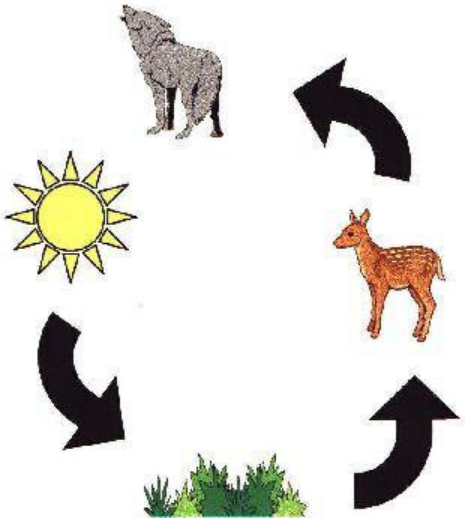
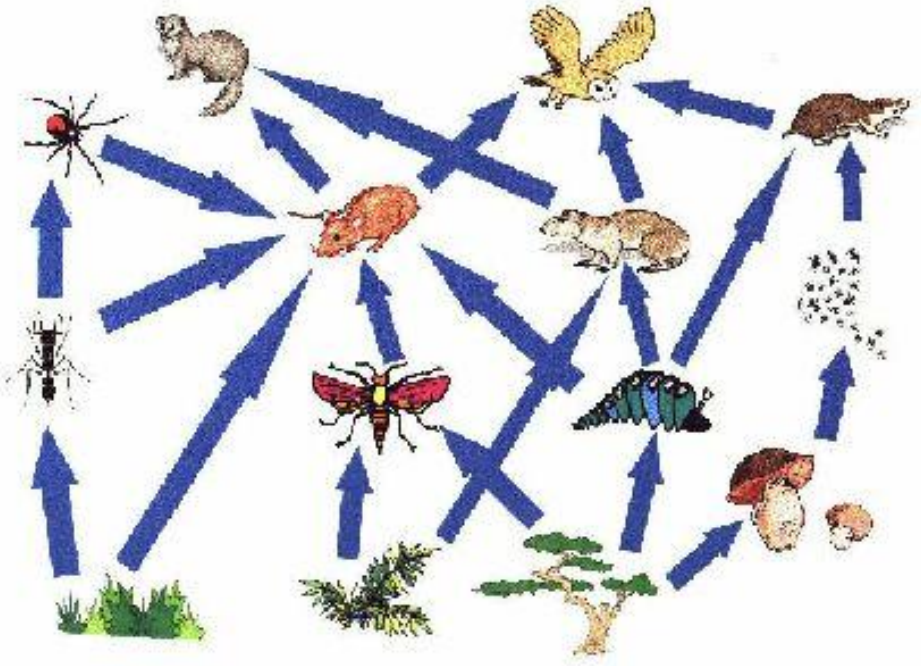
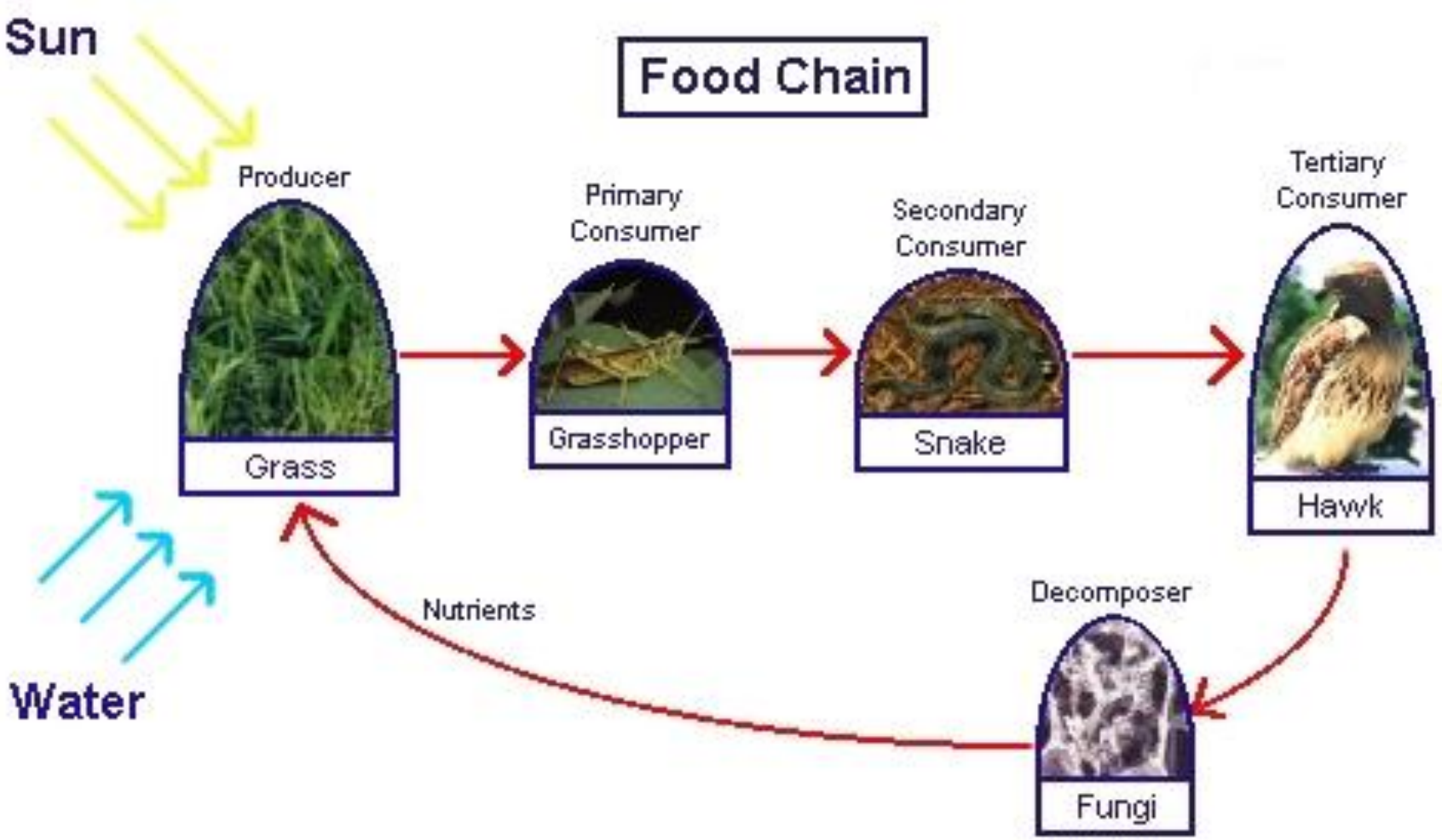
Food Chains & Food Webs





Food Chain vs. Food Web- What's the difference?

- A **food chain** is a diagram that shows a step-by-step sequence of who eats whom in an ecosystem.
- A **food web** is a diagram that shows many possible food chains or feeding relationships that can involve any combination of the individuals in an ecosystem.
- The arrows in chains and webs always point to the organism doing the eating (Follow the Energy)



- Which are the herbivores? Carnivores?
- What is the significance of the arrows?
- Why are decomposers important in a food chain?

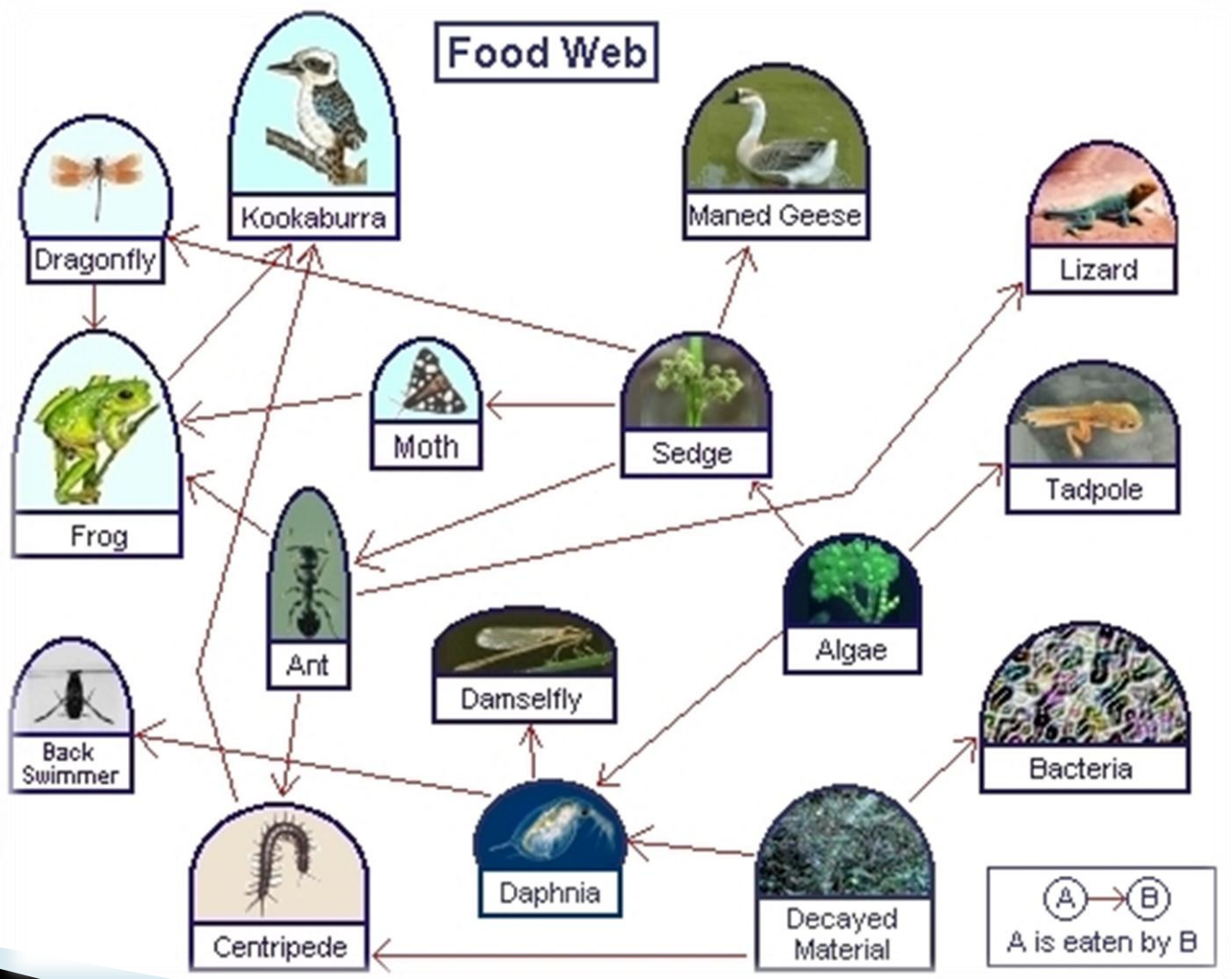
Trophic Levels

- Each member of the food chain occupies a specific trophic level and describes how an organism obtains its energy.

- The first trophic level is the **producer**
  - (e.g. plants) – converts energy from the sun
- The second trophic level is the **primary consumer**
  - (e.g. herbivores)
- The third trophic level is the **secondary consumer**
  - (e.g. omnivores or carnivores)

Can more than one organism occupy a trophic level?

YES!



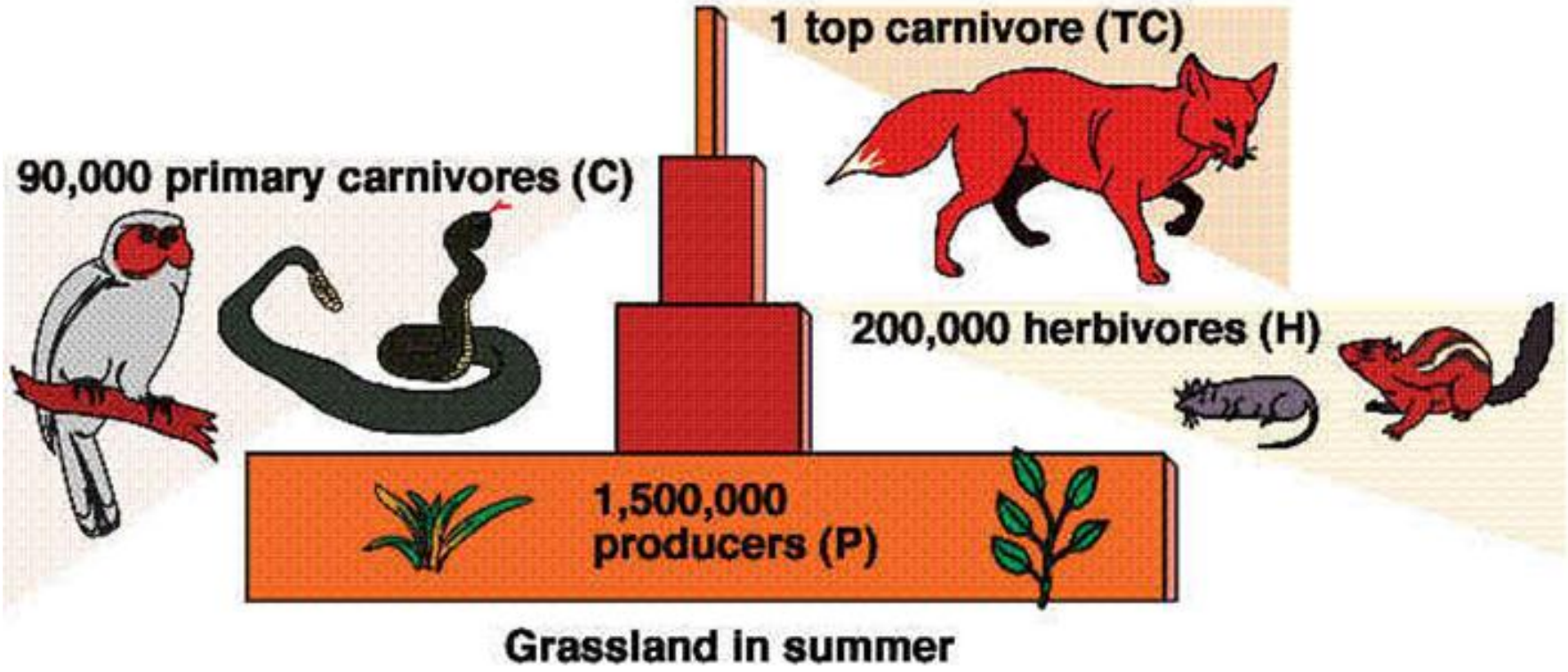
How do trophic levels differ?

- The first trophic level houses the largest amount of energy.
- Each subsequent trophic level only houses 10 percent of the energy from the previous level
  - (i.e. 90% is lost)
- Why is energy lost at each level?
  - Not all of the organism is consumed.
  - Not everything that is eaten is digested.
  - Energy is lost as heat from the bodies of organisms.
- What do changes in trophic levels look like as you move up through the food chain?

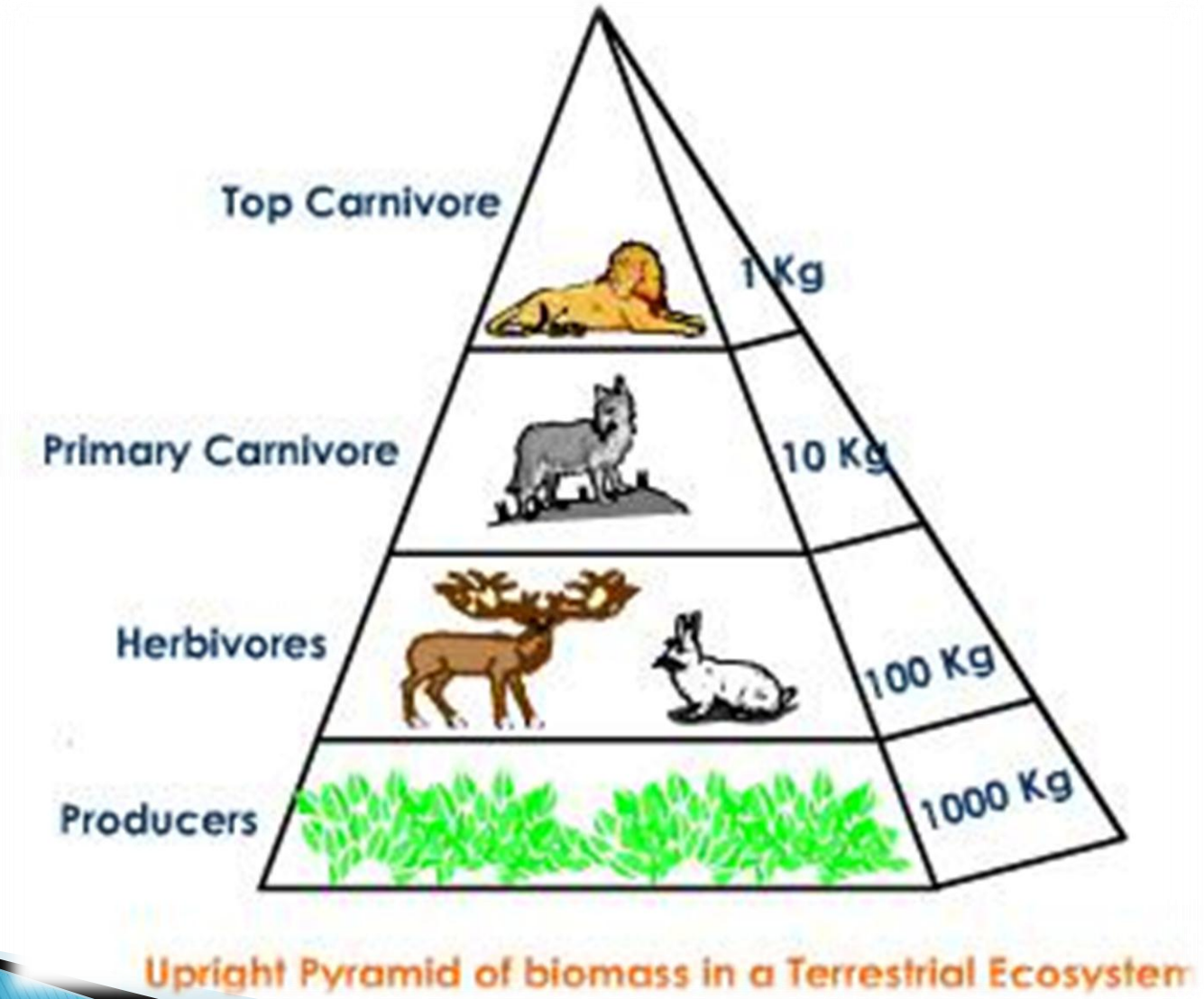
Food Pyramids

- Food Pyramids display the distribution of organisms in a food chain through:
  - Numbers of organisms at each trophic level.
  - Biomass (kg) of organisms at each trophic level.
  - Energy (kJ) available at each trophic level.

Pyramid of Numbers

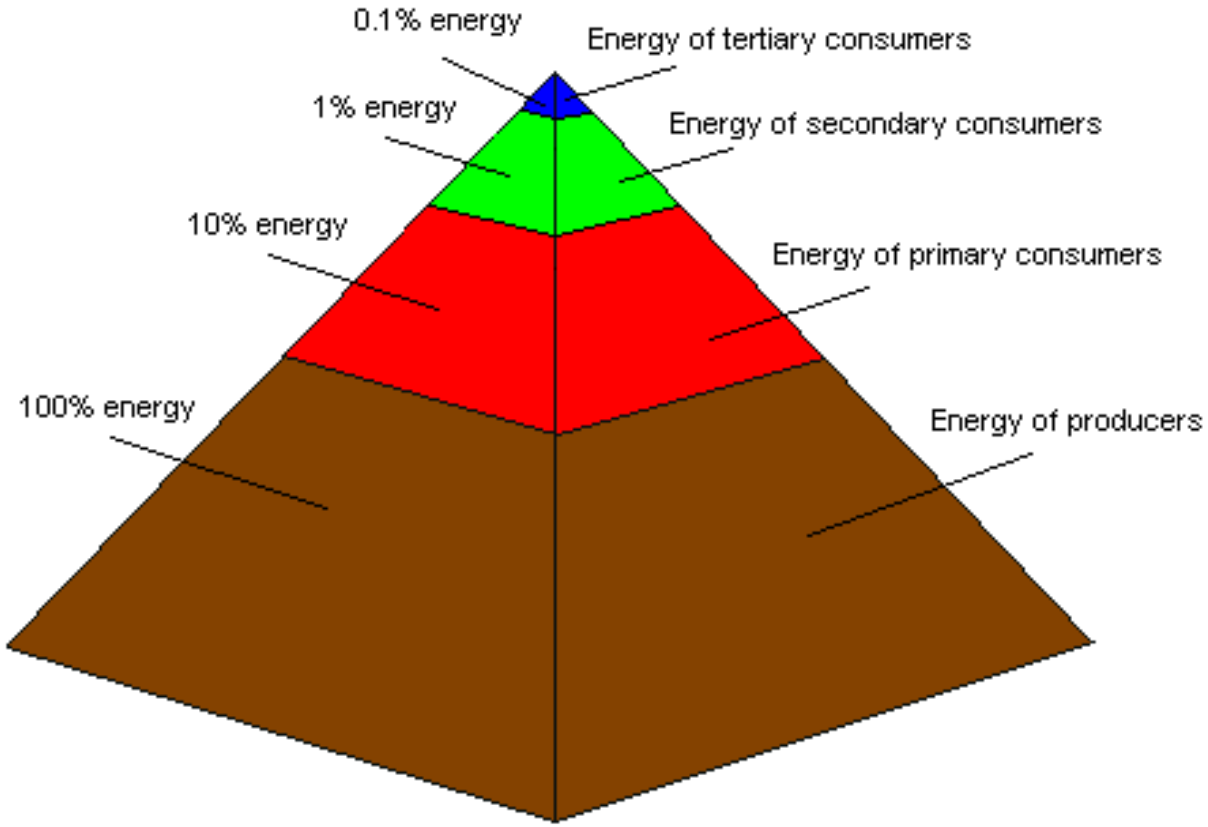


Pyramid of Biomass



Upright Pyramid of biomass in a Terrestrial Ecosystem

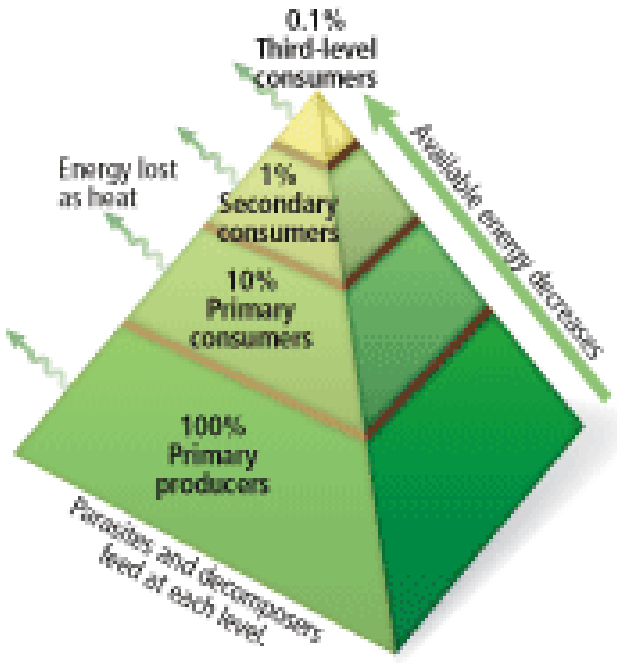
Pyramid of Energy



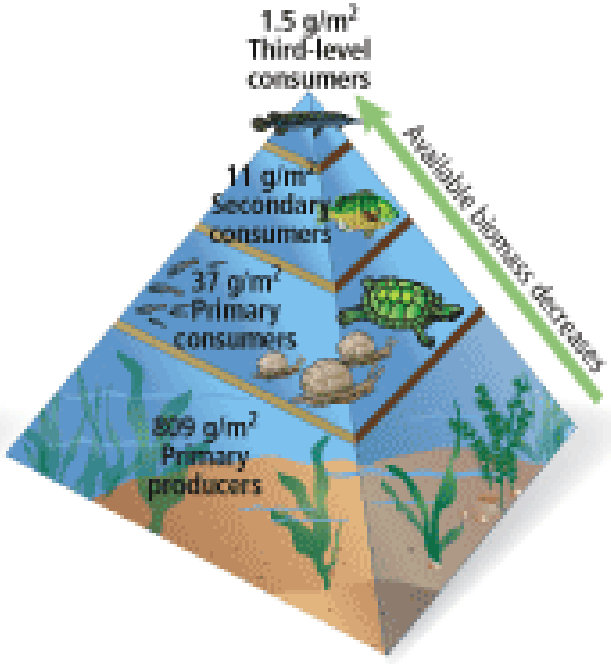
2nd Law of Thermodynamics:

- In every energy transformation,
- some energy is always lost
- There is no 100% energy conversion

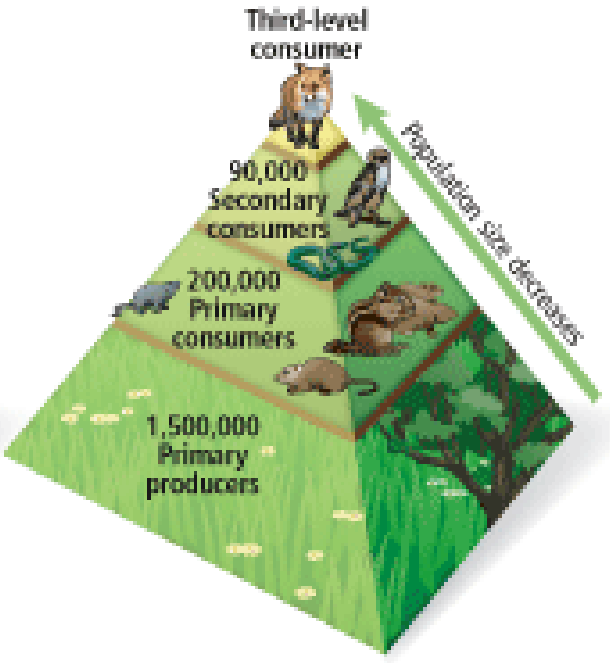
Ecological Pyramids



Pyramid of Energy



Pyramid of Biomass



Pyramid of Numbers