


Elements of an Ecosystem

Organism - any living thing (wolf, person, plant)

Population - a group/groups of the SAME Species found in the same general area (a couple of families of coyotes/wolves)

Community - all populations of all species that occupy a given area (wolves and mice and owls and bears altogether)

Habitat - a place where a species lives

 <http://www.youtube.com/watch?v=O3CZFfyed3M&safe=active>

Within an Ecosystem Organisms play different roles.

1. Producers → green plants
make their own food
also called **AUTOTROPH**



2. Consumers → organisms that feed off other organisms
don't make their own food
also called **HETEROTROPH**



Types of Consumers / Heterotrophs:

a. Herbivores

plant-eaters (cow, moose)



b. Carnivores

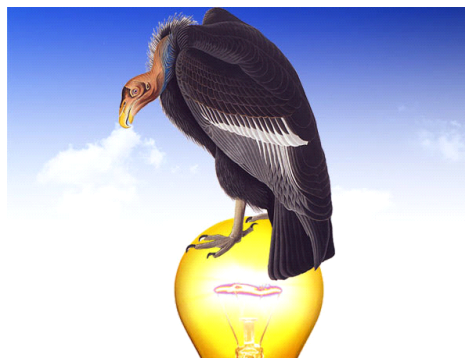
meat-eaters (wolf, fox)

- Predators - hunt and kill their own food (prey)

- lions, foxes, eagles

- Scavengers - feed on dead organisms

- vultures, hyenas



c. Omnivores

plant and meat eaters (humans, bears)

3. Saprobies

feed on dead and decaying material (detritus)- also called decomposers

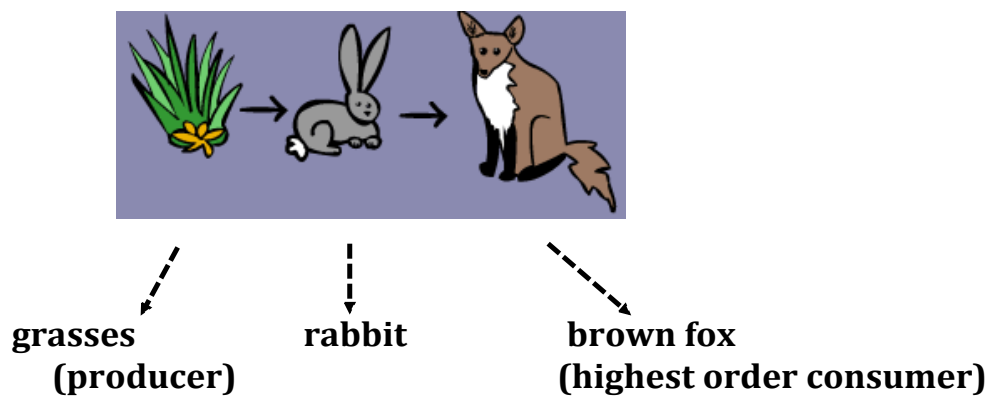
Decomposers include fungi, bacteria, worms, mushrooms.

They break down plant and animal material and release nutrients back into the soil.



Energy Movement

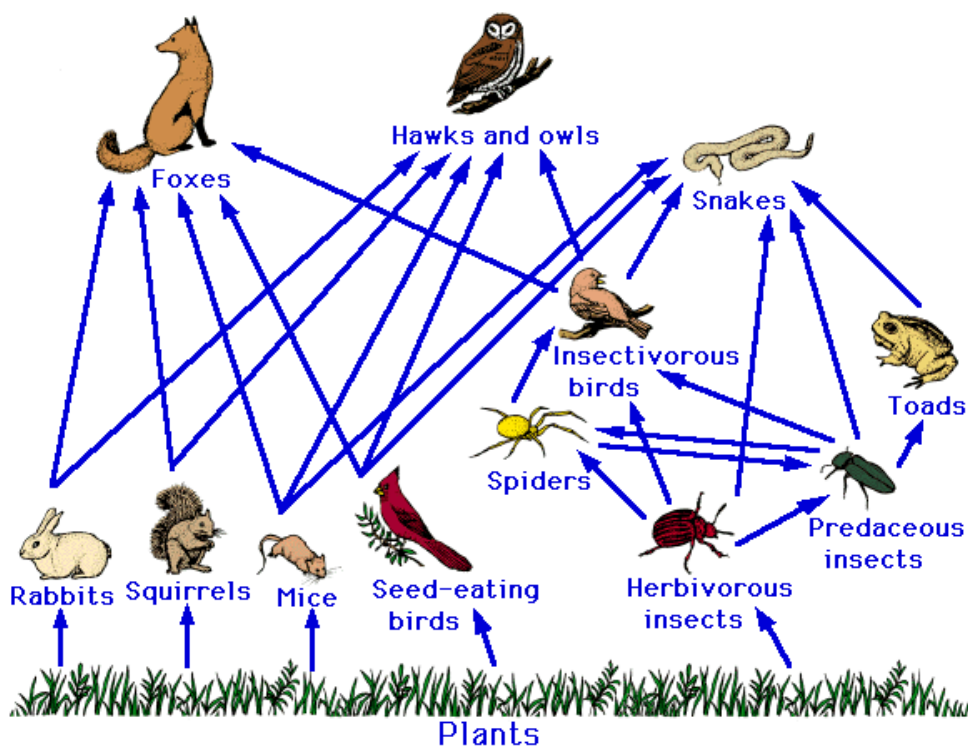
Food Chain - a step by step sequence linking organisms that feed on each other.
- always starts with a producer



Food Web

Food Webs are truly more effective at showing ALL of the interconnected feeding relationships that exist in an ecosystem.

It is really a SERIES OF FOOD CHAINS.



Trophic Level-

- a way of categorizing living things according to how they gain their energy; the first trophic level contains autotrophs, and each higher level contains heterotrophs.

1st Trophic Level

- Producer/autotroph- makes their own food

2nd Trophic Level

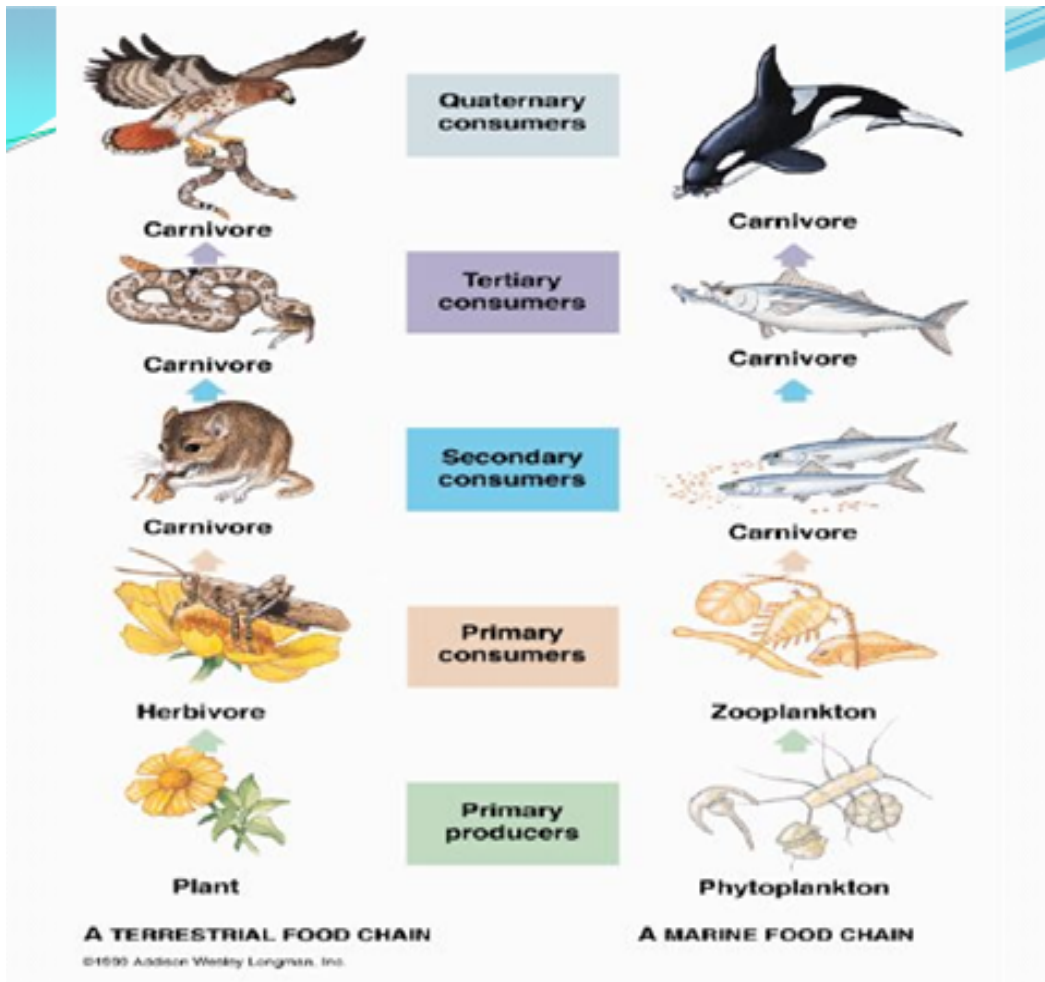
- Primary consumer- eats autotrophs

3rd Trophic Level

- Secondary consumer- eats primary consumers

4th Trophic Level

- Tertiary consumer- eats secondary consumers



Energy in Ecosystems

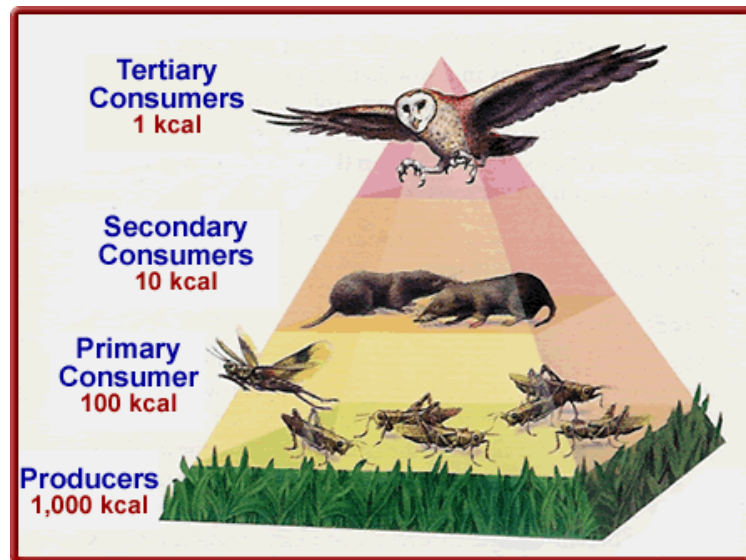
* Points to remember:

1. Energy cannot be continually recycled; more must be added daily basis.
2. Energy "drives" an ecosystem; the capture and the transfer of the sun's energy drives the cycling of matter. We will see several of these cycles soon.
3. There is a recycling "effect" between biotic/abiotic components in an ecosystem
4. Ecosystems are called "open systems", meaning that energy can move in and out of the system.

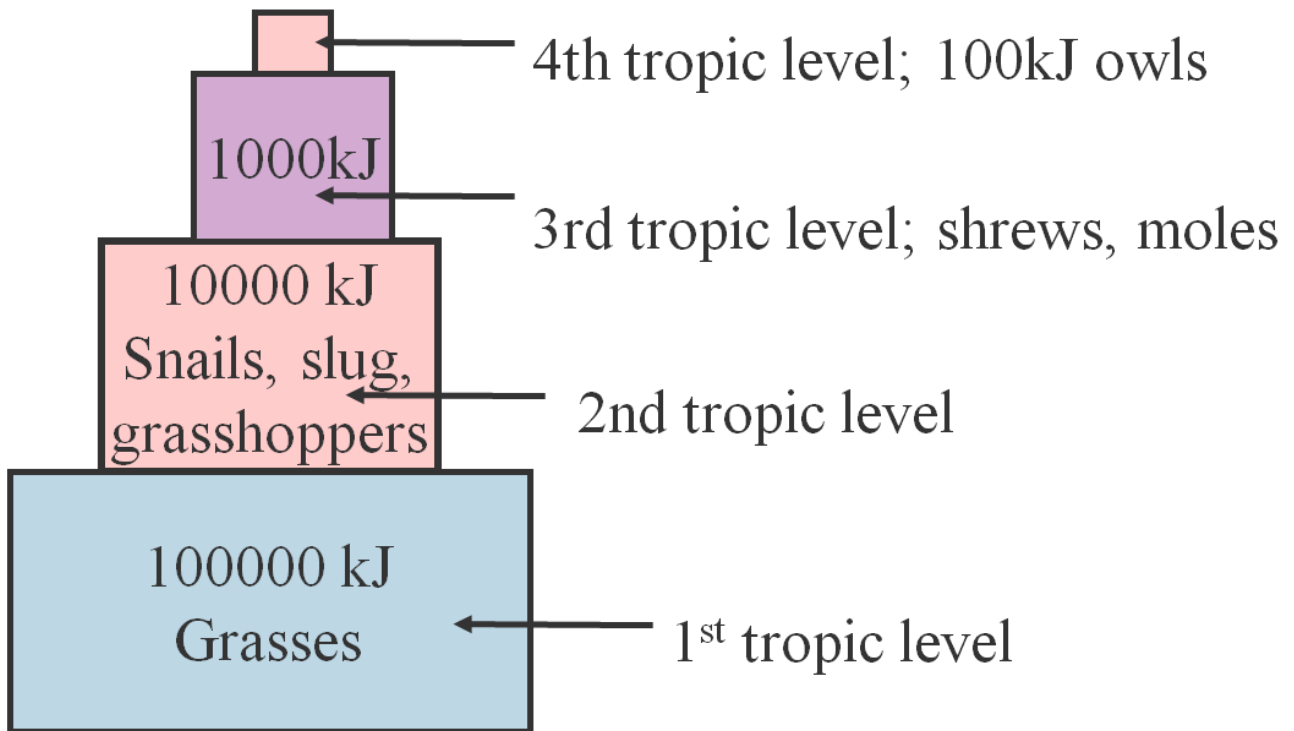
Energy Pyramids

Pyramids represent the energy available at each level in a food chain.
90% is lost as you move up each level because it was used by the organisms for themselves
10% is passed on to the next level

Energy Pyramid



An Example With Calculations

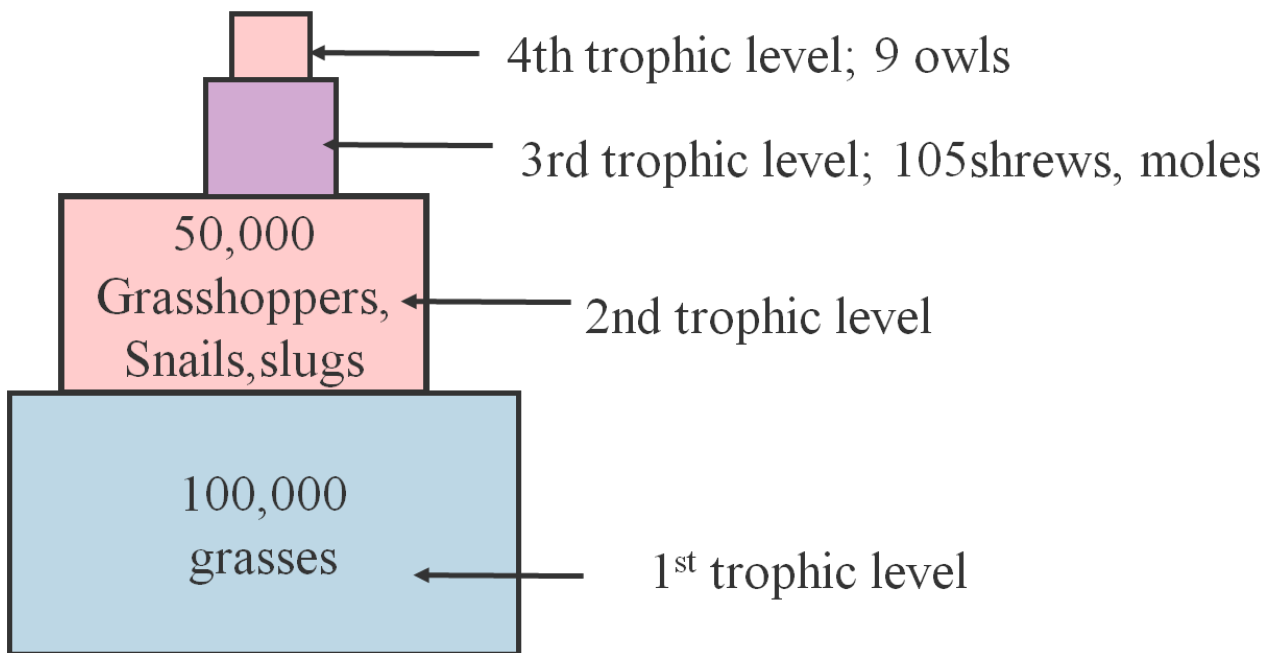


Numbers Pyramids

shows the actual number of organisms at each trophic level

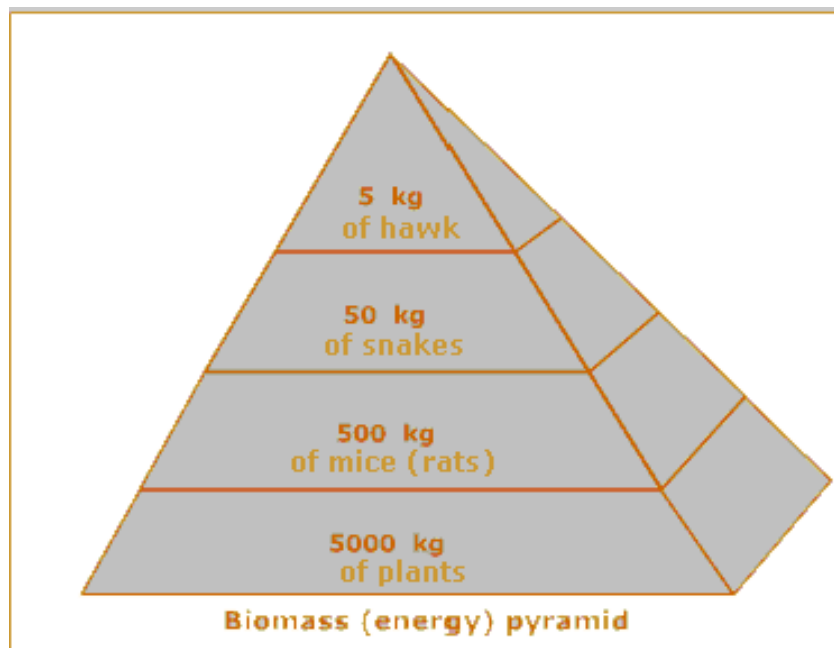


Another Example

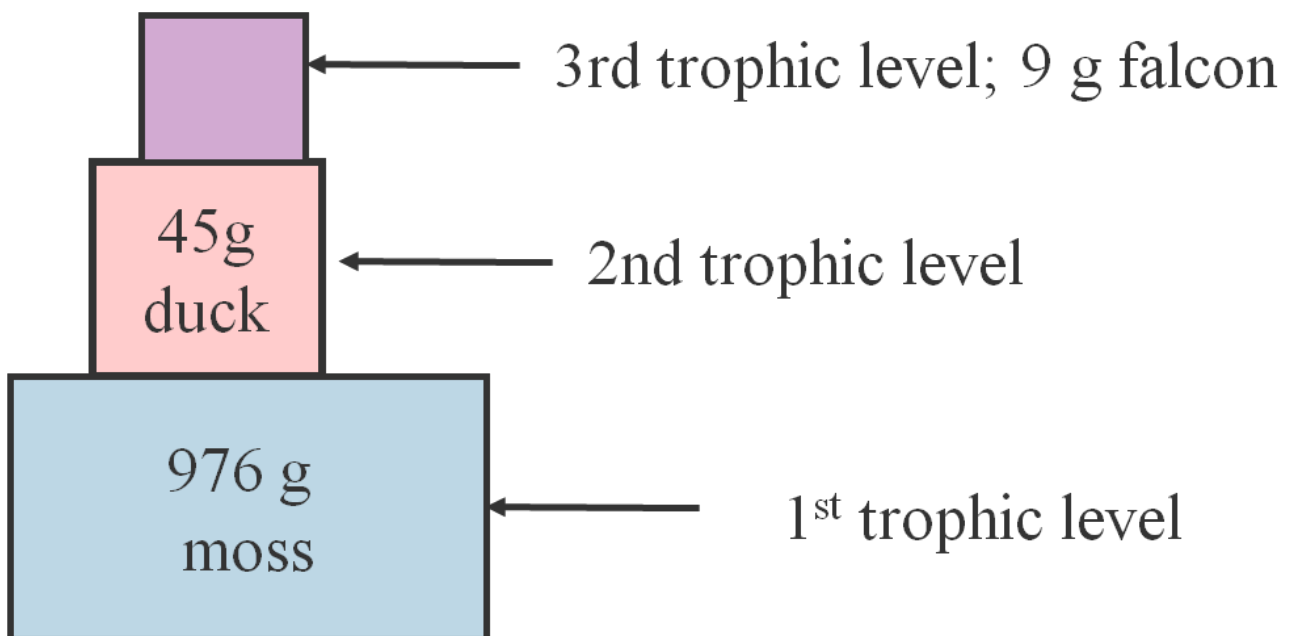


Biomass Pyramids

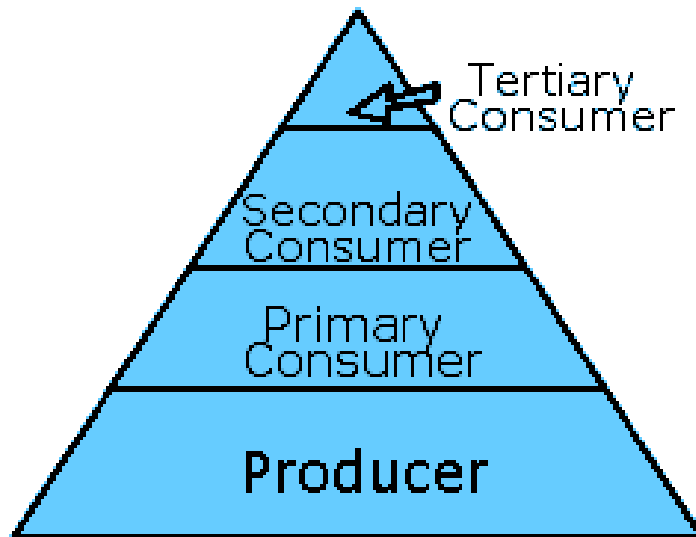
a measure of the total dry organic matter produced in a given area



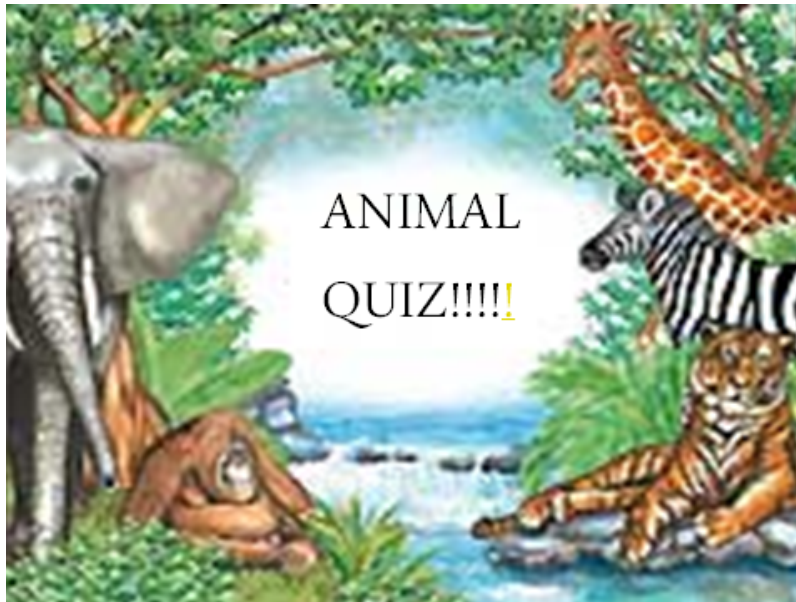
An Example



As you go from a lower feeding level to a higher feeding level, energy, numbers of organisms and biomass becomes LESS (gets smaller).....between each link in the food chain.



The energy will eventually run out unless the sun continually feeds it.



And one of the things we tend to see a lot of in ANY ecosystem is:

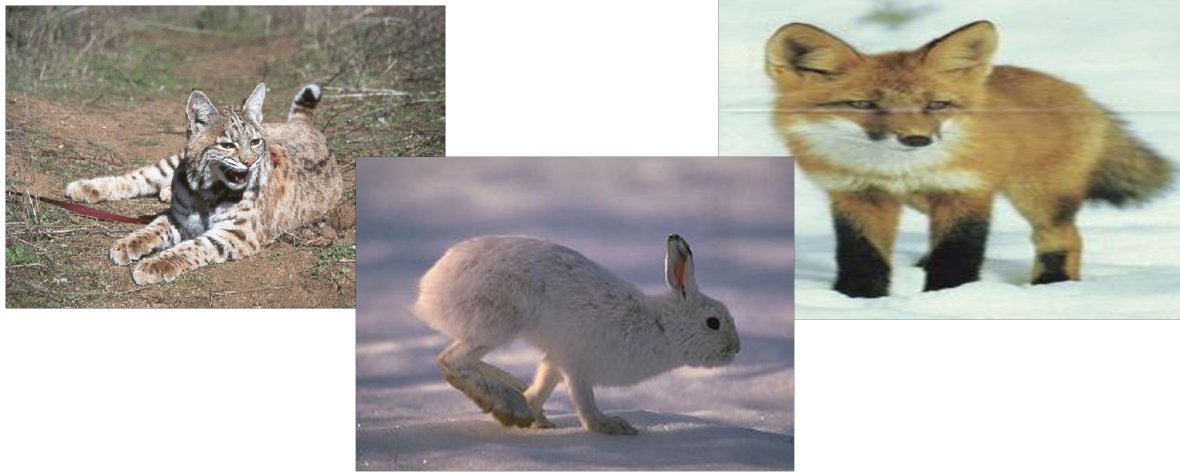
COMPETITION

Two types:

1. Inter-specific Competition

- competition between organisms of **DIFFERENT** species.
- ex: squirrels and birds fighting over nuts and seeds.

Ex 2. Both the lynx and the red fox compete to **to prey on the snowshoe hare.**



2. Intra-specific Competition

- competition between organisms of the **SAME** species.
- ex. two robins fighting over a female or a home or food.
- ex 2. Male salmon will compete with other males for mates during the spawning season. The strongest will be successful, ensuring the fittest genes will be passed on.



