provides an anchor for the otters while they sleep.**

# Lichen



- Lichen is really two organisms: **algae and fungus**. The fungus needs food but cannot make it. The algae makes food but needs some way to keep moist. The fungus forms a crust around the algae which holds in moisture. Both organisms benefit.



# The Chital and the Tree-pie



- The tree-pies help the chital by stripping the dead velvet from the antlers. This provides them with nourishment. Therefore both species are benefiting from this symbiotic behavior.

# Cleaner Fish and the Moray Eel

- The cleaner fish eats parasites and food bits out of the inside of this moray eel. It gets a meal and is protected from predators by the fierce eel.



# Yucca Plants and Yucca Moths



- Each type of Yucca plant can only be pollinated by a specific kind of Yucca moth.
- That moth can only live on that kind of Yucca.



# Swollen Thorn Acacia Tree and Ants



- The tree provides a nursery for the ants in the thorns and makes special food for the ant babies.
- In return the ants sting and attack any other plants or insects that try to invade the tree.

# Commensalism

<http://youtu.be/2YWlHAo9-V4>

- **One species benefits while the other is unaffected**

# Barnacles and Whales



- **Barnacles need a place to anchor. They must wait for food to come their way. Some barnacles hitch a ride on unsuspecting whales who deliver them to a food source. This does not effect the whale in any way.**

# Oak Gall Wasps and Oak Trees

- The oak gall wasp stings the oak tree. the tree then grows a GALL which is a nest for the wasp's babies.

When the larva hatch, they eat their way out of the gall.

- Does not help or hurt the oak tree



Figure 1. A gall-making cynipid wasp.

# Parasitism

- One species benefits while the other is harmed
- The one harmed in parasitism is called the host.

<http://www.youtube.com/watch?v=vMG-LWyNcAs>

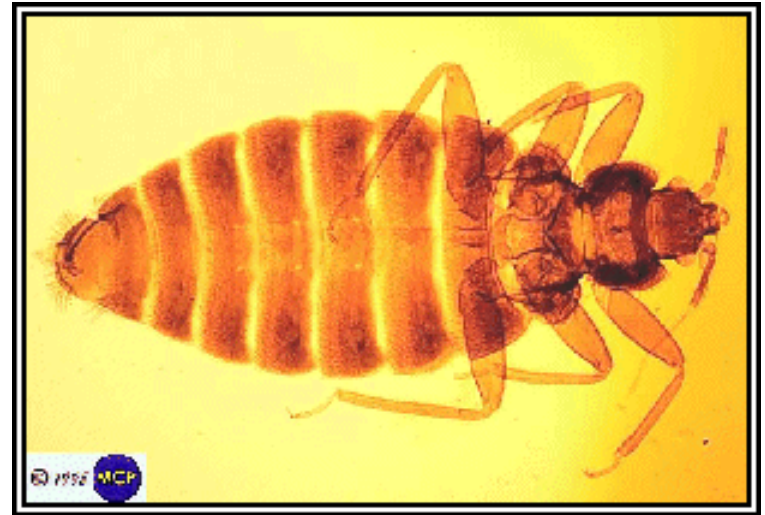


**Mistletoe is an aerial parasite that has no roots of its own and lives off the tree that it attaches itself to. Without that tree it would die. It slowly chokes out the life of the host tree.**

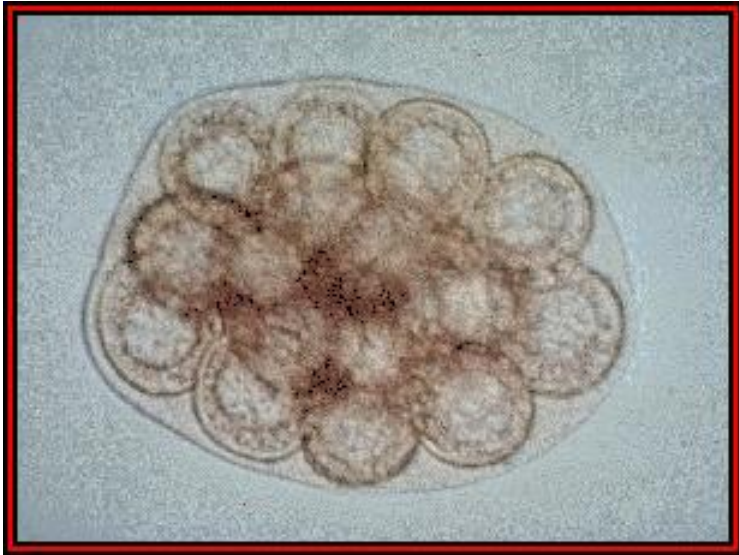


# Bedbugs

- **Bedbugs are small, nocturnal parasites that come out of hiding at night to feed on unsuspecting humans. They feed exclusively on blood! Their bites often result in an allergic reaction.**



# Tapeworms



- The definitive host of the cucumber tapeworm is a dog or a cat (occasionally a human). Fleas and lice are the intermediate host. the dog or cat becomes contaminated when the eggs are passed in the feces, and the flea or louse ingests the eggs. The dog or cat (or human) is infected when they ingest a flea or louse. Hence the importance of controlling fleas on your pet!

# Which type of symbiosis is it?

- Mutualism, commensalism, parasitism



Fleas/dogs

Lice/humans

Clownfish/sea anemone

Crocodile bird/crocodile

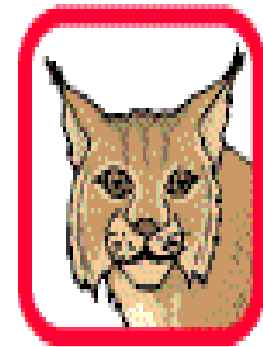
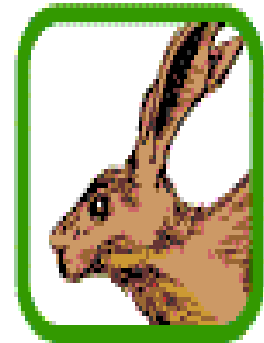
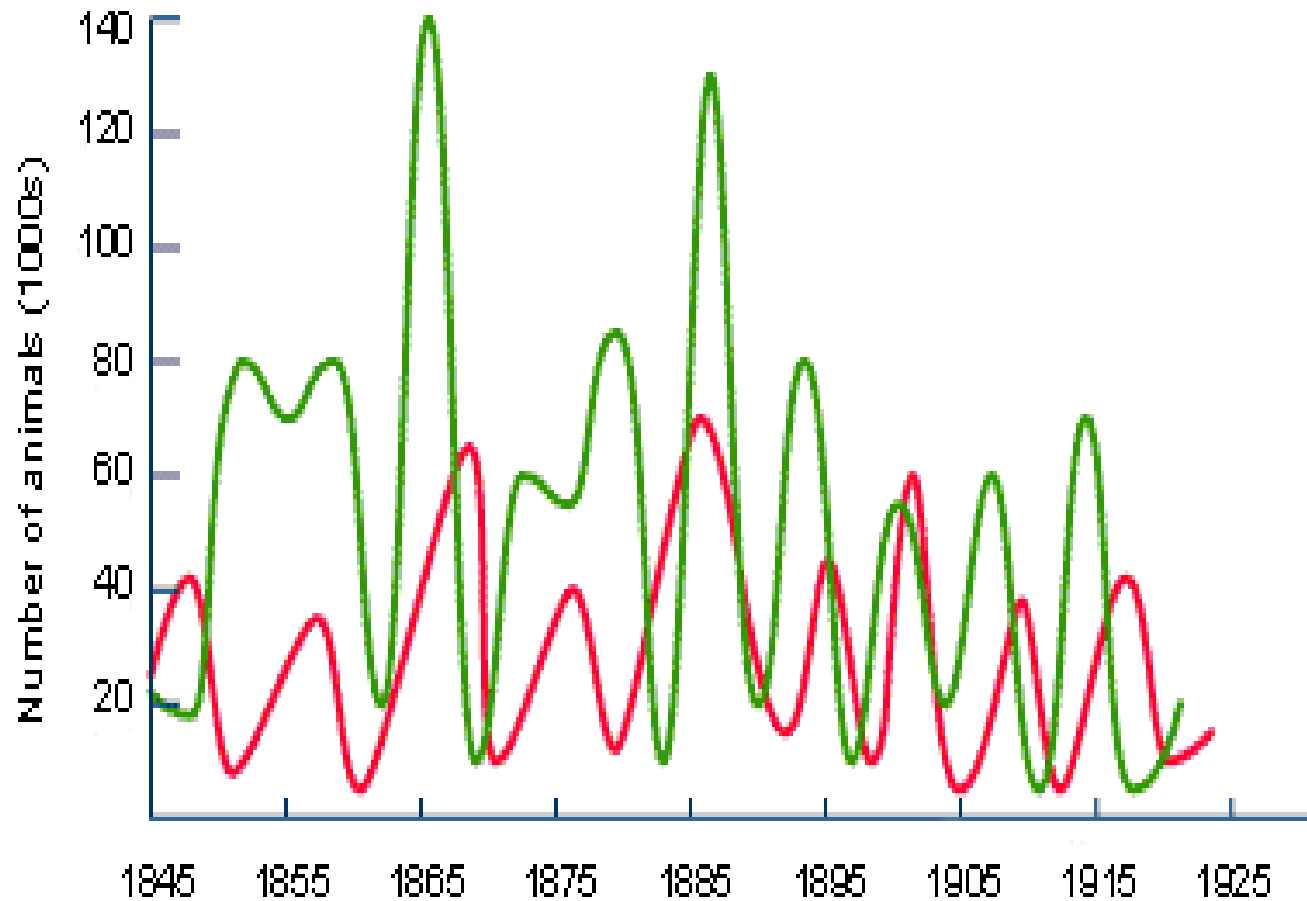
Joshua tree/pronuba moth



# Predator- Prey Relationships

- **A predator is an organism that kills and eats another organism.**
- **The prey is the organism which the predator eats.**
- **Predator and prey evolve together.**

# Can you see why they go up and down together?



# Time for you to work alone...

- Write 3 examples – one each of mutualism, commensalism, and parasitism using your friends, family or classmates.
- Then underline the people as follows:
- Put a 😊 if – benefits
- Put a ☹️ if - gets hurt
- Put a :-| if– neither helps or hurts.

# Worksheet- side 1 only

- Work with a partner and do your best to name the types of symbiotic relationships.
- **Please number the worksheet for me..then write your answers on the worksheet**

# Answers to worksheet

- barnacle/whale - 1
- Mistletoe/spruce - 2
- Yucca/moth - 3
- Hermit crab/snail - 1
- Ox pecker/rhino – 3
- Cowbird/buffalo - 1
- Mouse/flea - 2
- Wrasse fish/sea bass - 3



- Deer/tick – 2
- Silverfish/ ants - 1
- Cuckoo/warbler – 3
  
- Second side put in folder for bell work next class...