

# Food Chains, Food Webs and Ecological pyramid

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# Autotrophs

- A groups of organisms that can use the energy in sunlight to convert water and carbon dioxide into Glucose (food)
- Autotrophs are also called Producers because they produce all of the food that heterotrophs use
- Without autotrophs, there would be no life on this planet
- Ex. Plants and Algae

# Autotrophs

## Chemotrophs

Autotrophs that get their energy from inorganic substances, such as salt Live deep down in the ocean where there is no sunlight

Ex. Bacteria and Deep Sea Worms

# Heterotrophs

- Organisms that do not make their own food
- Another term for Heterotroph is consumer because they consume other organisms in order to live
- Ex. Rabbits, Deer, Mushrooms

# Heterotrophs



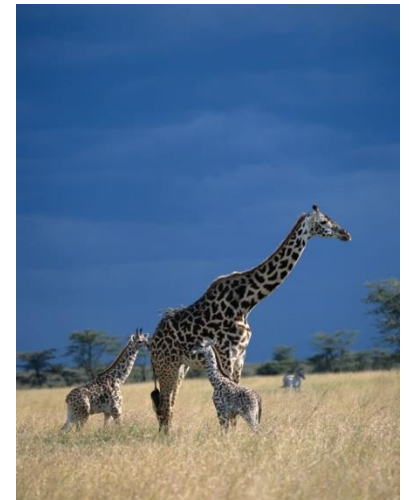
# Heterotrophs

- Consumers
  - 1. Scavengers/Detritivores – feed on the tissue of dead organisms (both plants and animals)
    - Ex. – Vultures, Crows



# Heterotrophs

- Consumers
  - 2. Herbivores – eat ONLY plants
    - Ex. – Cows, Elephants, Giraffes



# Heterotrophs

- Consumers
  - 3. Carnivores – eat ONLY meat
    - Ex. – Lions, Tigers, Sharks





# Heterotrophs

- Consumers
  - 4. Omnivores – eat BOTH plants and animals
    - Ex. – Bears and Humans

# Heterotrophs

- Consumers
  - 5. Decomposers – absorb any dead material and break it down into simple nutrients or fertilizers
    - Ex. – Bacteria and Mushrooms



# Transfer of Energy

- When a zebra eats the grass, it does not obtain all of the energy the grass has (much of it is not eaten)
- When a lion eats a zebra, it does not get all of the energy from the zebra (much of it is lost as heat)

# Transfer of Energy

- The two (2) previous examples of energy transfer show that no organism EVER receives all of the energy from the organism they just ate
- Only 10% of the energy from one trophic level is transferred to the next – this is called the 10% law

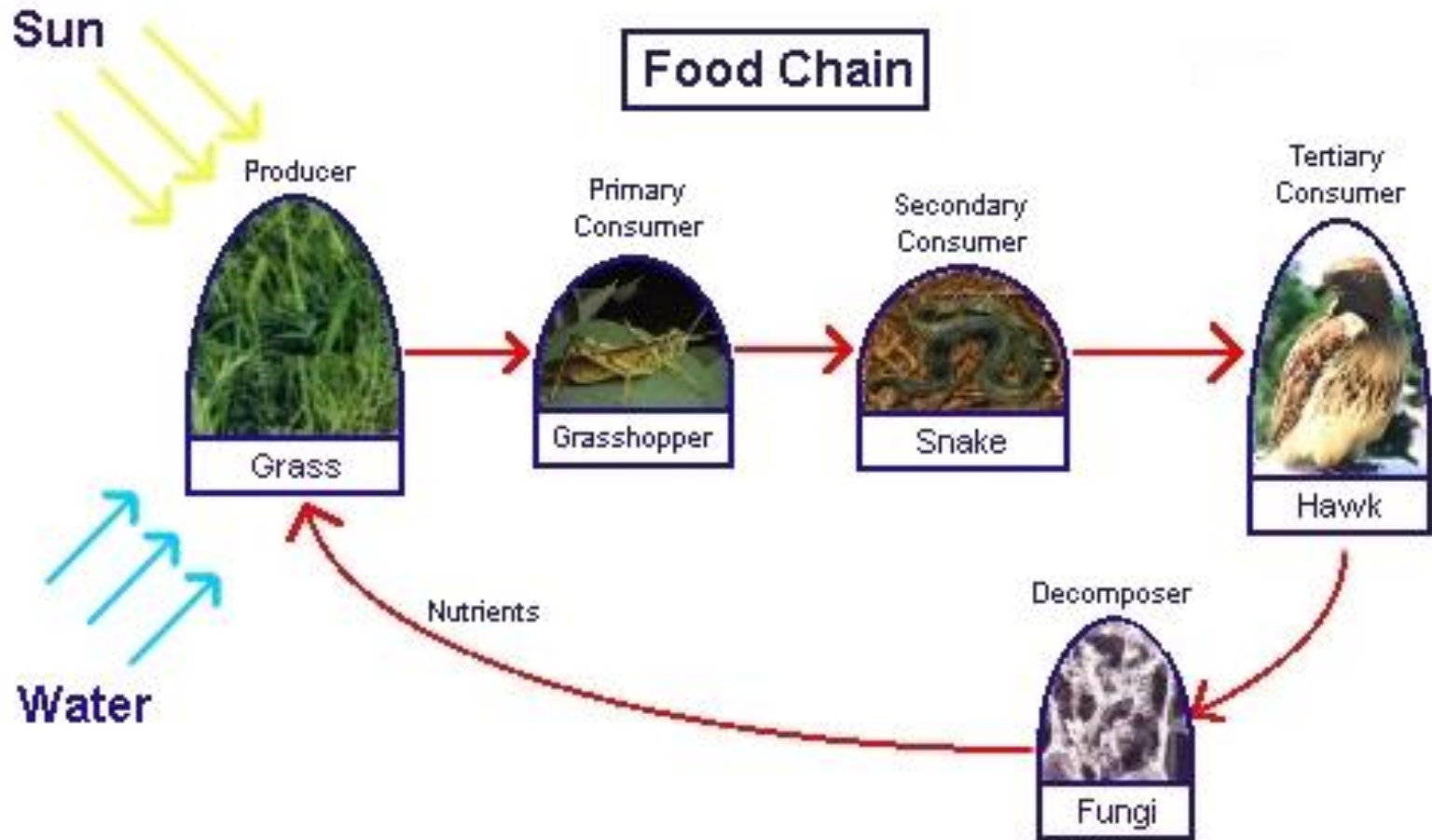
# Trophic Levels

- Energy moves from one organisms to another when it is eaten
- Each step in this transfer of energy is known as a trophic level
  - The main trophic levels are producers, consumers, and decomposers

# Food Chains

- The energy flow from one trophic level to the other is known as a food chain
- A food chain is simple and direct
- It involves one organism at each trophic level
  - Primary Consumers – eat autotrophs (producers)
  - Secondary Consumers – eat the primary consumers
  - Tertiary Consumers – eat the secondary consumers
  - Decomposers – bacteria and fungi that break down dead organisms and recycle the material back into the environment

# Food Chain

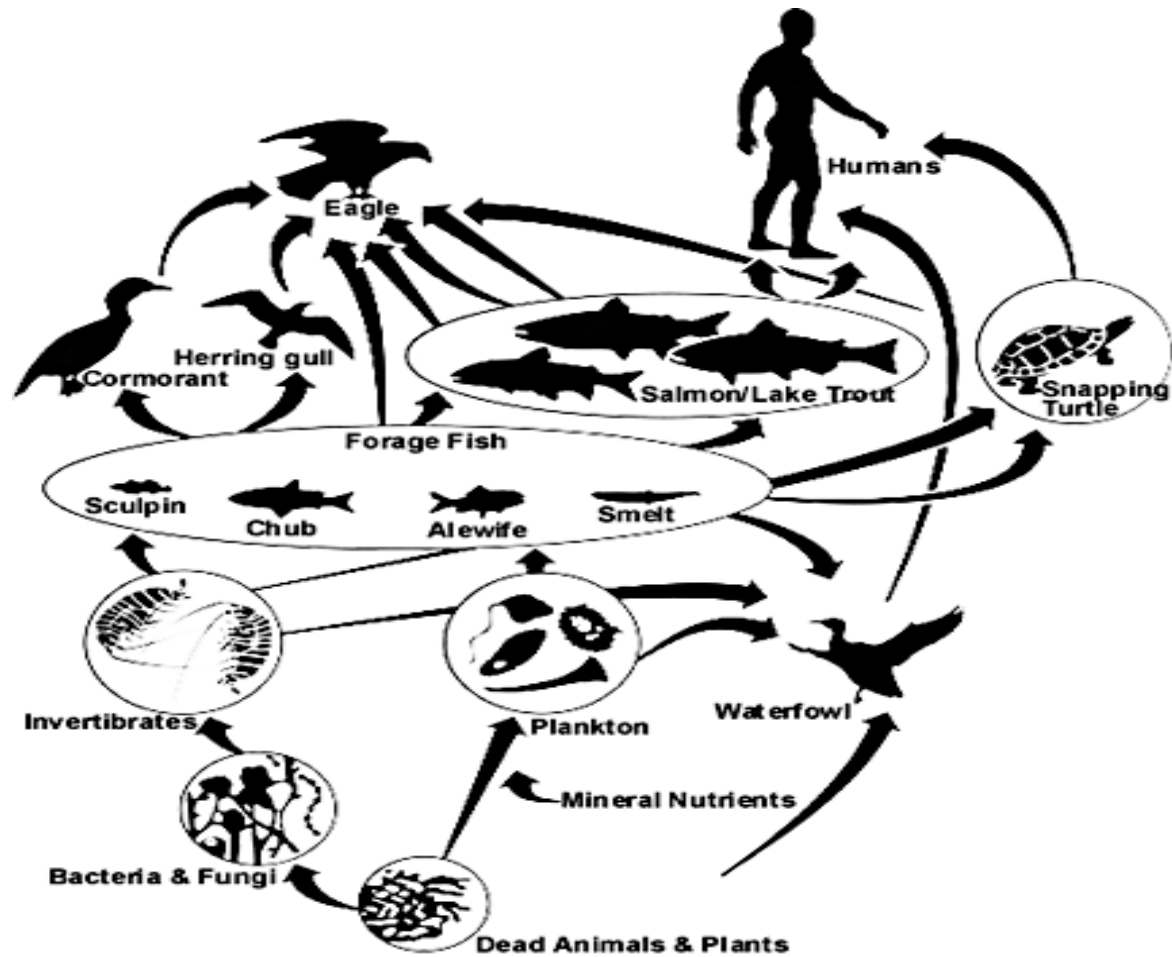


# Food Web

- Most organisms eat more than JUST one organism
- When more organisms are involved it is known as a FOOD WEB
- Food webs are more complex and involve lots of organisms



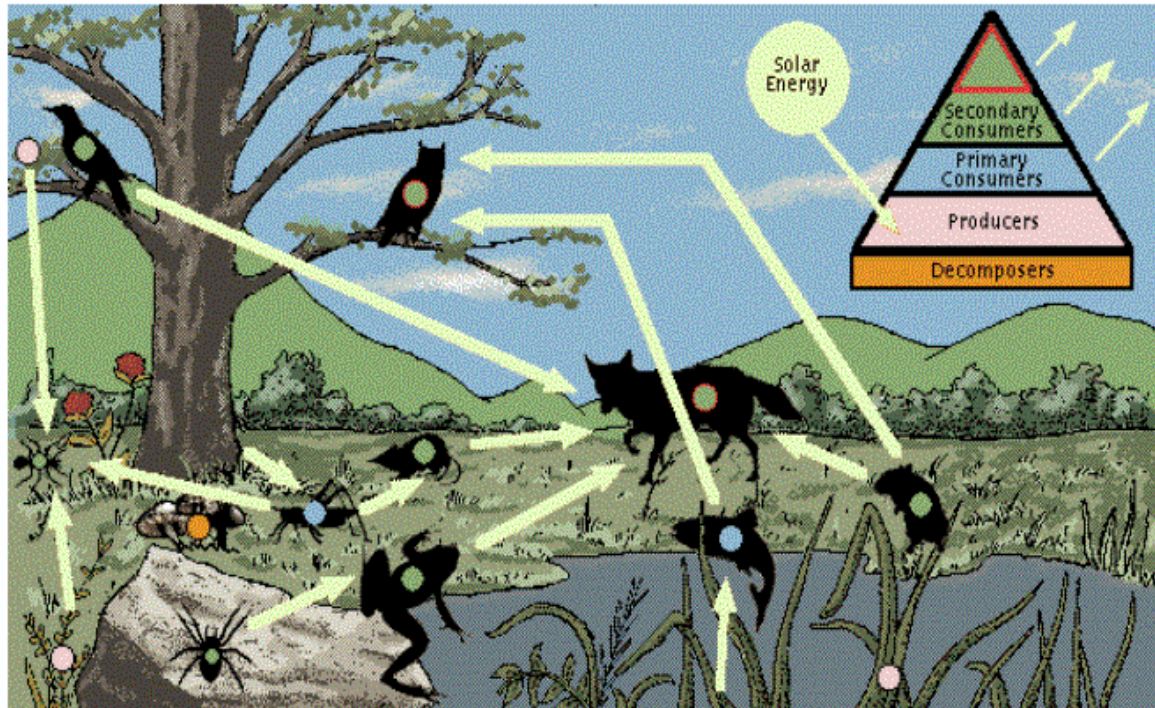
# Food Web



# Food Web

- Notice that the direction the arrow points → the arrow points in the direction of the energy transfer, NOT “what ate what”

# Food Web

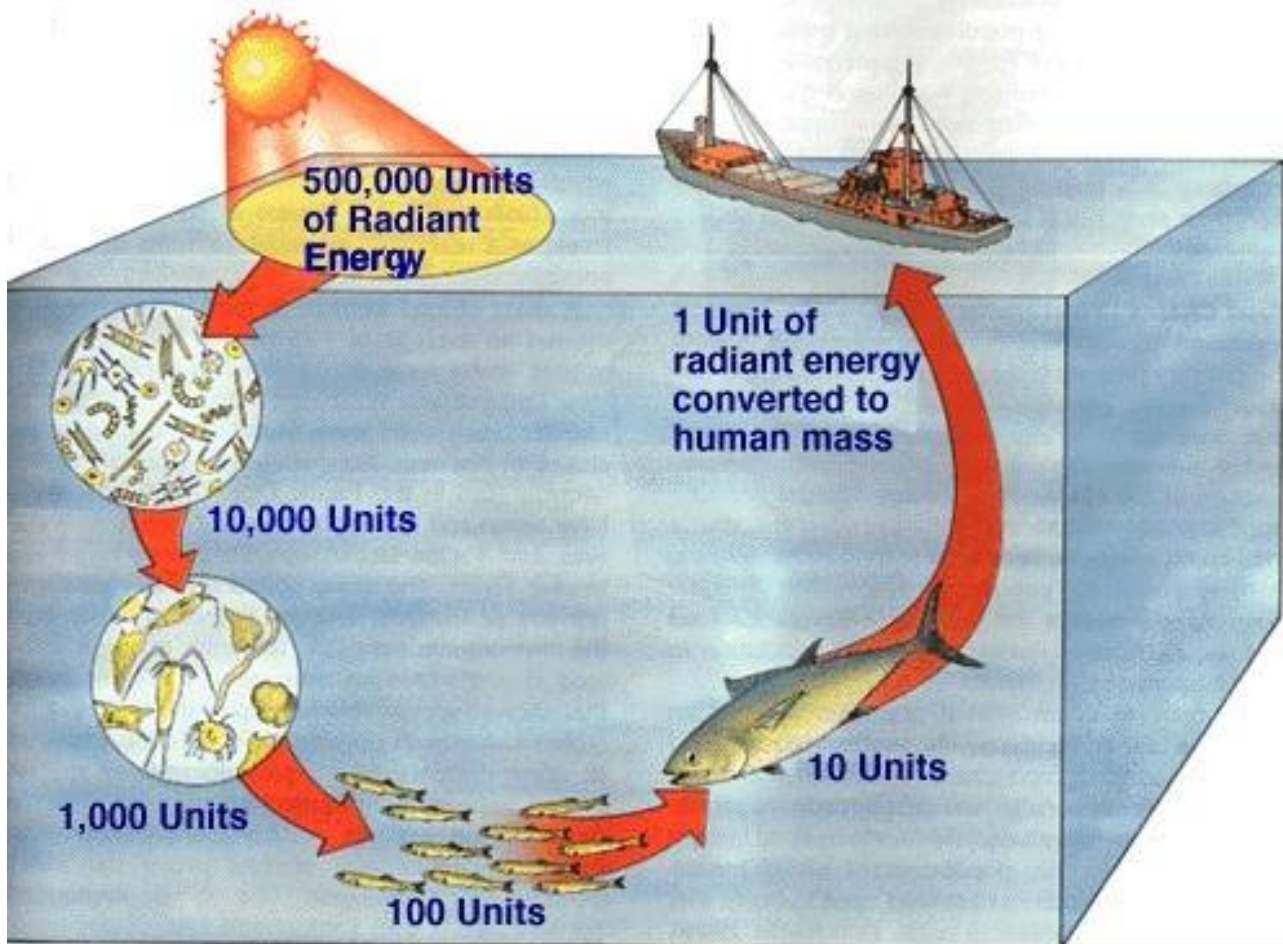


**FIGURE 1:** This diagram shows the relations between typical terrestrial organisms. The arrows connect the prey (diet) to the predator (consumer). The colored dots on the animals are coded to the colors in the triangular diagram at the upper right.

# Biomass

- The total mass of the organic matter at each trophic level is called biomass
- Biomass is just another term for potential energy – energy that is to be eaten and used.
- The transfer of energy from one level to another is very inefficient (10% Law)

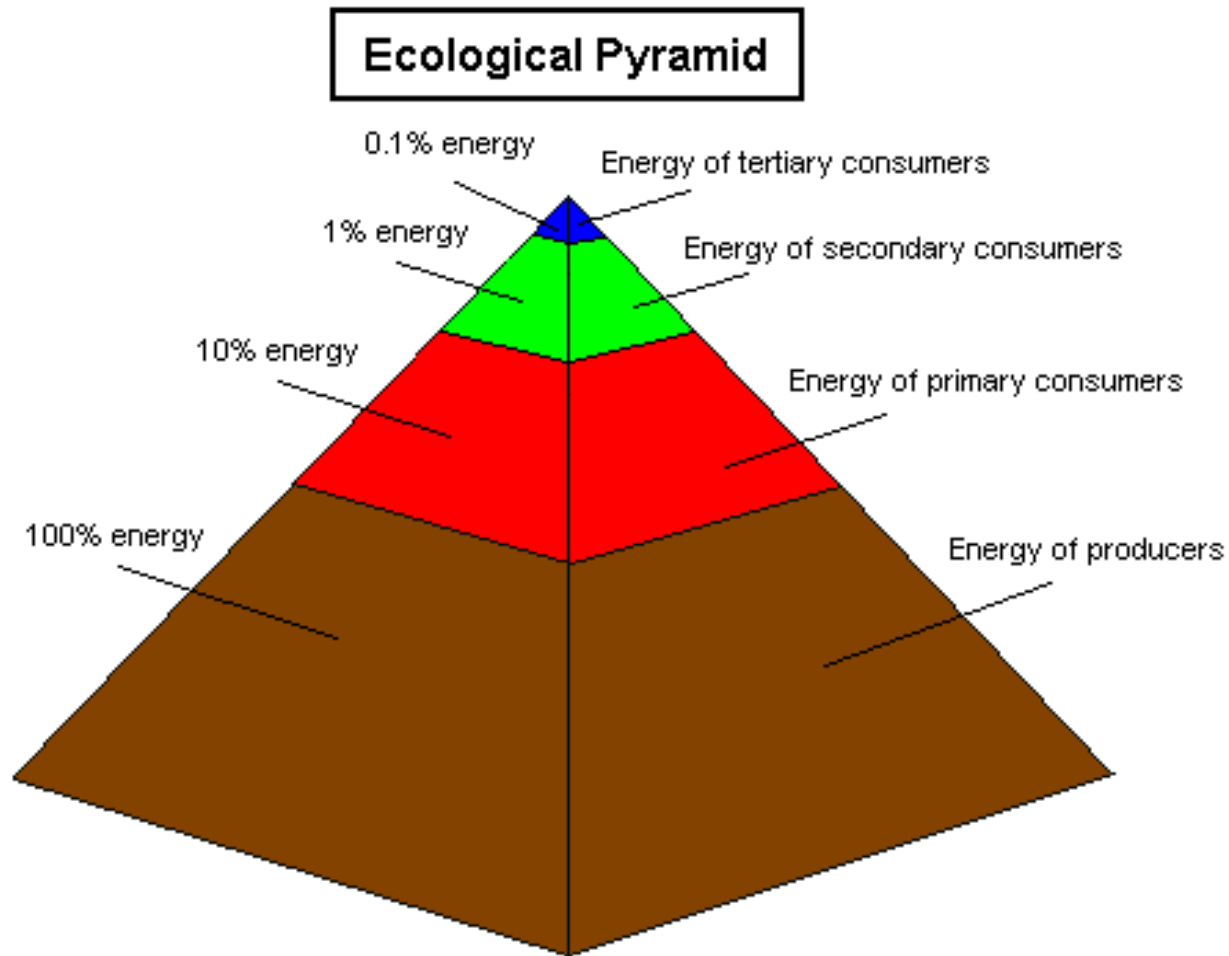
# Biomass



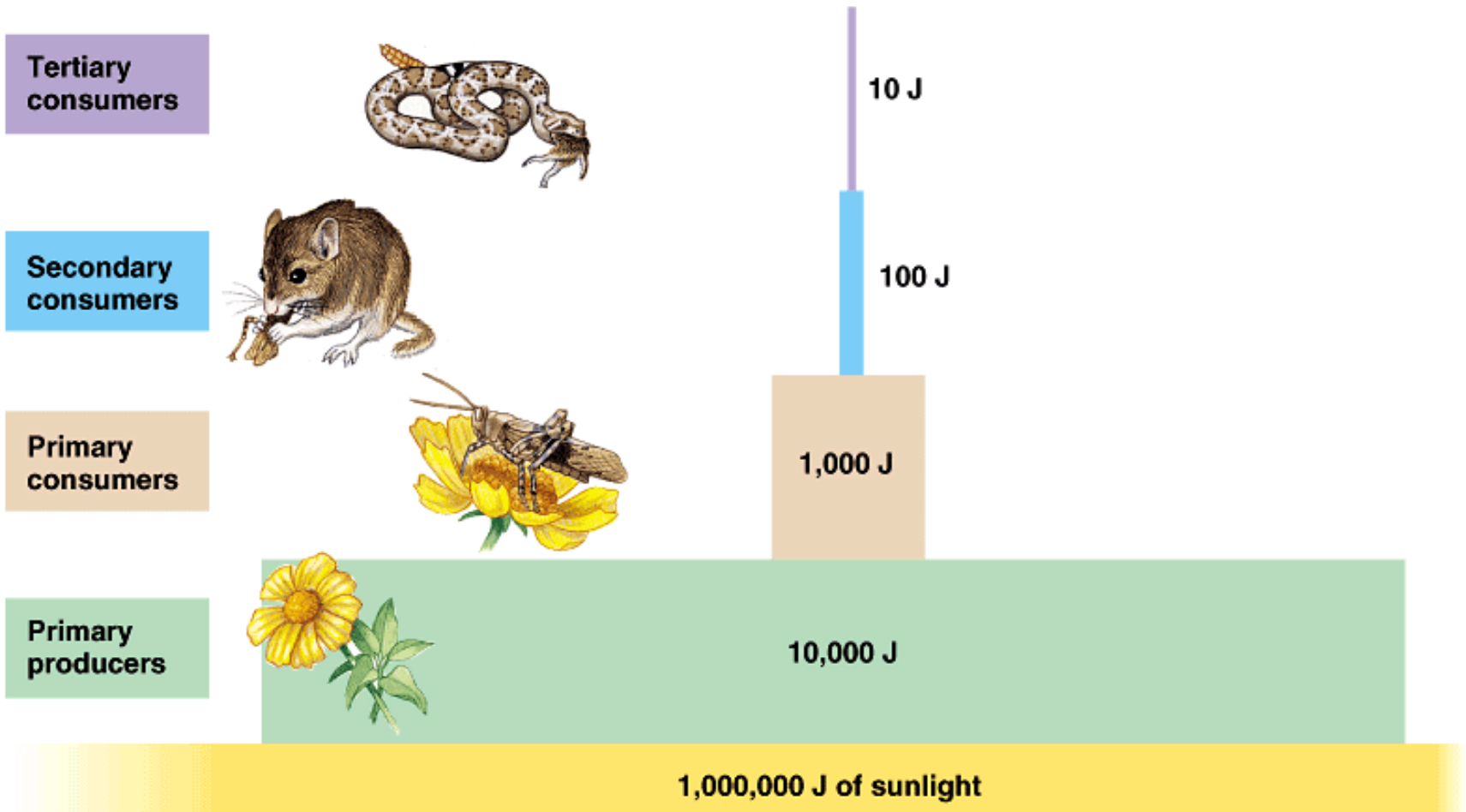
# Ecological Pyramid

- An ecological pyramid shows the relationship between consumers and producers at different trophic levels in an ecosystem
- Shows the relative amounts of energy or matter contained at each trophic level
- The Pyramid shows which level has the most energy and the highest number of organisms

# Ecological Pyramid



# Ecological Pyramid





Thank You