

Unit 10: Ecology

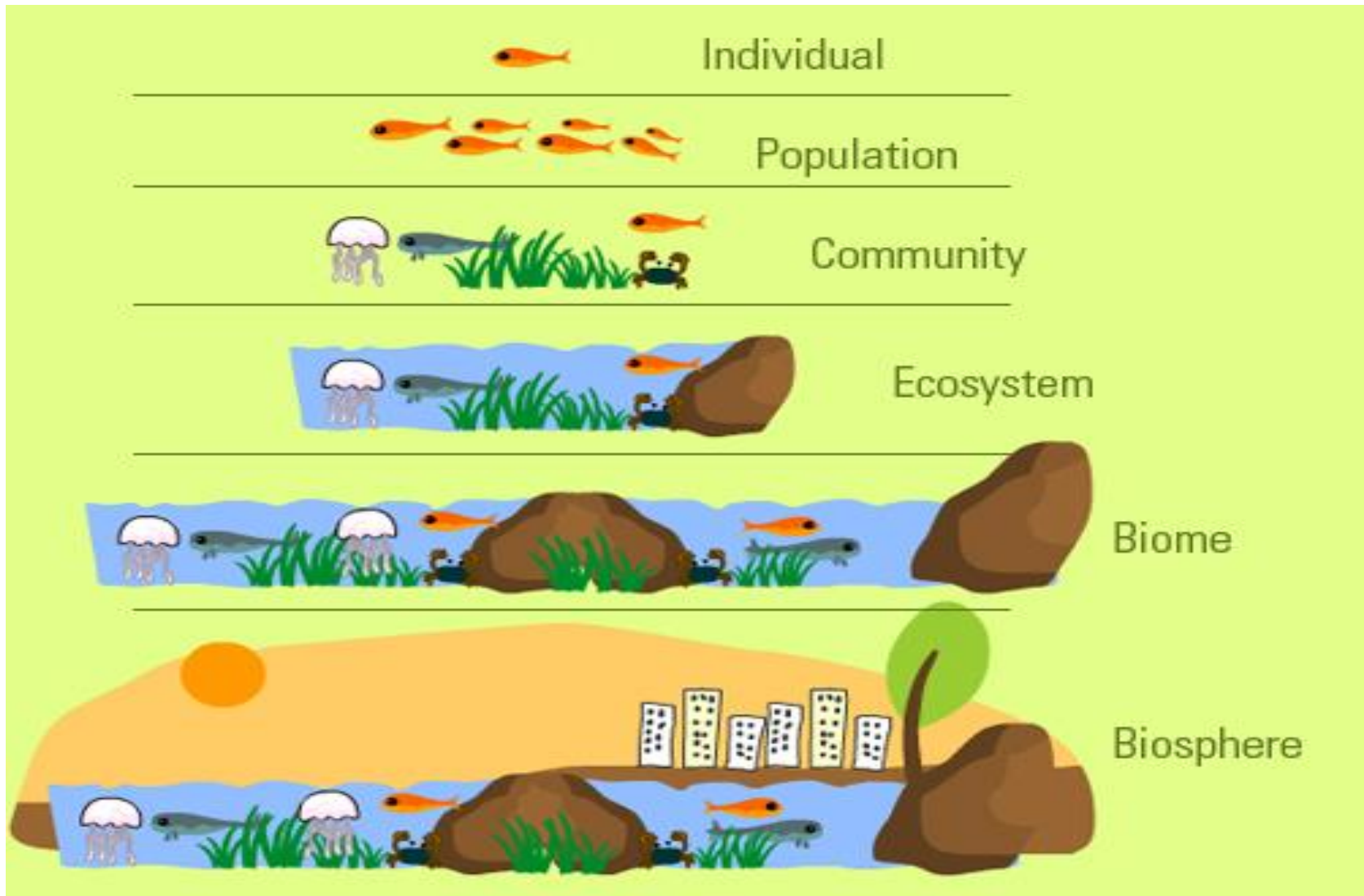
What is ecology?

- Study of interactions among organisms and between organisms and their environment

What is the biosphere?

- Zone of all life on Earth
- Sum of all ecosystems

Levels of Organization:

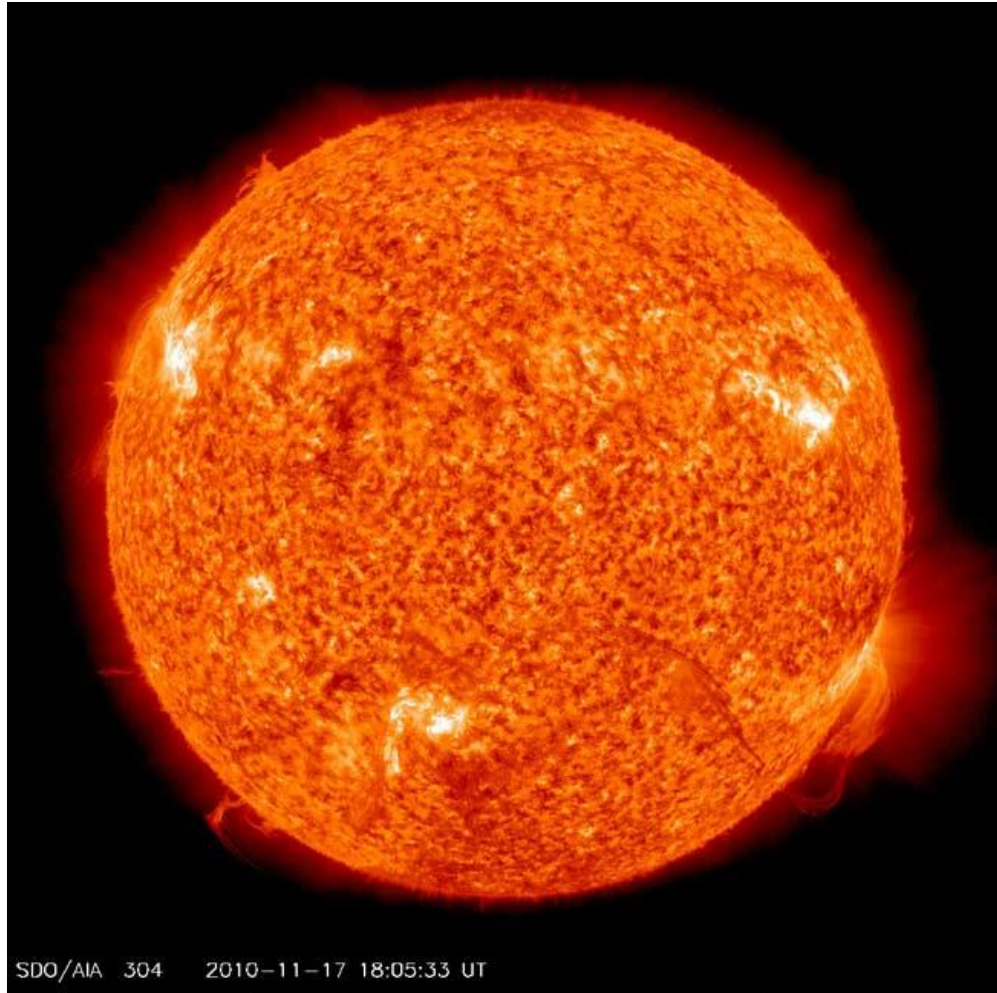


Factors that affect an ecosystem:

- Biotic factors: biological (living) influences on organisms
 - E.g. animals, plants, bacteria, etc.
- Abiotic factors: physical (non-living) influences on organisms
 - E.g. temperature, precipitation, sunlight, etc.

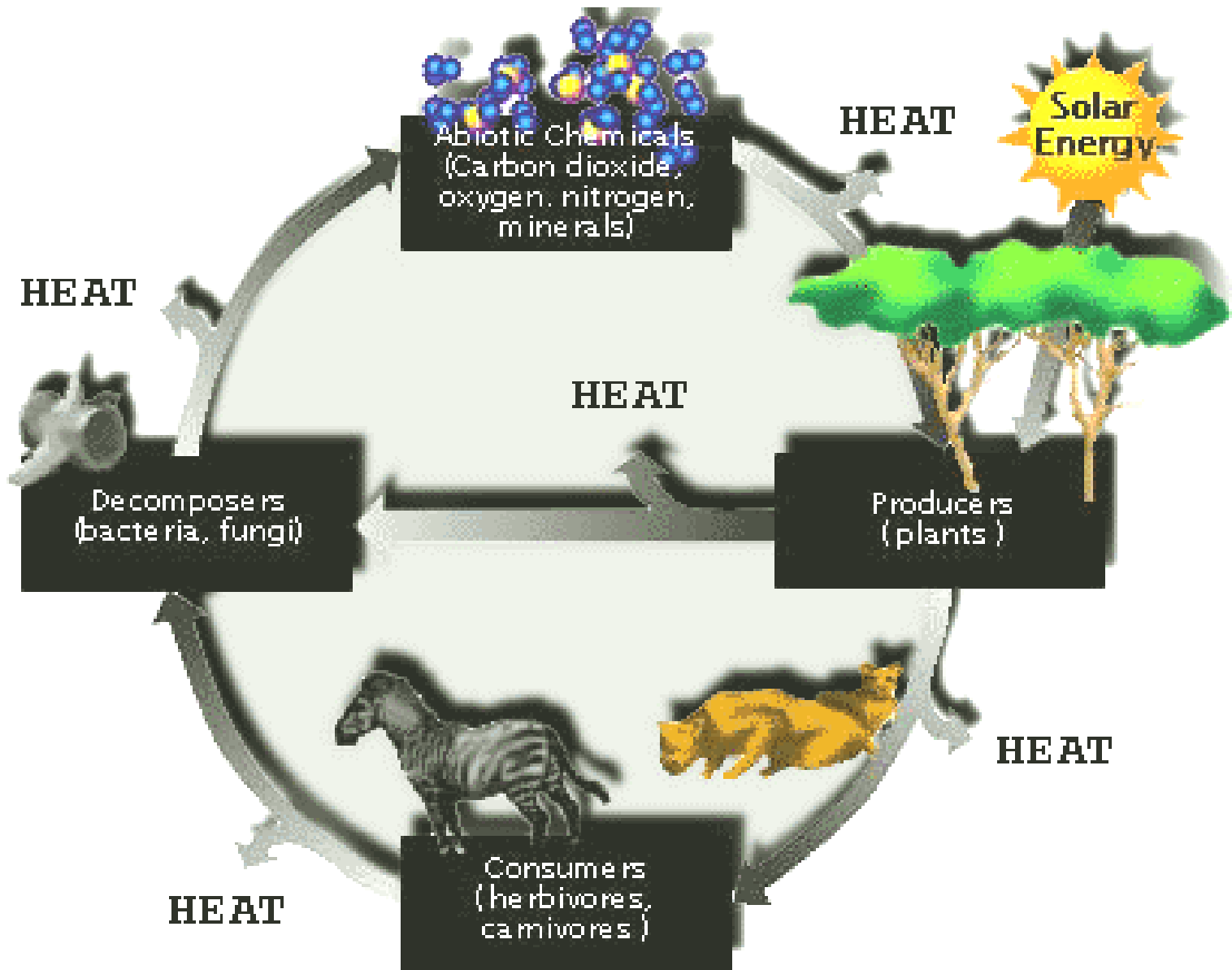
The Ultimate Source of Energy for All Life on Earth?

- THE SUN!!!



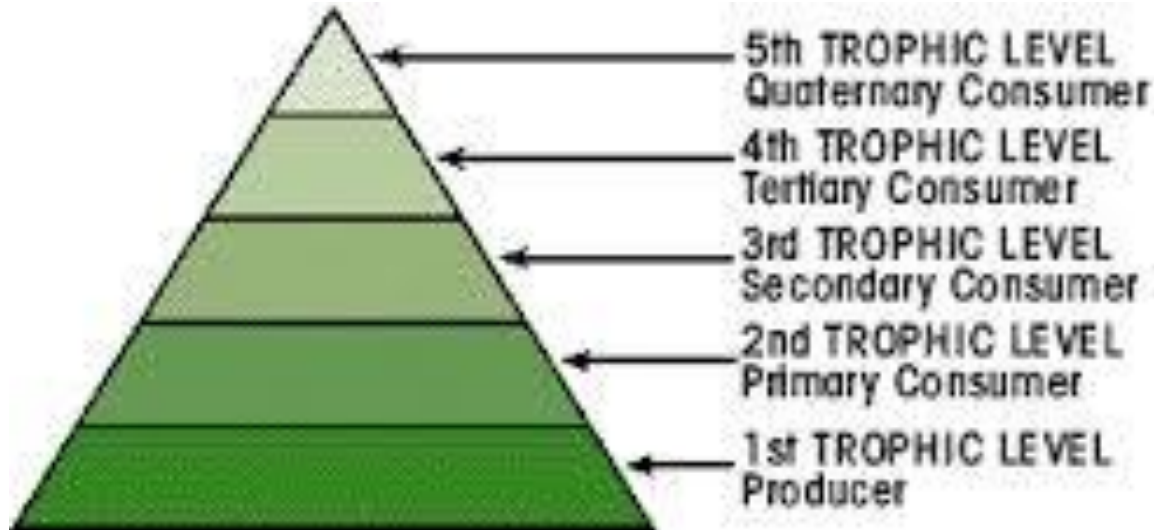
Energy Flow Through an Ecosystem

- Flows in one direction
 - Radiant energy from the sun to chemical energy to heat energy
- In the following order:
 1. Sun
 2. Autotrophs (producers) - plants
 3. Heterotrophs (consumers) – herbivores, carnivores, omnivores
 4. Decomposers – bacteria and fungi

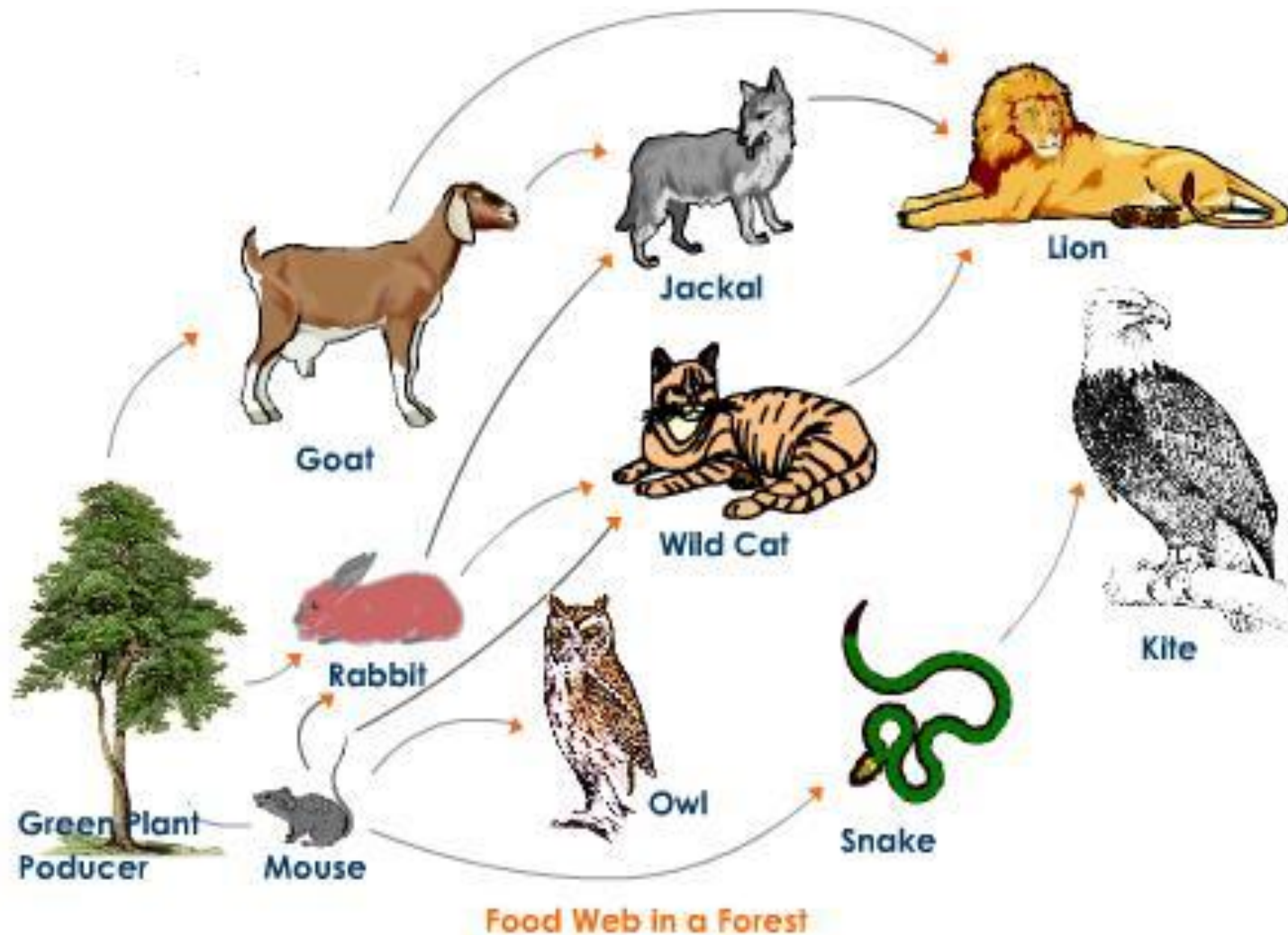


Food Chain (food web)

- Energy stored by producers is passed along a food web
- Each step in a food web is a **trophic level**

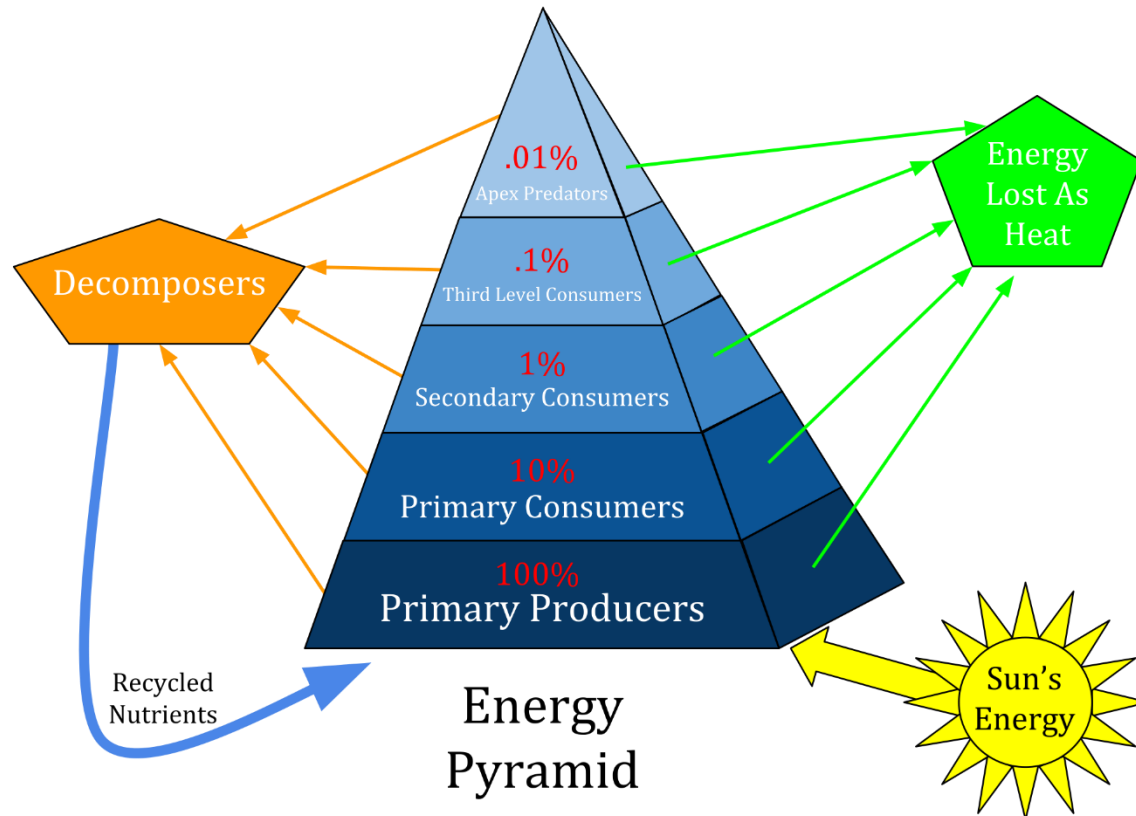


Food Web



Ecological Pyramid

- Shows the relative amounts of energy within a trophic level
- Only ~10% of energy in one trophic level is transferred to the next level



Community Interactions:

- Organisms within a community must interact:
 - Competition for resources
 - Predator vs. prey
 - Symbiotic relationships



Symbiotic Relationships

- **Symbiosis** – any relationship in which two species live closely together
- 1. Mutualism – both species benefit from the relationship
 - E.g. flowers and insects



Symbiotic Relationships

2. **Commensalism** – one member benefits, the other is not helped or harmed

- E.g. Barnacles on whale's skin
 - Barnacles benefit
 - Whale's are not affected



Symbiotic Relationships

3. Parasitism – one organism lives on or inside another and HARMS it

- E.g. Tapeworms – parasites that live in the intestines of mammals
- E.g. Fleas and ticks

