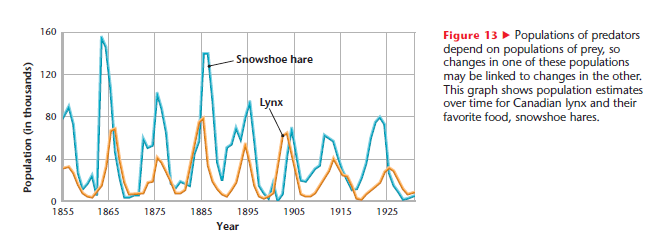
Ecological Relationships Notes

**Predation**

* An organism that feeds on another organism is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* The organism that is fed upon is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Examples:
  + Snakes eating \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + \_\_\_\_\_\_\_\_\_\_\_\_ eating insects.
  + Whales consuming \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Some predators eat only \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ types of prey.
* In this type of relationship, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of each population tend to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in linked patterns.



**Competition**

* Competition is a relationship in which \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ individuals or populations attempt to use the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ limited resource.
* Each individual has \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ access to the resource and so is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ by the competition.
* Competition can occur both \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ species.
* Indirect competition occurs when species \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ come in contact with each other.
  + Examples:
    - If one species \_\_\_\_\_\_\_\_\_\_\_\_\_ on a certain plant during the day and another species feeds on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ plant at night.
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rarely interact with the insects that eat our \_\_\_\_\_\_\_\_\_\_\_\_\_, but the insects are still competing with us for food.

**Symbiosis**

* The close association between two or more organisms of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ species
* Three types of symbiosis:
  1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  2. Commensalism
  3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Mutualism**

* A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ relationship between two organisms of different species in which each member \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Examples:
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_perched on a black rhinoceros get food (pests on rhinos) and help the rhino get rid of pests
  + One kind of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ lives in the guts of termites and digests the cellulose in the wood that the termites eat. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the protozoa, the termites could not completely digest the cellulose.
  + Some types of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ grow on the roots of plants and release an acid that changes minerals in the soil into forms that plants can \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + You and a species of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that lives in your intestines benefit each other! The bacteria get a plentiful food supply from you and in return you get \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_that the bacteria produce.
  + The living corals near the surface of the water provide a home for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The algae produce food through \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that is used by the corals.

**Commensalism**

* A symbiotic relationship between two organisms of different species in which one organism \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ without \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the other organism
* Examples**:**
  1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_attached to a gray whale gain a home and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to areas with food while leaving the whale unaffected.
  2. Remoras hitch a ride and feed on scraps of food left by sharks. The remoras \_\_\_\_\_\_\_\_\_\_\_\_\_\_ from this relationship while sharks are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  3. The Cattle \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(*Bubulcus ibis*) is often found in pastures following horses and cattle. As the livestock graze, insects are stirred up by their movement and this provides \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_for the egrets.
  4. The Great Burdock *(Arctium lappa)* has spines on its seeds that curve upward which allow the seeds to attach themselves to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of passing animals. The plant \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_by having its seeds dispersed in a large area and the animals are not affected.
  5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ receive more sunlight for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ if they grow high on tree branches. The orchid plants are helped by the tree. The tree gets nothing in return from the orchids.

**Parasitism**

* A symbiotic relationship between two organisms of different species in which one organism \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and the other is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + The organism that benefits is called the *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*.
  + The organism that is harmed is called the *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*.
* The parasite gets nourishment from its host, which is weakened in the process. Sometimes a host organism becomes so weak that it dies.
* Some parasites, such as ticks, live \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_the host’s body.
* Other parasites, such as tapeworms, live \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the host’s body.
* Examples of Parasitism
  + The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ parasite, *Giardia Lamblia*, lives in the digestive tracts of humans and other vertebrates causing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and severe stomach cramps. *Giardia* lives in water and sometimes hikers drink infected water.
  + A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on a human scalp receives \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ by drinking the human’s blood, and also causes a rash or irritation.
  + A female \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ lays \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in a caterpillar. When the eggs hatch, the wasps eat the caterpillar alive!
  + A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ uses the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the rabbit for nourishment.
  + Lampreys attach to fish causing sores.