



ECOLOGY UNIT



Ecology

- Study of interactions between organisms and their environment

Biotic Factors

- “Bio” means

Biotic Factors

- “Bio” means life

Biotic Factors

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- Biotic factors:

Biotic Factors

- “Bio” means life
- Biotic factors: Living things (organisms)

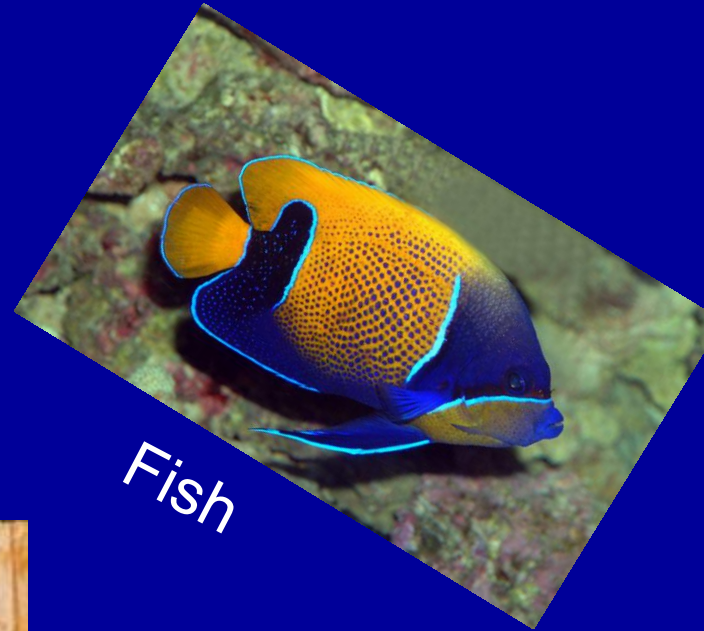
Biotic Factors



Apple tree



Flower

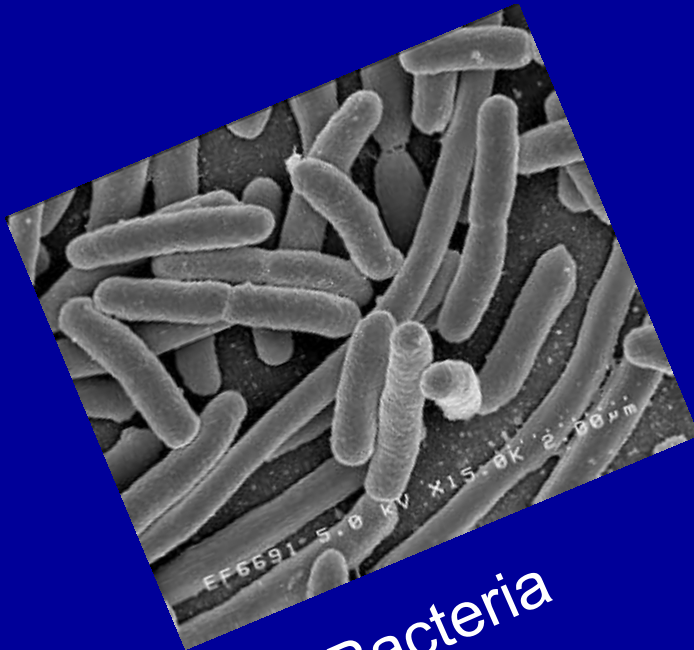


Fish



Tiger

Biotic Factors



Bacteria



Fungus



Mold

Abiotic Factors

- “A” means

Abiotic Factors

- “A” means against, opposite

Abiotic Factors

- “A” means against, opposite
- Abiotic factors:

Abiotic Factors

- “A” means against, opposite
- Abiotic factors: Non-living things (physical things)

Abiotic Factors



Soil



Rocks

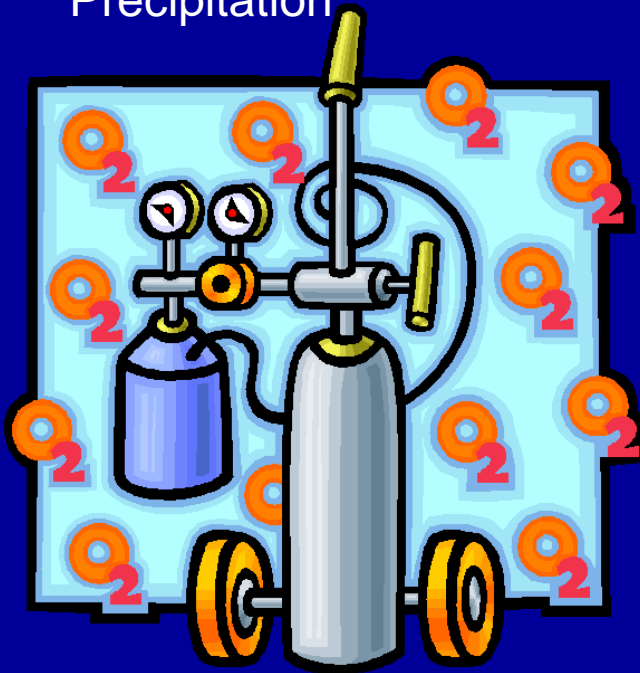


Water

Abiotic Factors



Precipitation



Oxygen



Climate



Amount of sunlight

Abiotic Factors

Shelter



Cave



Beaver Dam



Beehive



Igloo



Individual: one organism in an area



Population: a group of a single type of organism living in one area



Community: populations of different organisms living in one area



Ecosystem: all of the living and non-living things in one area.



Biome: all ecosystems in an area



Biosphere: includes all of Earth



Habitat

- A specific place where an organism lives



Niche

- Niche: The role an organism plays in its environment.
 1. What it eats
 2. Where it lives
 3. How it interacts with other organisms
 4. How it reproduces



What is the lion's niche? (What is the lion's role in the ecosystem?)

What is the niche of the clown fish?



1. What does it eat?
2. Where does it live?
3. How does it interact with other organisms?

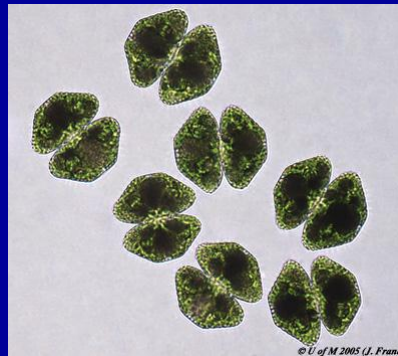
- Autotrophs/ Producers:
 - (auto= self)
- Make their own food in the form of glucose



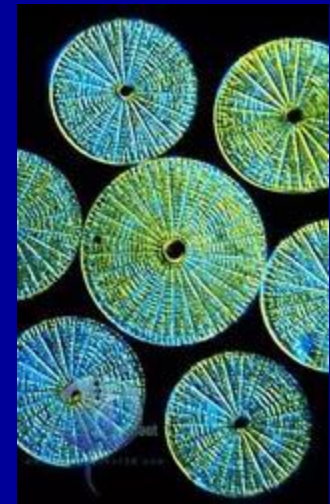
Examples: algae, trees, grass, phytoplankton



Plants



Algae



Phytoplankton

- Heterotrophs/Consumers:

Hetero = different

- Must eat other organisms in order to obtain energy and nutrients



Herbivores: Animals that only eat plants

- Examples: cows, rabbits, squirrels



Cow



Rabbit



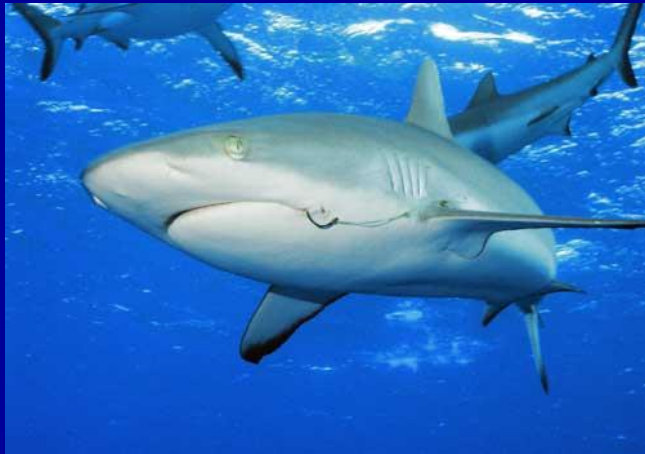
Squirrel

- Omnivore: Animals that eat both plants and animals
- Examples: bears, humans,



Carnivores: Animals that only eat other animals

- Examples: Sharks, lions, raccoons, vultures.



Shark



Lion



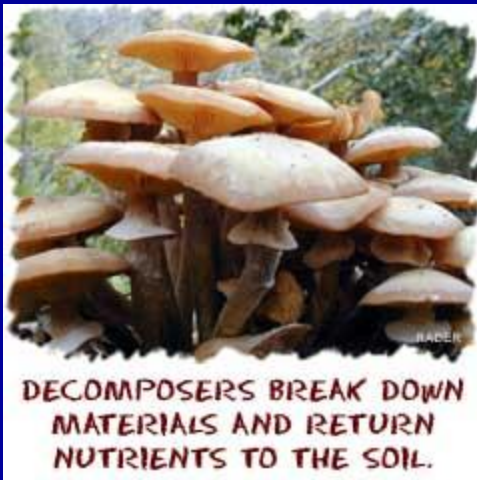
Raccoon



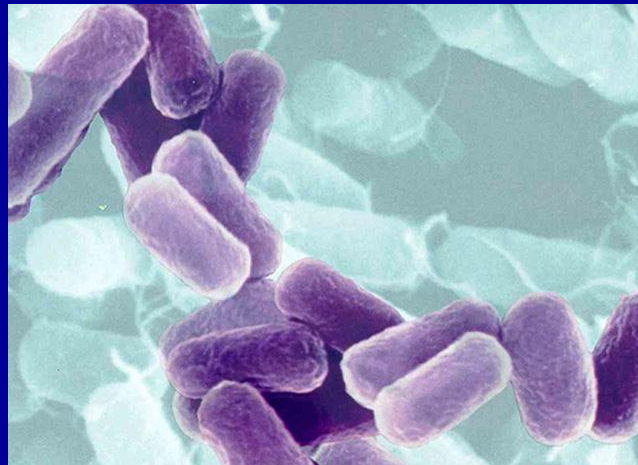
Vulture

Decomposer: Break down dead/organic material. Recycle nutrients back into the soil.

- Examples: Fungus (mushroom), bacteria



Fungus



Bacteria

Food Chains

- Use the organisms to construct a food chain
- Draw the Arrows:

This is a food chain

Grass → Insect → Bird → Fox

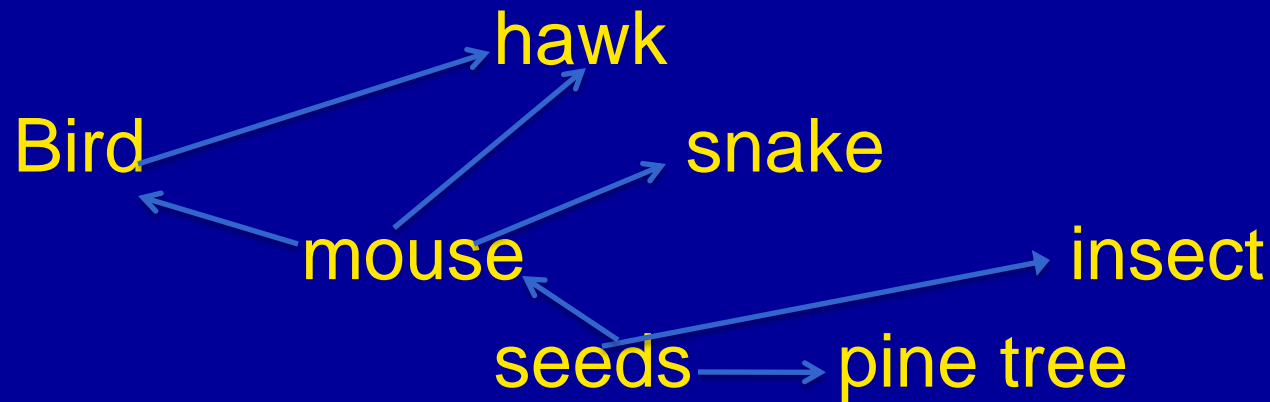
Where does the initial energy come from?

How does each organism obtain their energy?

A food chain is a sequence in which energy is transferred from one organism to the next as each organism eats another organism

Food Webs

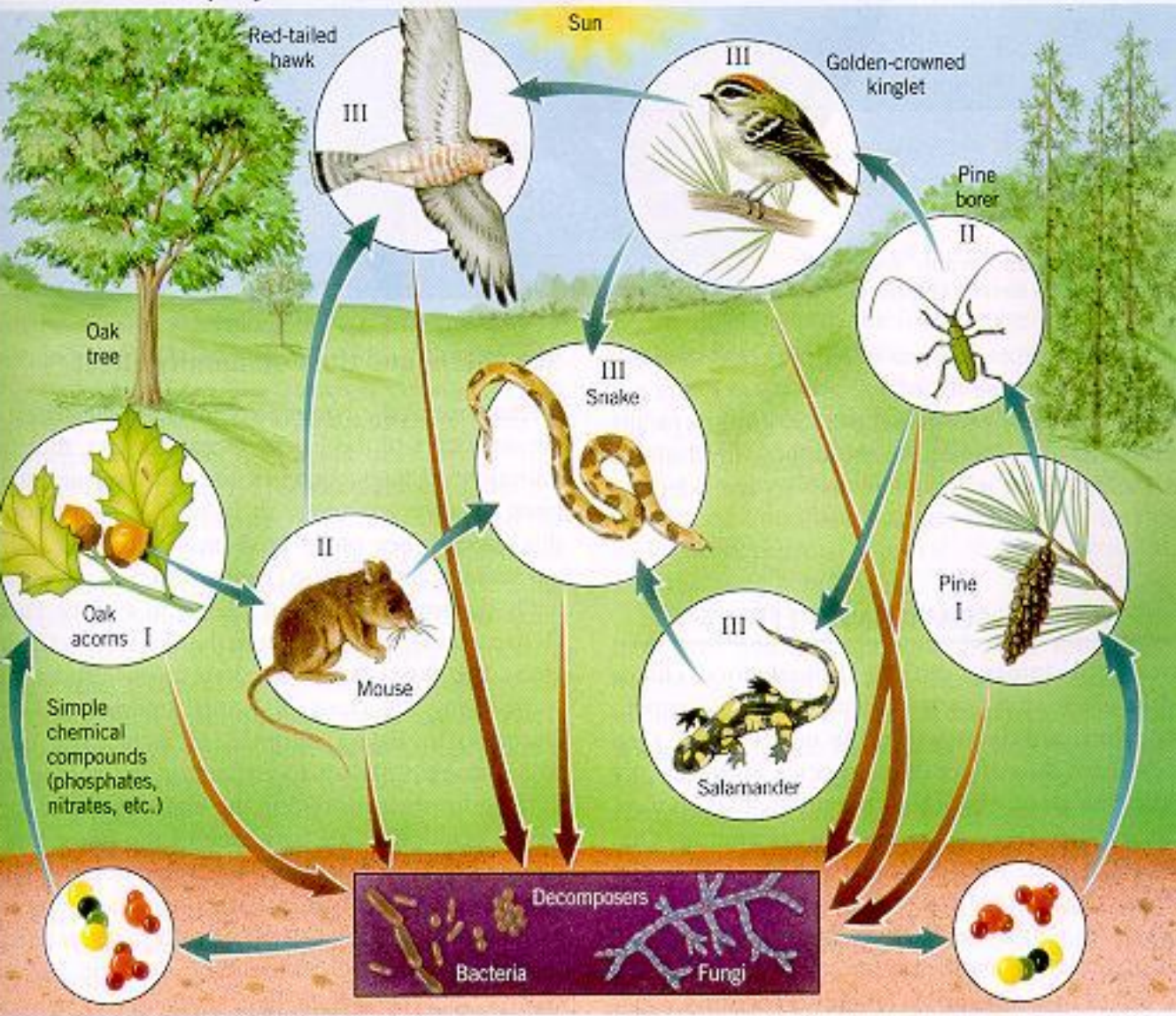
- Food webs are interconnected food chain that show many feeding relationships



- The arrows show the FLOW OF ENERGY

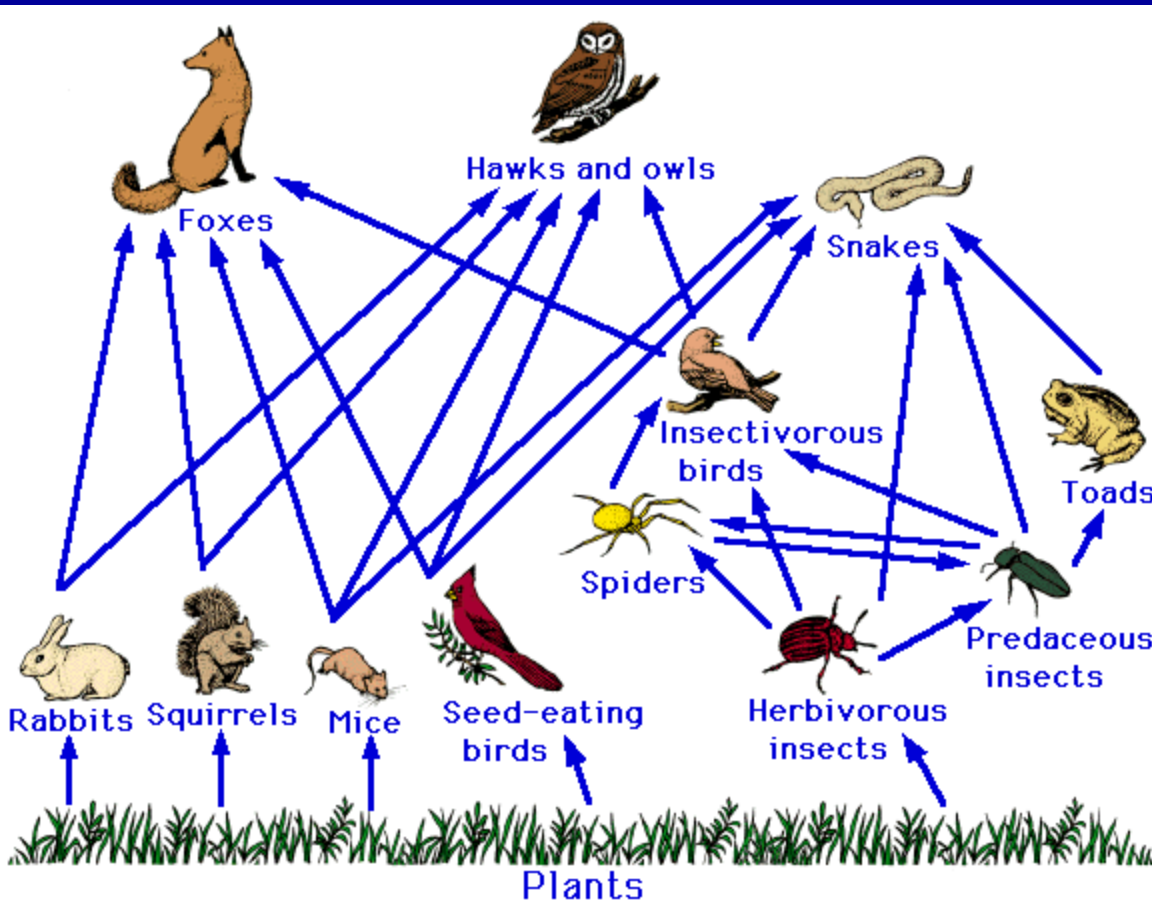
Food Webs

FIGURE 6.3 Food webs: (a) a typical terrestrial food web. Roman numerals identify trophic levels.



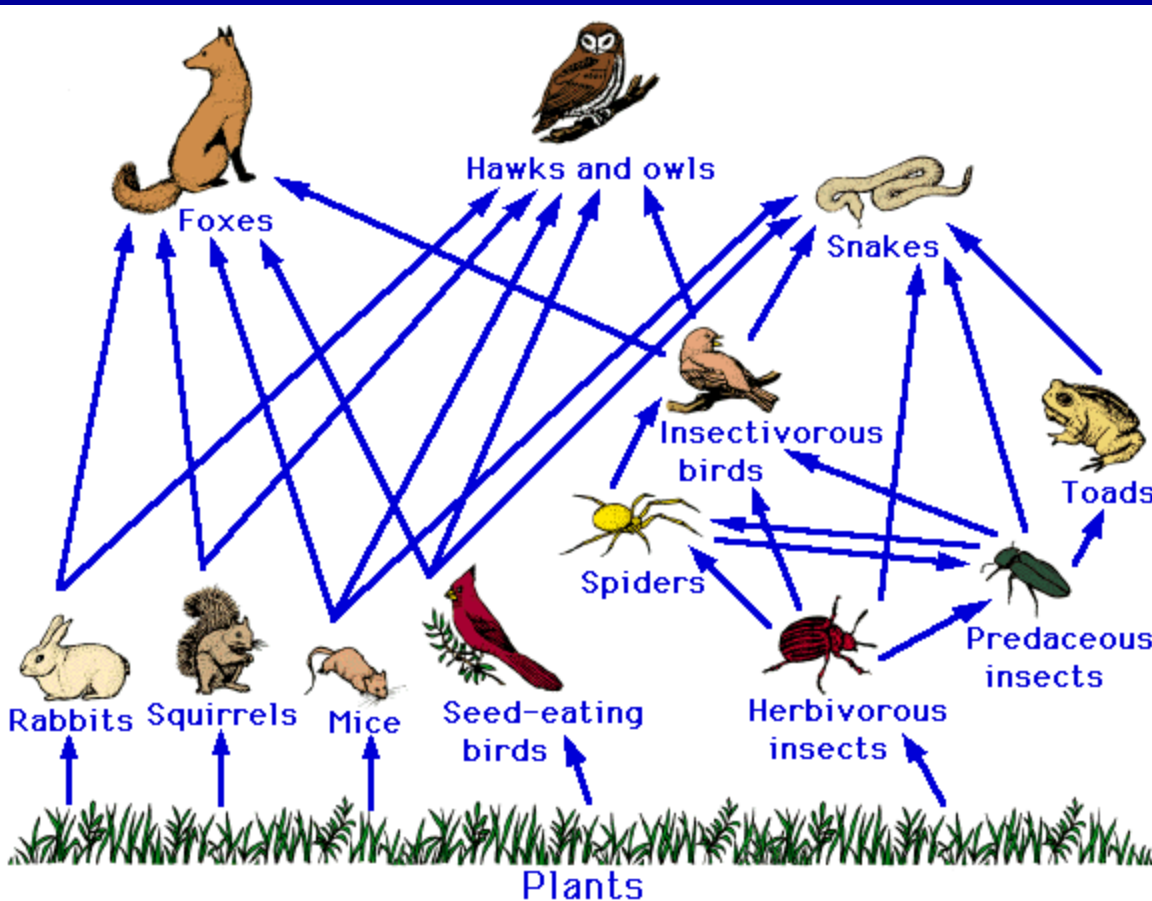
Energy flows
in one
direction.
Which
direction?
Energy flows
from
producers to
herbivores to
carnivores to
decomposers

Factors that affect stability



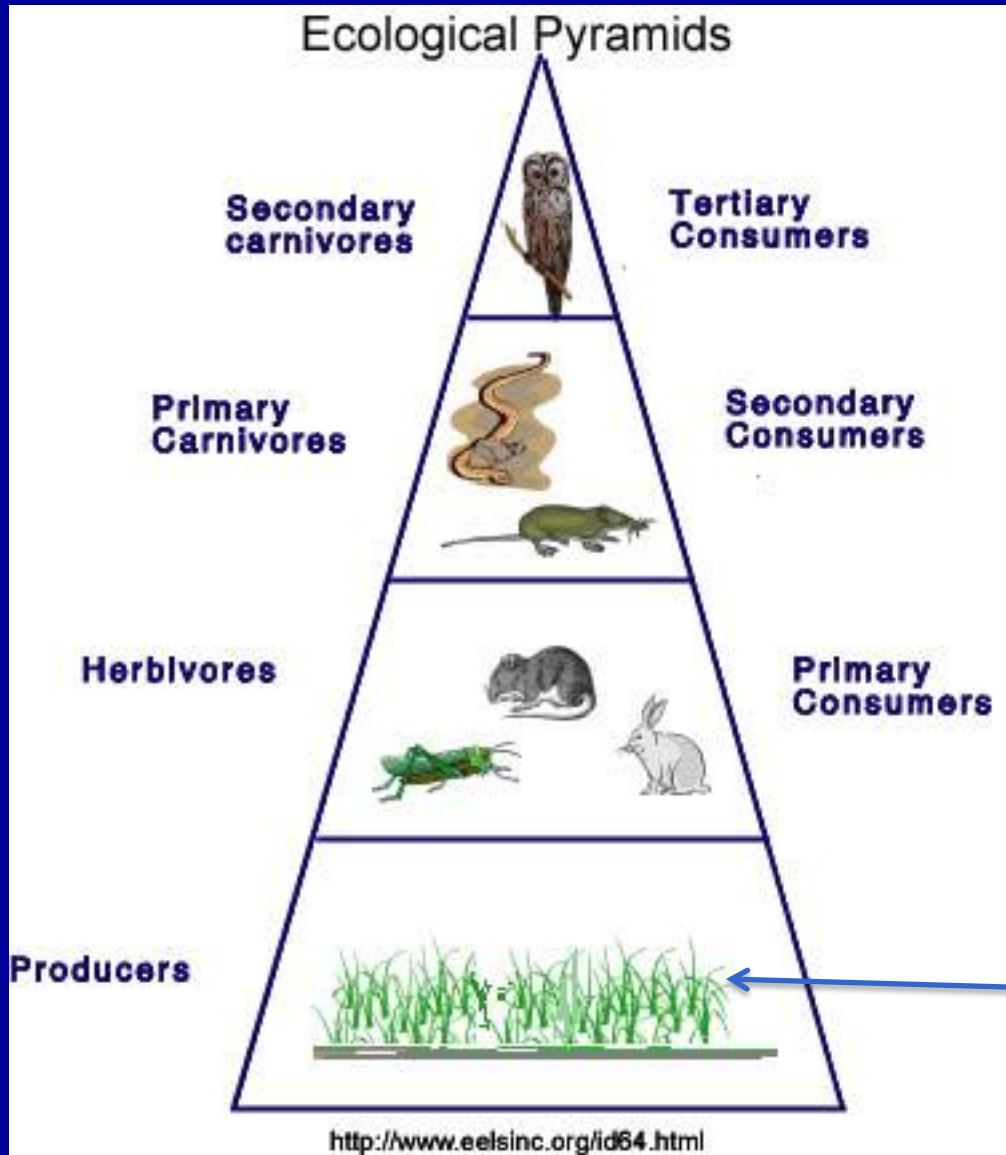
Food webs are more stable than food chains because organisms have more than one food source in a food web

Factors that effect stability



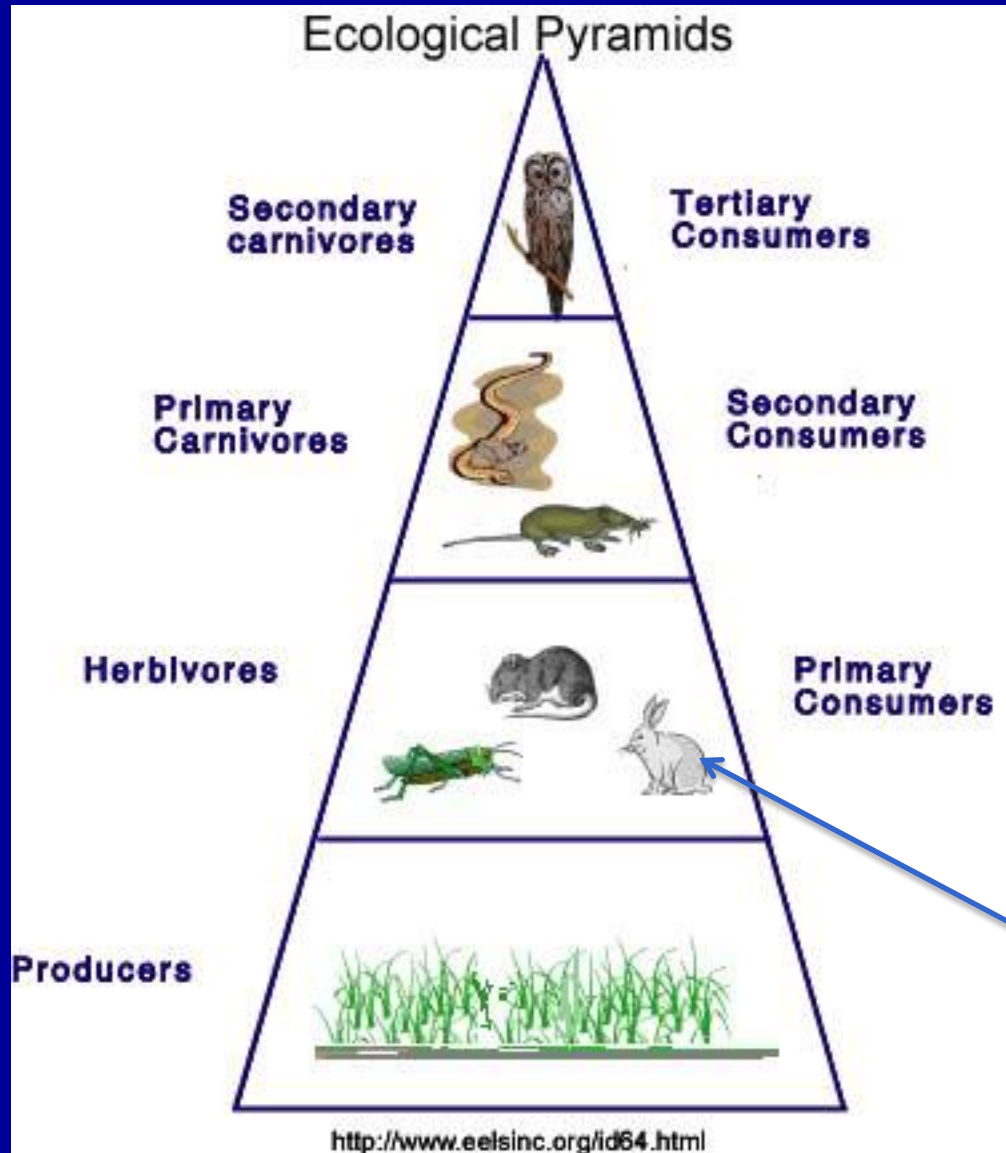
- Removing or adding organisms in food web can be harmful to the stability of the ecosystems.

ENERGY PYRAMID

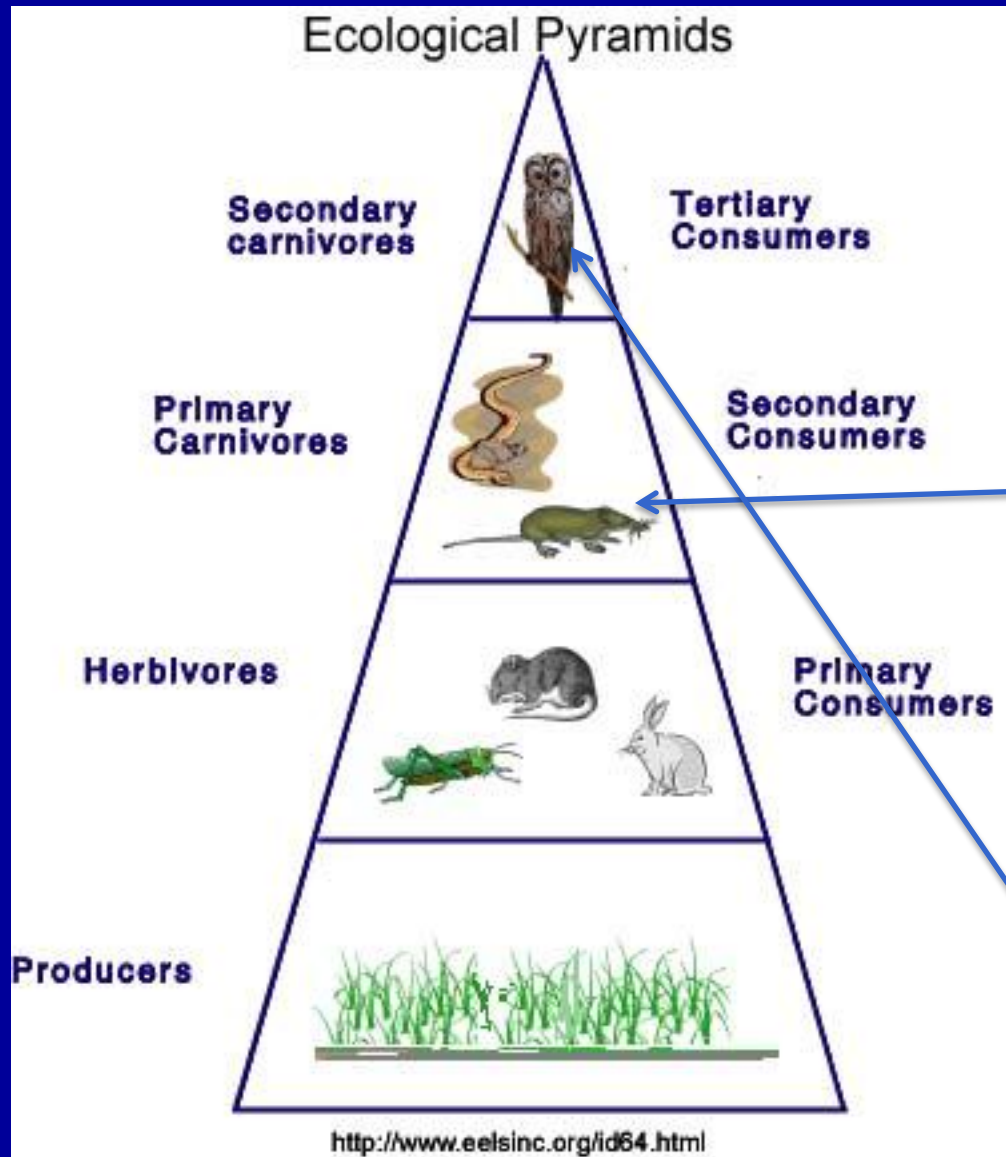


Each level is called a trophic level

- The autotrophs form the basis of the pyramid and are the primary producers.

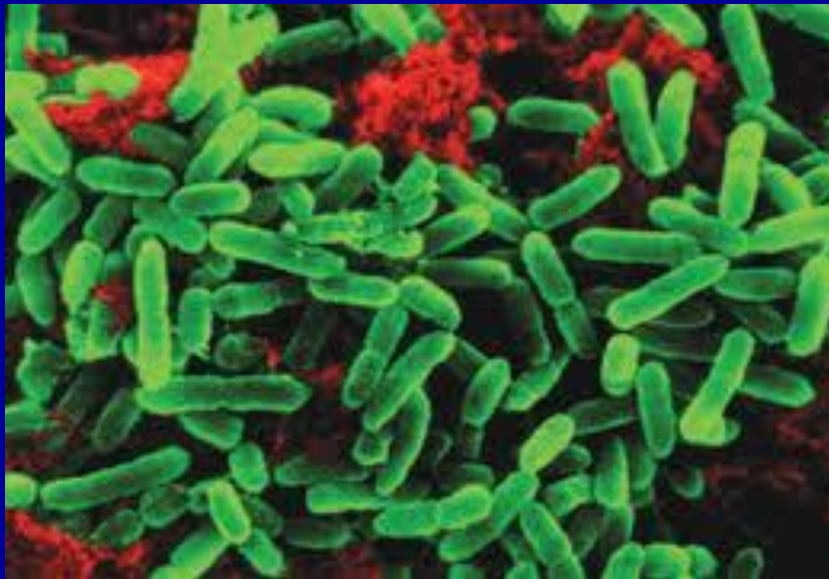


- The next level is heterotrophs that consume the autotrophs and are the primary consumers. Generally, 10% of the energy is based from one level to the next.



- The secondary consumers are carnivores who eat the herbivores
- The tertiary consumers are also carnivores who eat the secondary consumers

- Decomposers that break down the remains of plants and animals also figure into pyramid of energy.



10% LAW

- According to the law, during the transfer of organic food from one trophic level to the next, only about ten percent of the energy in each organism is transferred to the next level. The remaining is lost during transfer or broken down for energy by the organism.