

BASIC ECOLOGY

EQ: WHAT ARE THE 3 ECOLOGICAL
PYRAMIDS AND CAN I
DIFFERENTIATE BETWEEN THEM?

Populations,
Communities,
and their
interactions

WHAT IS ECOLOGY?

- The study of interactions among and between organisms and their environment.



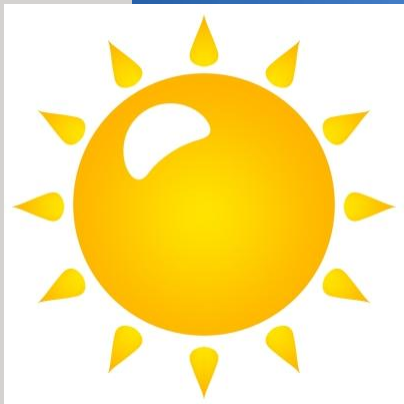
IMPORTANT TERMS

Biosphere	The part of Earth that contains all ecosystems	 Biosphere
Ecosystem	Community and its nonliving surroundings	 Hawk, snake, bison, prairie dog, grass, stream, rocks, air
Community	Populations that live together in a defined area	 Hawk, snake, bison, prairie dog, grass
Population	Group of organisms of one type that live in the same area	 Bison herd
Organism	Individual living thing	 Bison

- Abiotic factors vs. biotic factors
- Herbivores - eat plants
- Carnivores – eat animals
- Omnivores – eat plants and animals

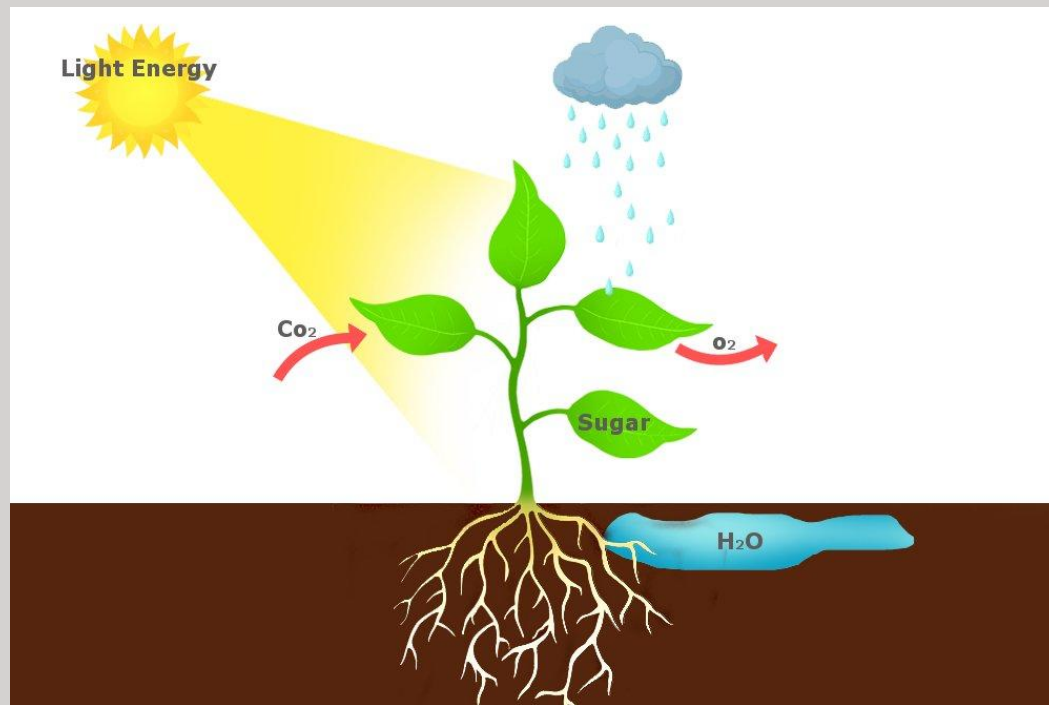
???

■ Where does all energy originate from?



PRODUCER/AUTOTROPH

A **producer/autotroph** is an organism that can produce its own food using light, water, carbon dioxide, or other chemicals.



CONSUMER/HETEROTROPH

A **heterotroph** is an organism that eats other plants or animals for energy and nutrients. ... **Heterotrophs** are known as **consumers** because they consume producers or other **consumers**.

Heterotroph/ consumer

Hetero (others)

troph (nutrition)

- Cannot make their own food
- Must eat other living organisms



<http://www.fishbase.org/species/lenis/001125>



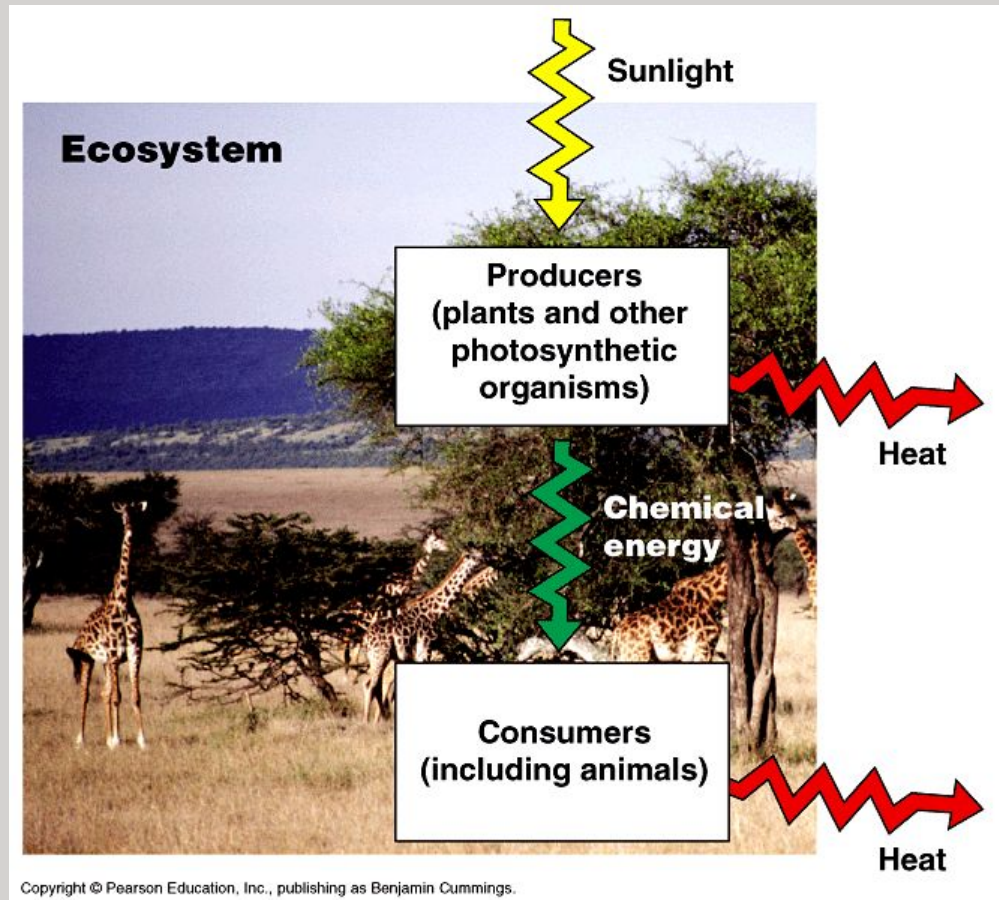
heterotroph



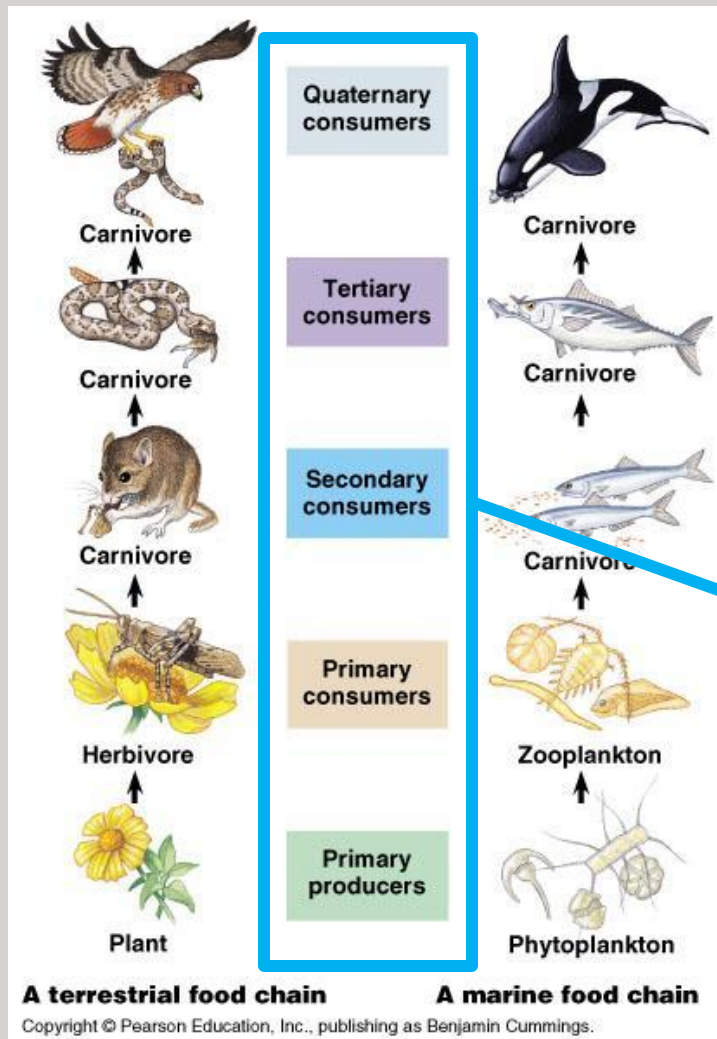
ECOSYSTEM

■ Types of Consumers

- Decomposers – break down organic matter
- Examples
 - bacteria, fungi
- Detritivores – eat plant and animal remains
- Examples
 - millipedes, woodlice, dung flies, slugs, many terrestrial worms, sea stars, sea cucumbers, fiddler crabs



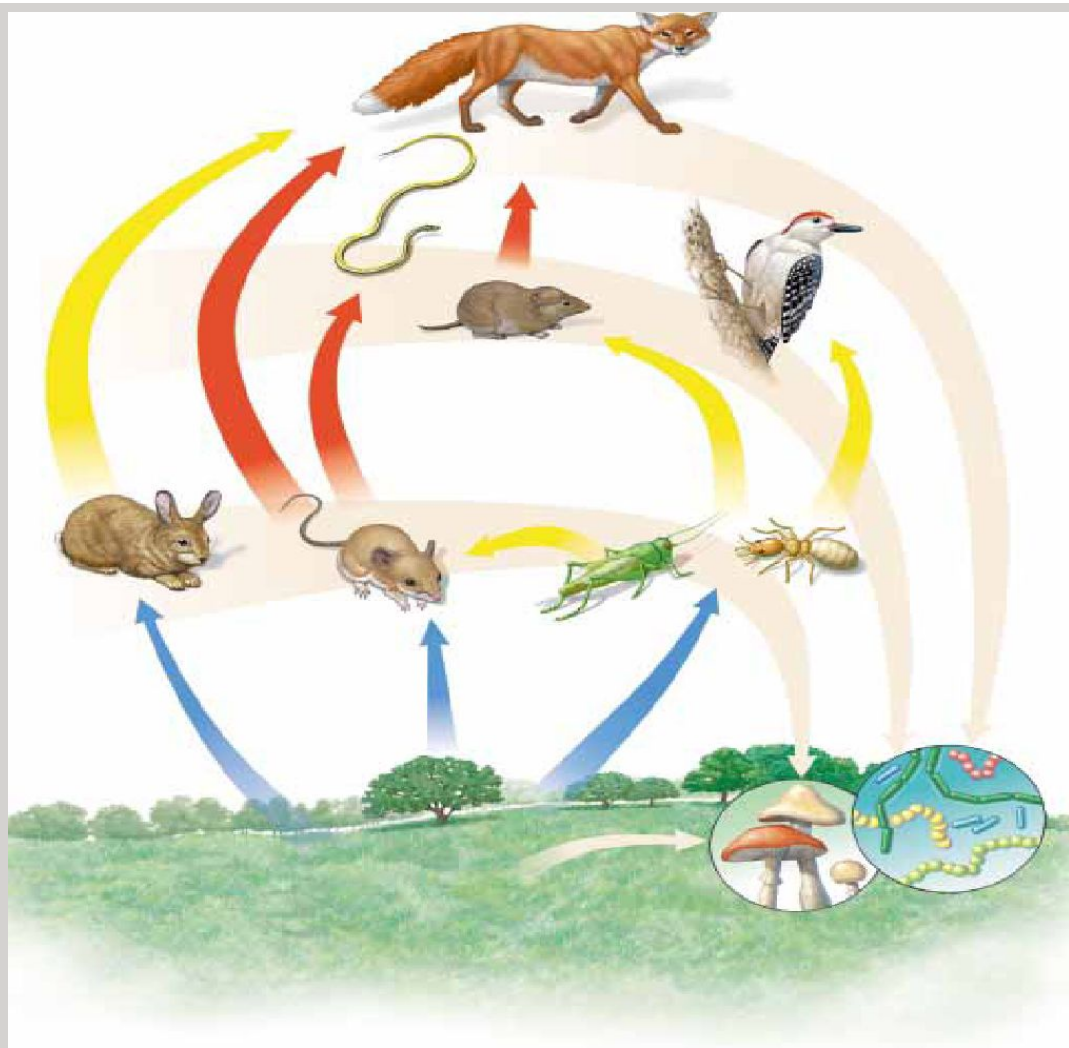
FOOD CHAIN



- Series of steps in an ecosystem in which organisms transfer energy by eating and being eaten
- Trophic Levels - feeding levels of organisms

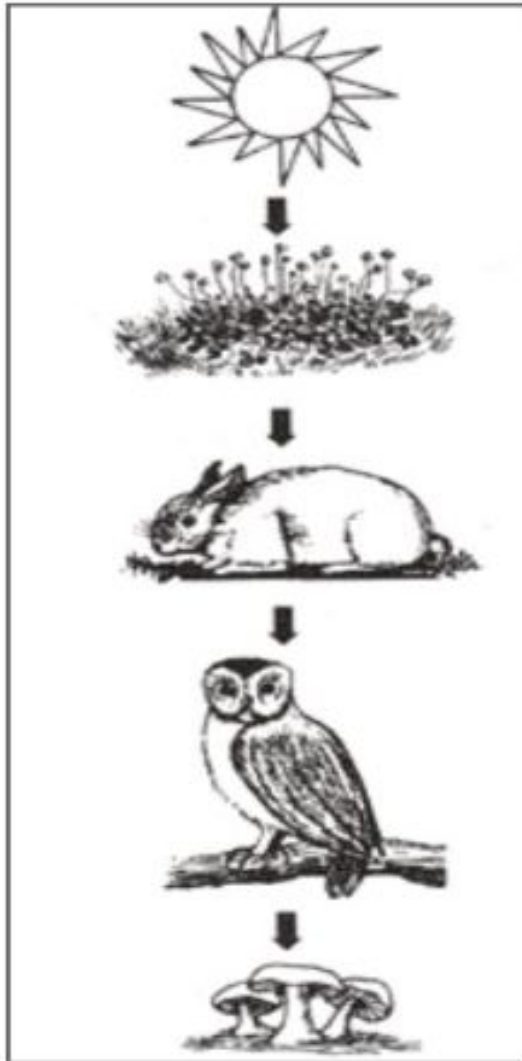
FOOD WEB

- A network of complex interactions formed by feeding relationships among organisms in an ecosystem.
- What do you notice about the arrows?



Label each trophic level with the correct identifier:

decomposer, primary consumer, secondary consumer, producer,
herbivore, carnivore, fungi, main energy source, plant, autotroph,
heterotroph



main energy source

producer
autotroph
plant

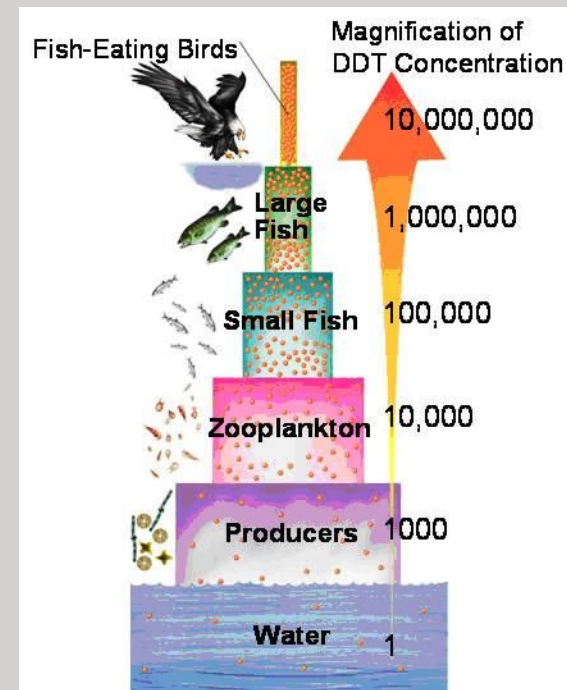
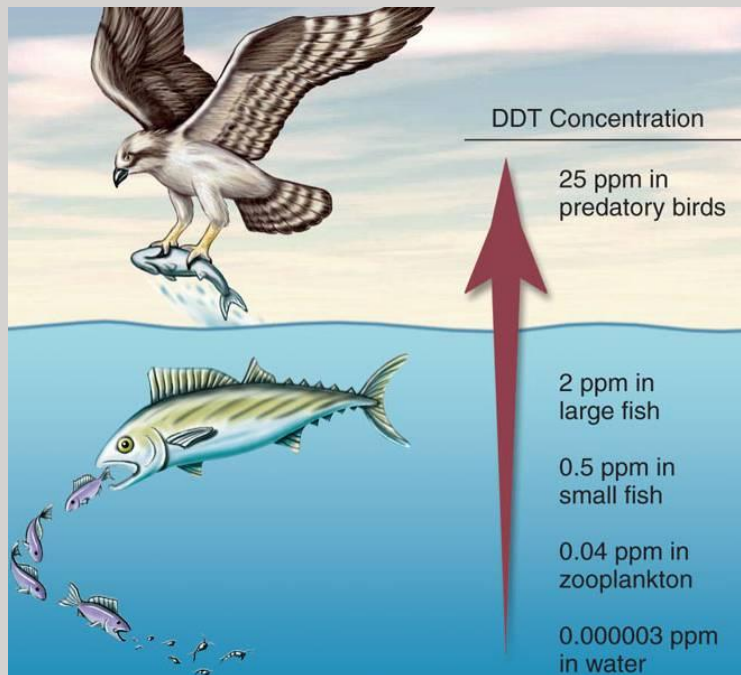
primary consumer
heterotroph
herbivore

secondary consumer
heterotroph
carnivore

decomposer
fungi

BIOMAGNIFICATION

- The process where **pollutants** such as pesticides or heavy metals **move up the food chain. (DDT)**
- The substances or pollutants become **concentrated** in their toxic form in the tissues or internal organs of the organisms as they move up the food chain.

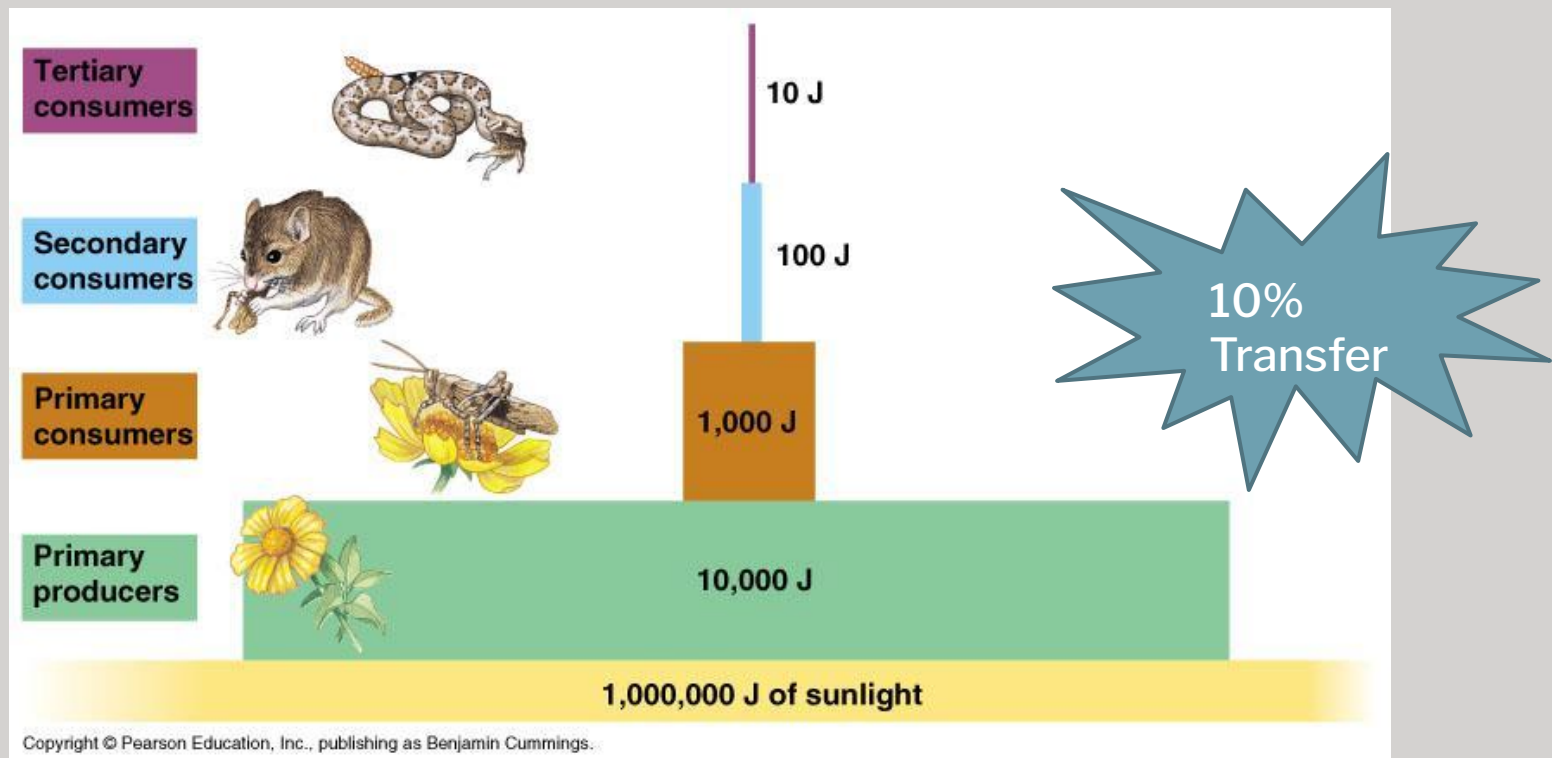


WHAT HAPPENS TO MOST ENERGY? (ATP)

- Most energy is released as thermal energy.
(HEAT)

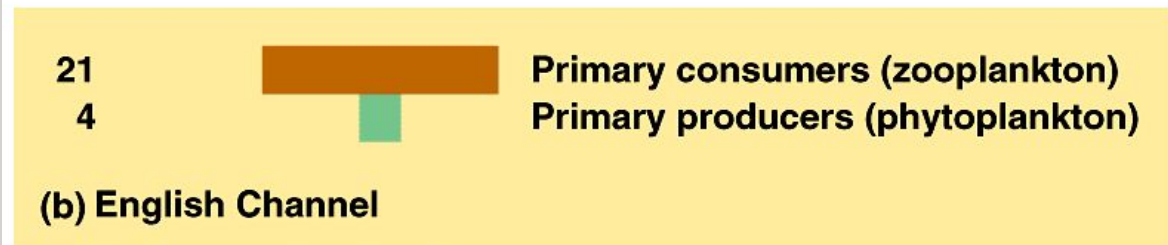
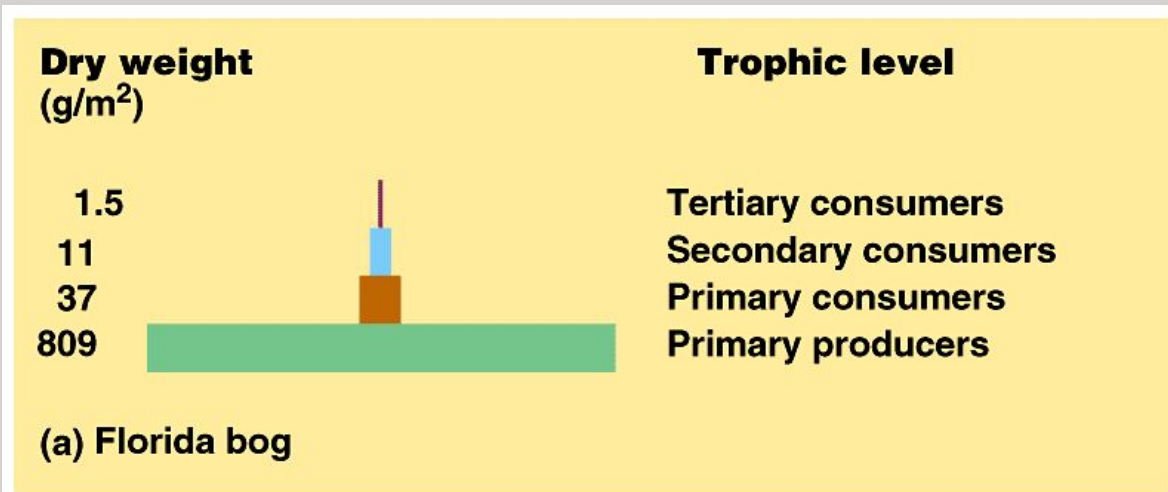
PYRAMID OF ENERGY

- A diagram that shows relative amounts of energy or matter contained at each trophic level in food chain/web.

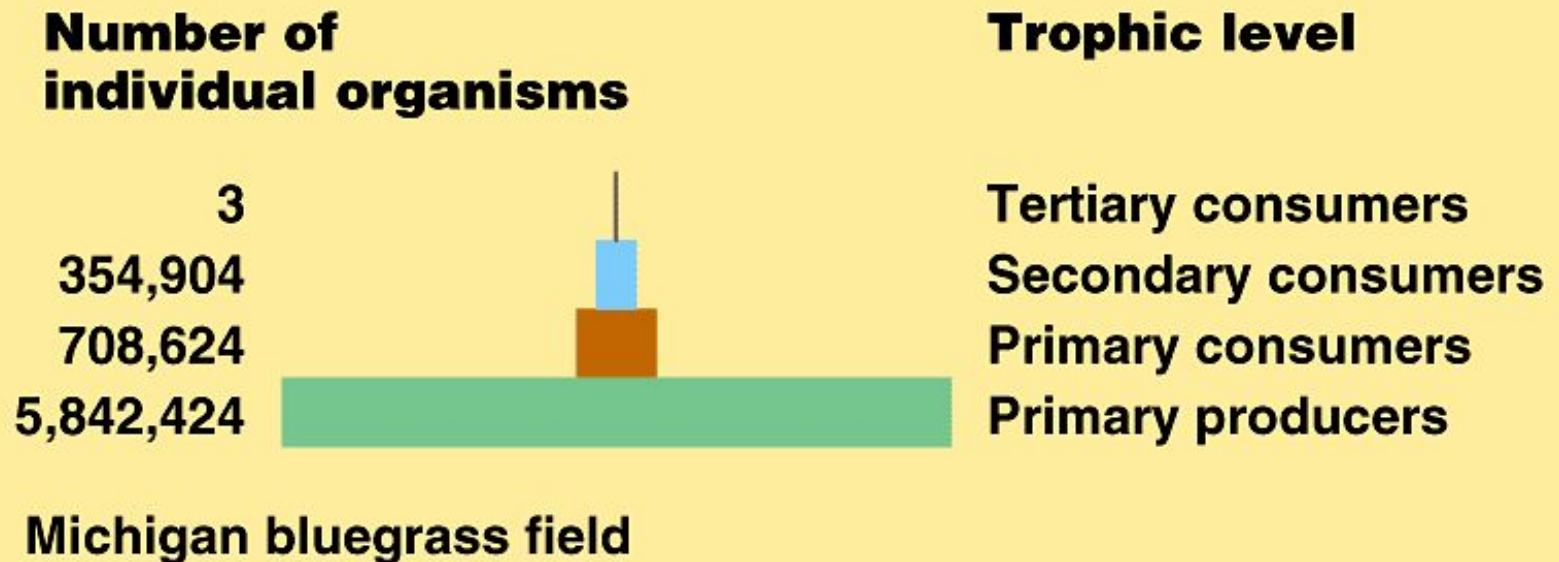


PYRAMID OF BIOMASS

- Shows the total amount of living tissue within a given trophic level



PYRAMID OF NUMBERS



ENERGY FLOW-Questions to Consider

- Which organisms contain the most energy?
- What happens to energy as we move up the trophic levels?

10% RULE

- Only 10% of energy is moved through each trophic level. Most is given off as
-----?!