

Warm Up (2/27-2/28)

You have 5 minutes to:

- Take out your ecosystem drawings
- Put any last minute touches on it
- Share it with your table mates

I will be walking around checking out what you have!

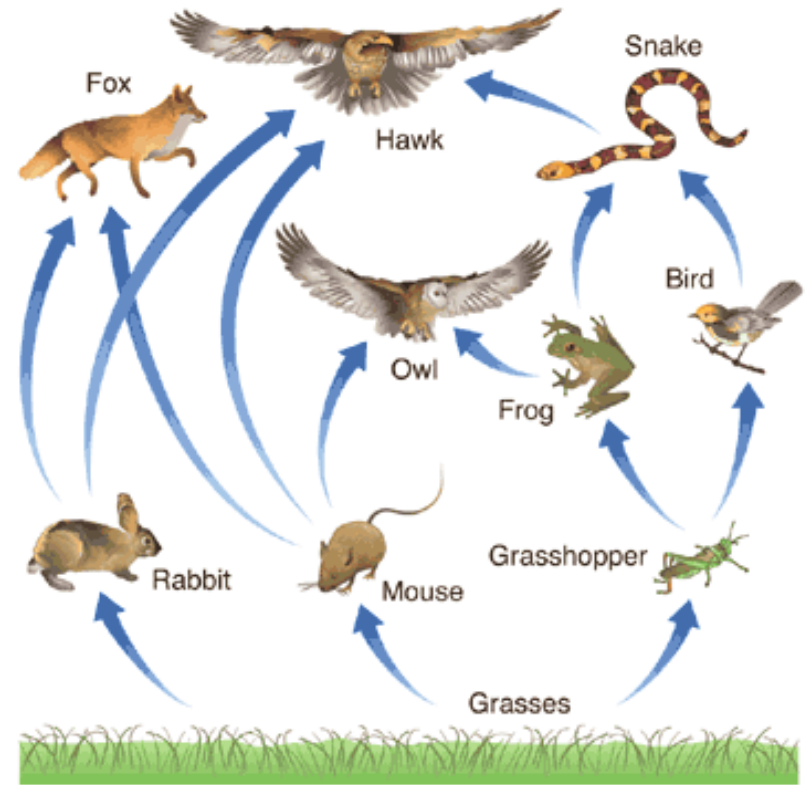
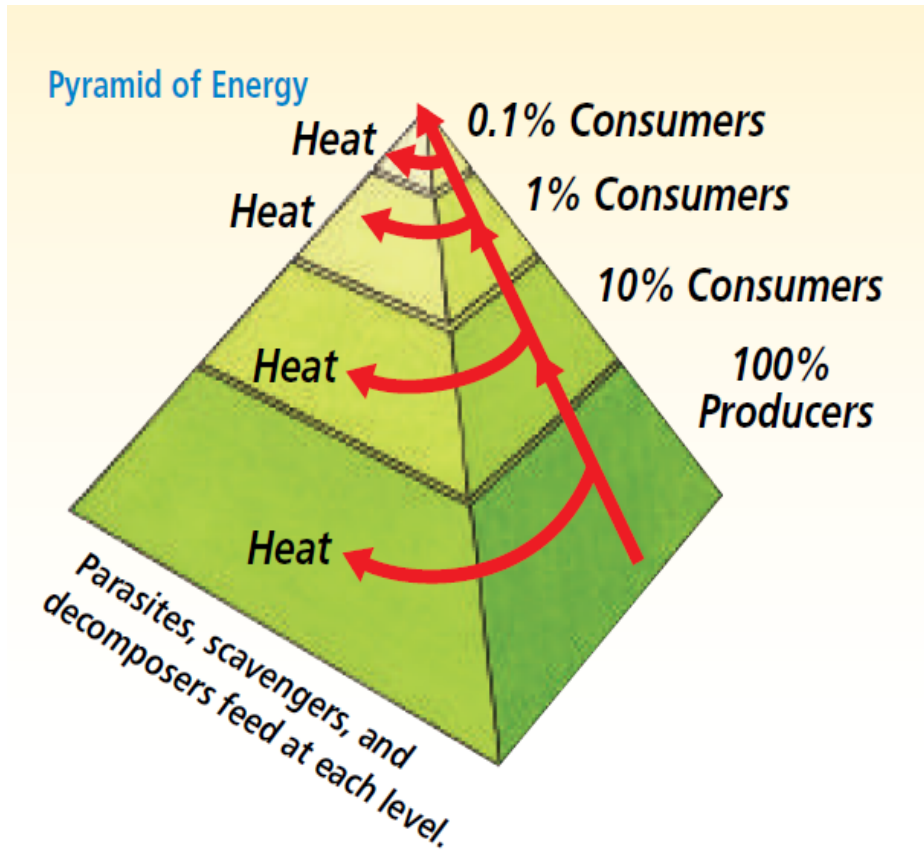
Agenda

- Share ecosystems
- 2.2 Notes: Nutrition and Energy Flow
- Lab: Succession in a jar

Homework: Chapter 2 Worksheet (Due Friday)

Accepting Gala donations until next week

2.2: Nutrition and Energy Flow



Producer vs. Consumer

- Autotroph
(producers)
 - Uses sunlight* to make its own food
 - Ex: plants, green algae



- Heterotroph
(consumers)
 - Eats other organisms to obtain energy



*Main energy resource for all life on Earth

Type of Consumers

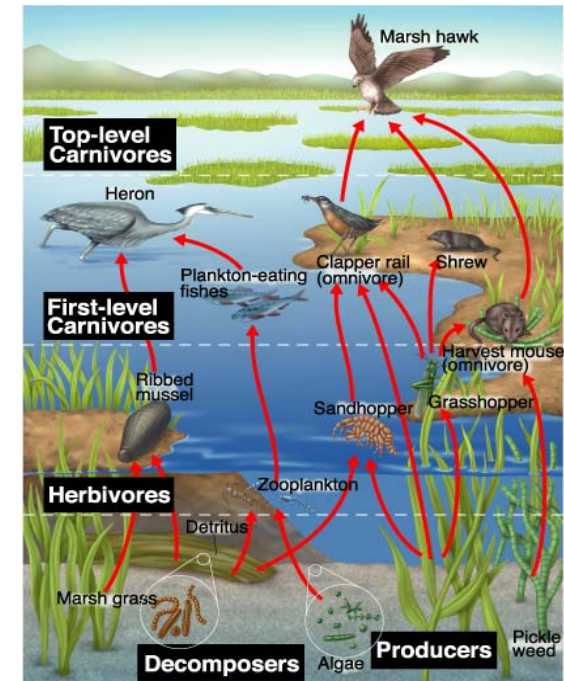
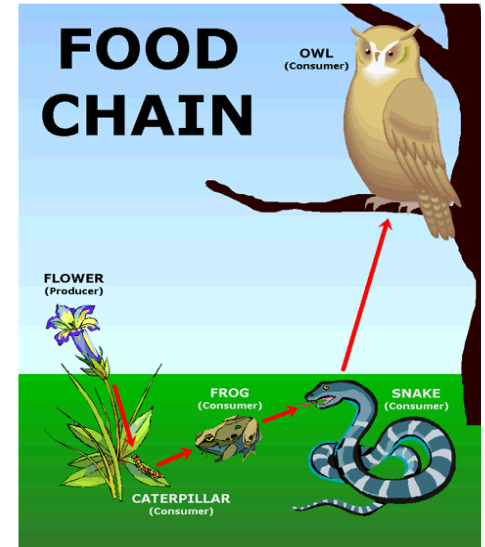
- Herbivores: Eat plants only
- Carnivores: Eat only other animals
- Omnivores: Eat plants and animals
- Scavengers: Feed on dead plant & animal remains
- Decomposers: Break down dead organisms for absorption

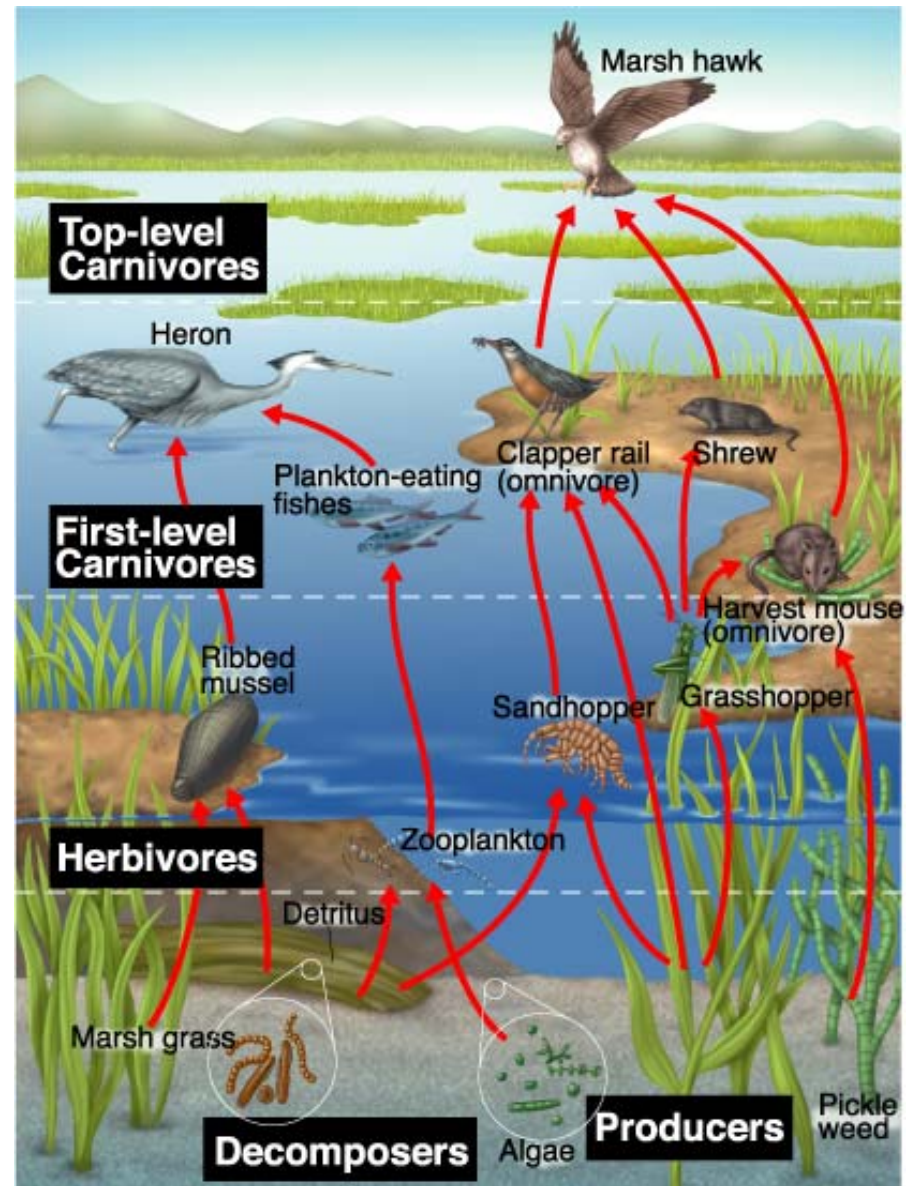
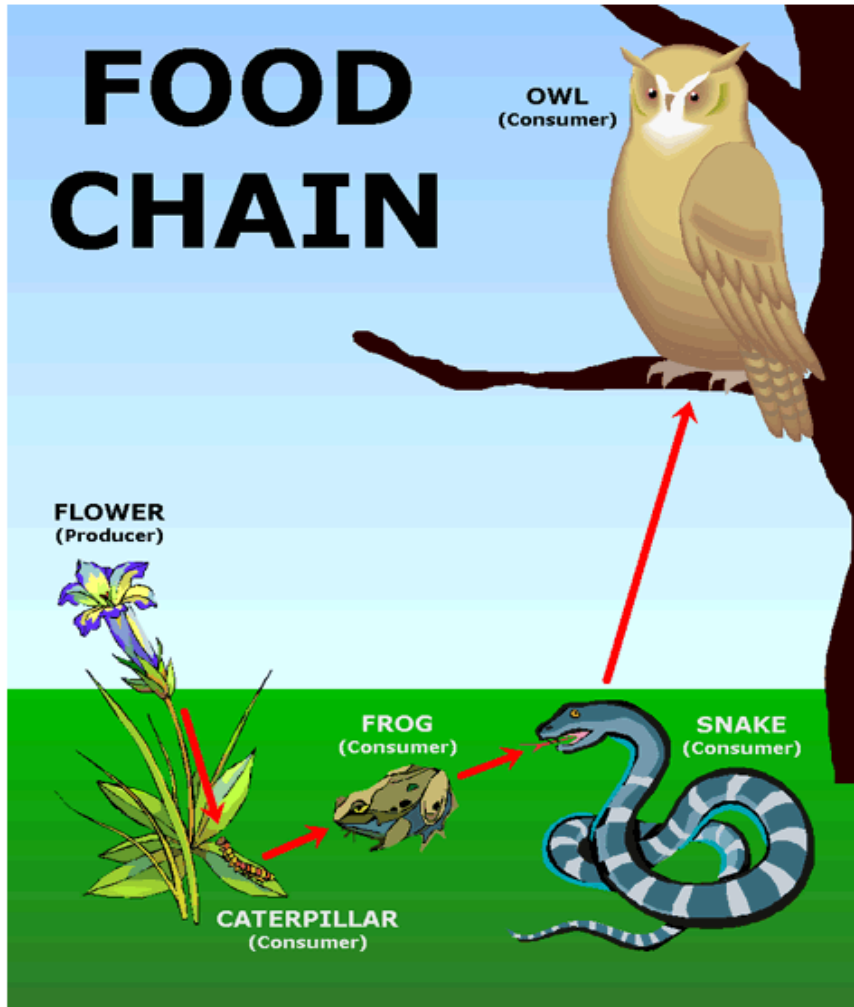
https://youtu.be/KI7u_pcfAQE



Energy Flow

- Energy flows through ecosystems from producers to consumers
- Food chain: Simple energy path through an ecosystem
- Food web: more realistic and complex path through an ecosystem made of many food chains





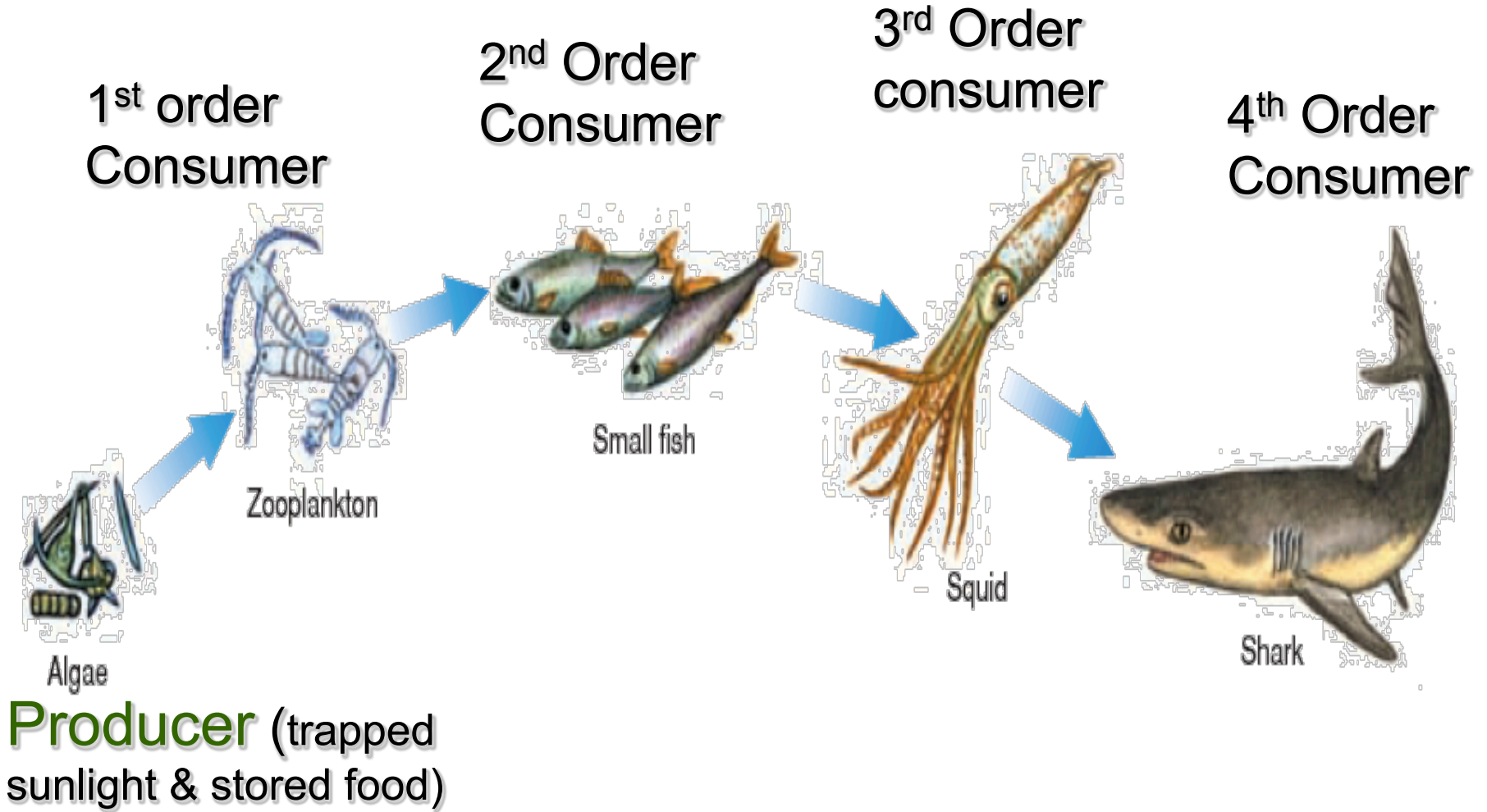
What do you notice about the flow of energy in both of these?

Trophic Levels

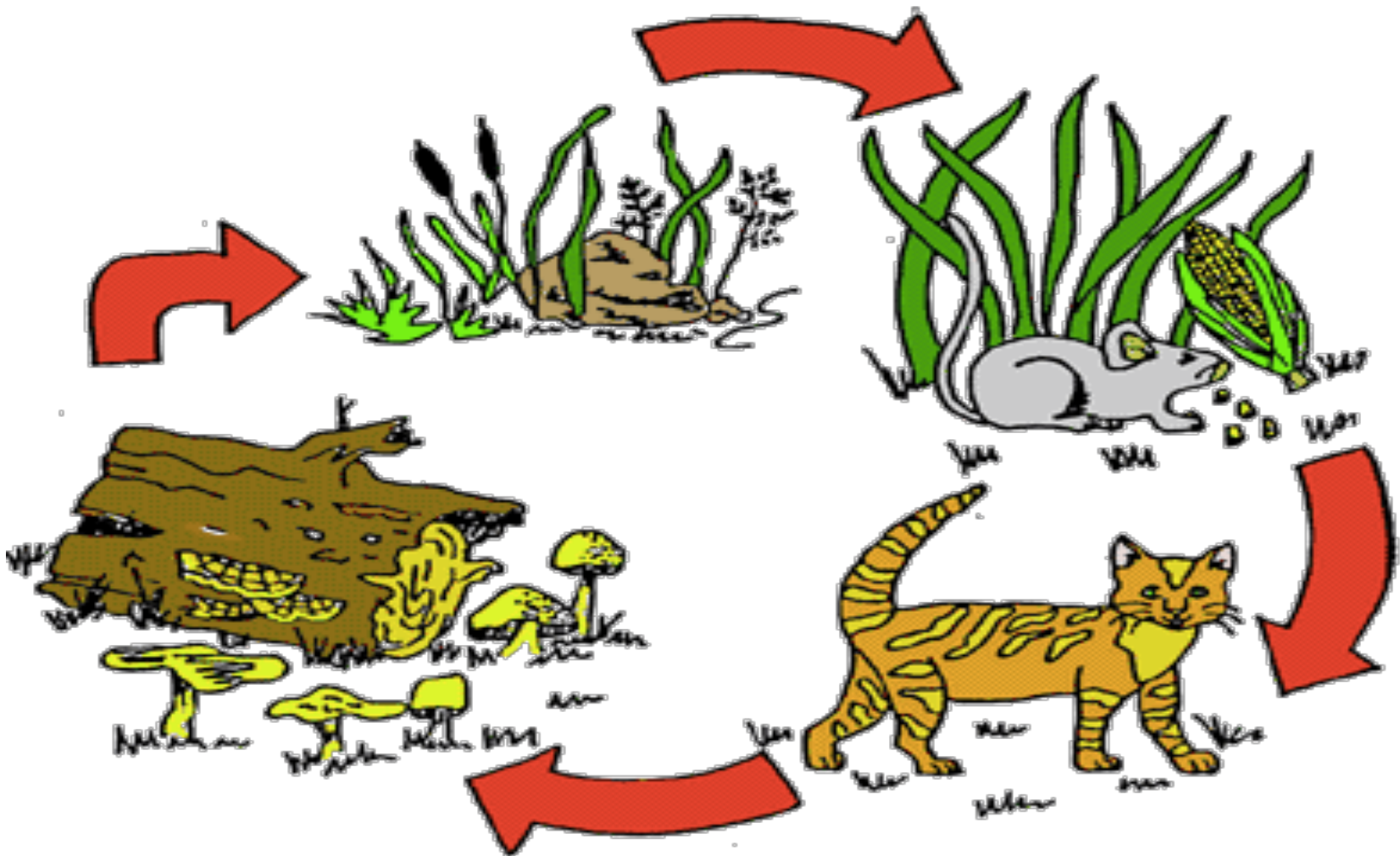
- Each level in a food chain or food web is a trophic level
- Producers: Always the first level
 - How energy enters the system
- Herbivores: Second trophic level
- Carnivores/omnivores: Make up the remaining trophic levels

Each level depends on the one below it for energy

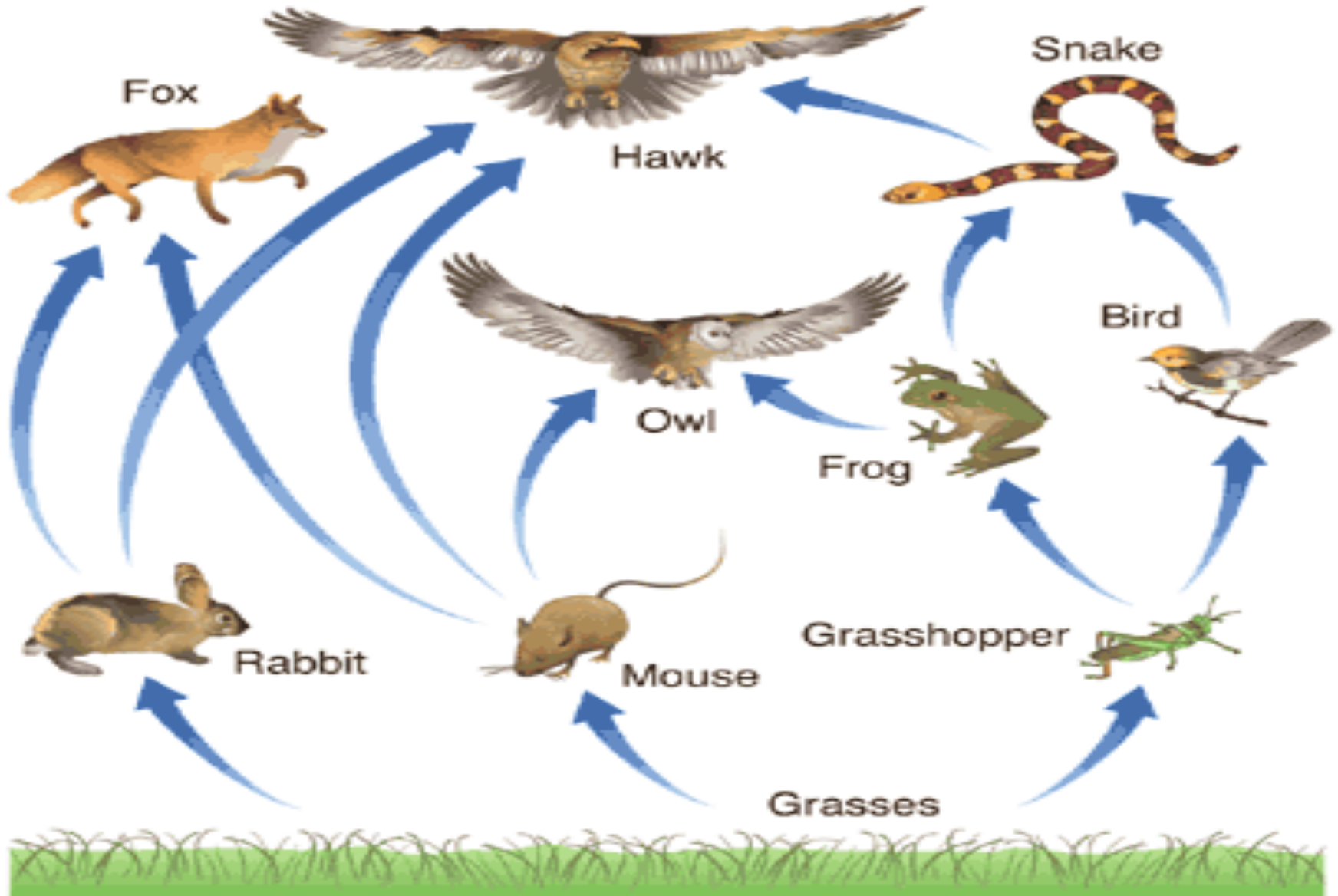
Food Chain

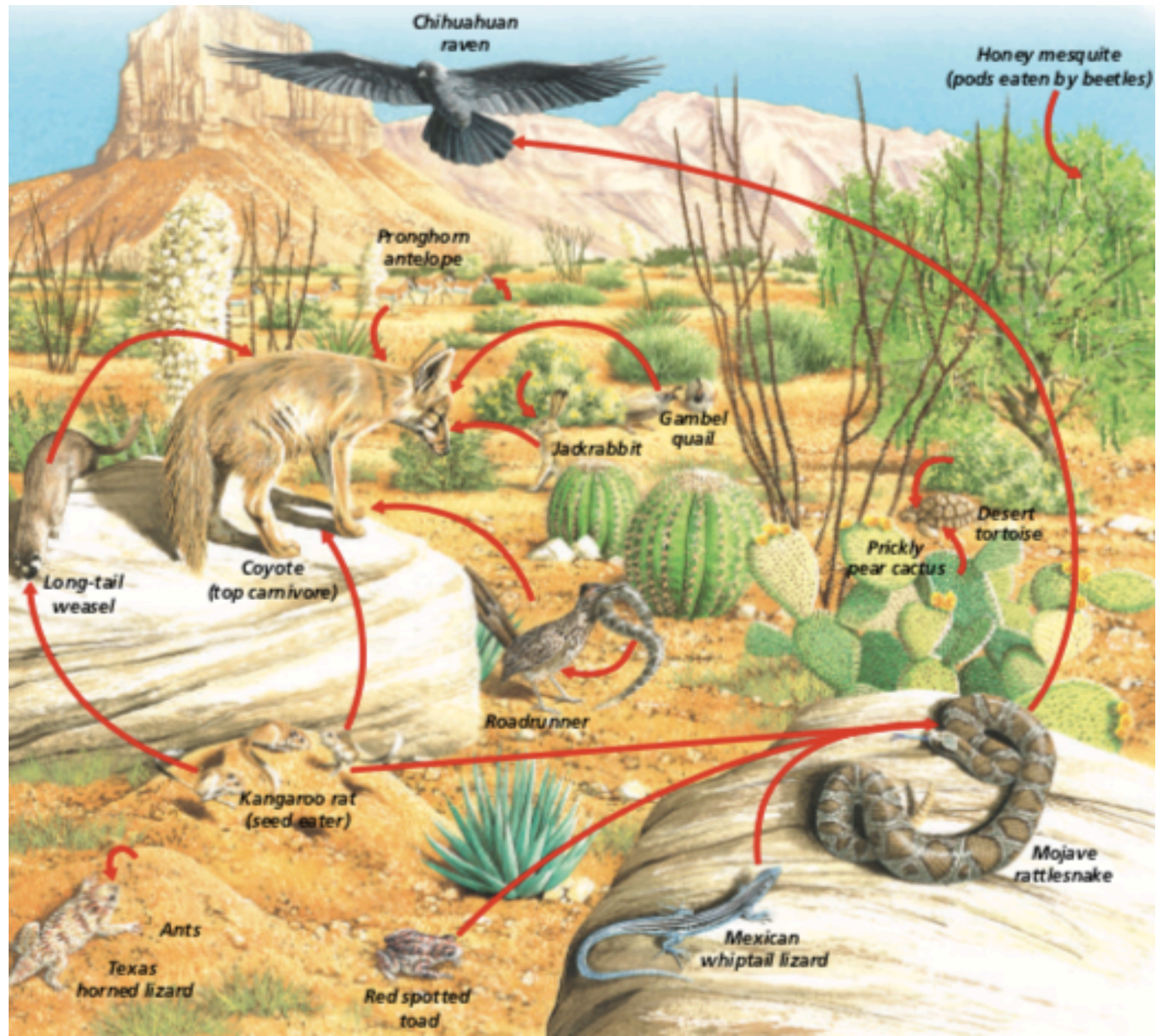


Name the Producer, Consumers & Decomposers in this food chain:



Food Web





Chihuahuan raven

Honey mesquite (pods eaten by beetles)

Pronghorn antelope

Gambel quail

Jackrabbit

Desert tortoise

Prickly pear cactus

Coyote (top carnivore)

Long-tail weasel

Roadrunner

Kangaroo rat (seed eater)

Mojave rattlesnake

Ants

Texas horned lizard

Mexican whiptail lizard

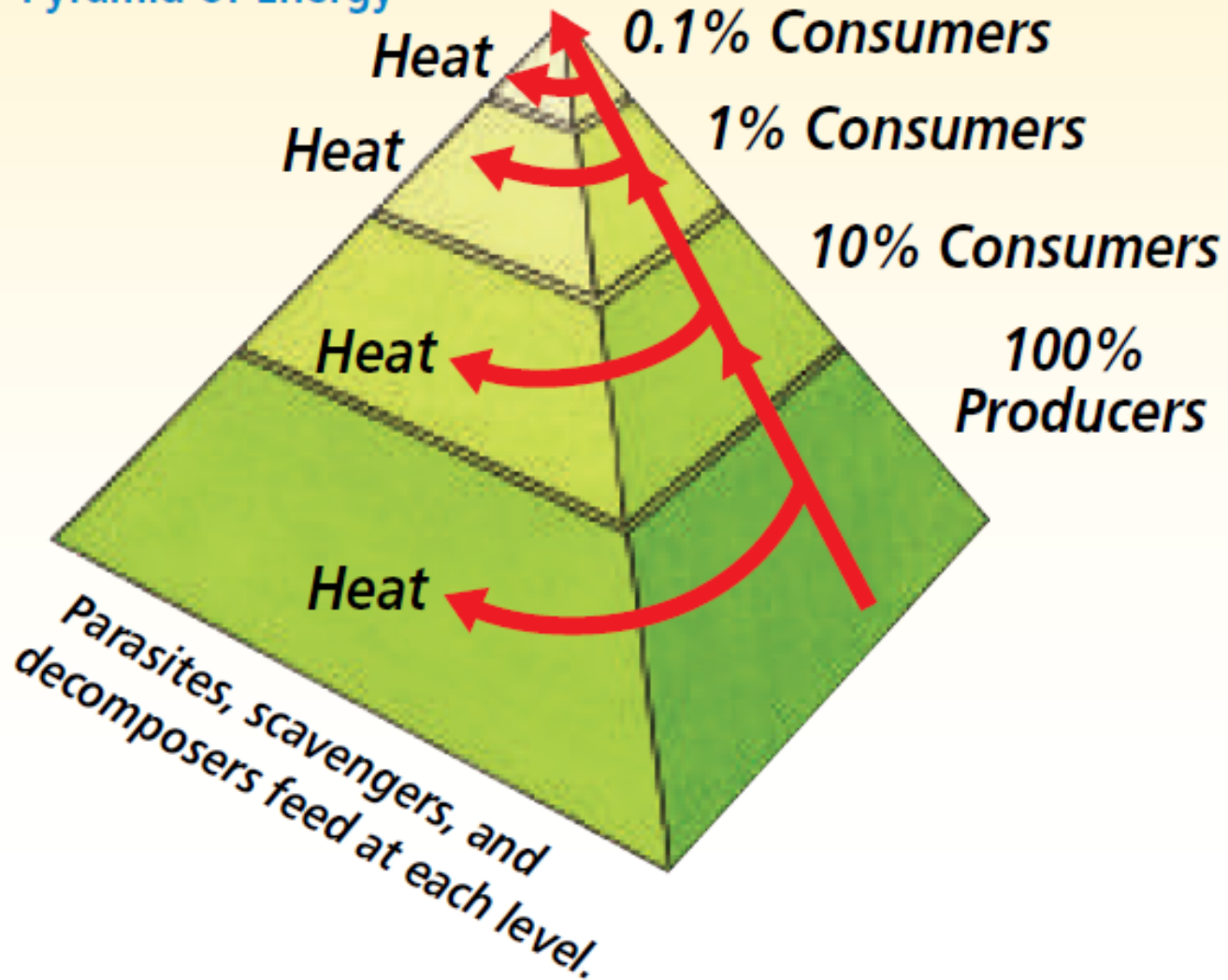
Red spotted toad

Ecological Pyramids

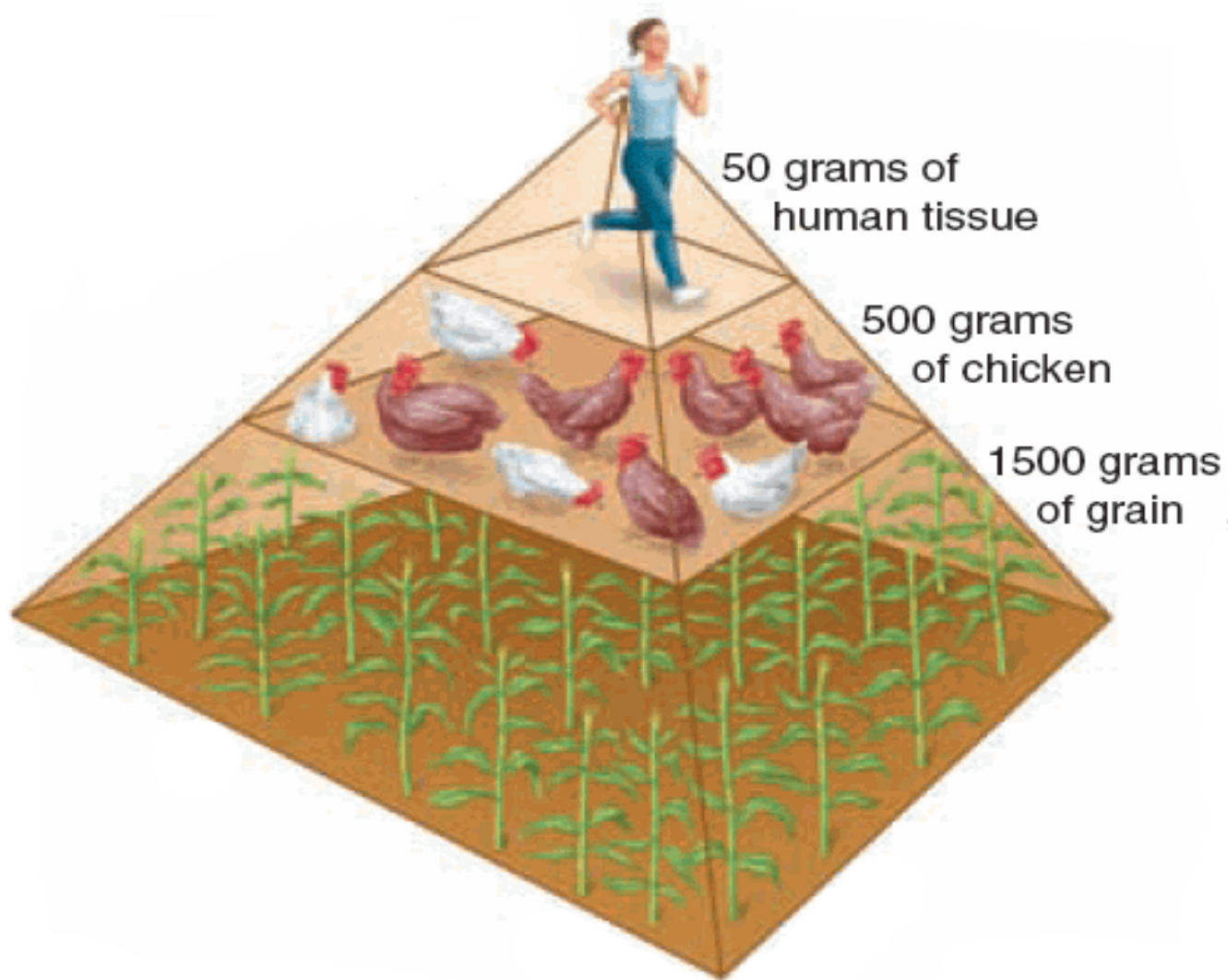
- Energy pyramid: shows the amount of energy decreases at each succeeding trophic level.
 - Only about 10% of energy transfers to next trophic level
- Biomass pyramid: Biomass- total weight of living matter at each trophic level
- Pyramid of numbers: Shows population sizes decrease at each higher level

Energy Pyramid

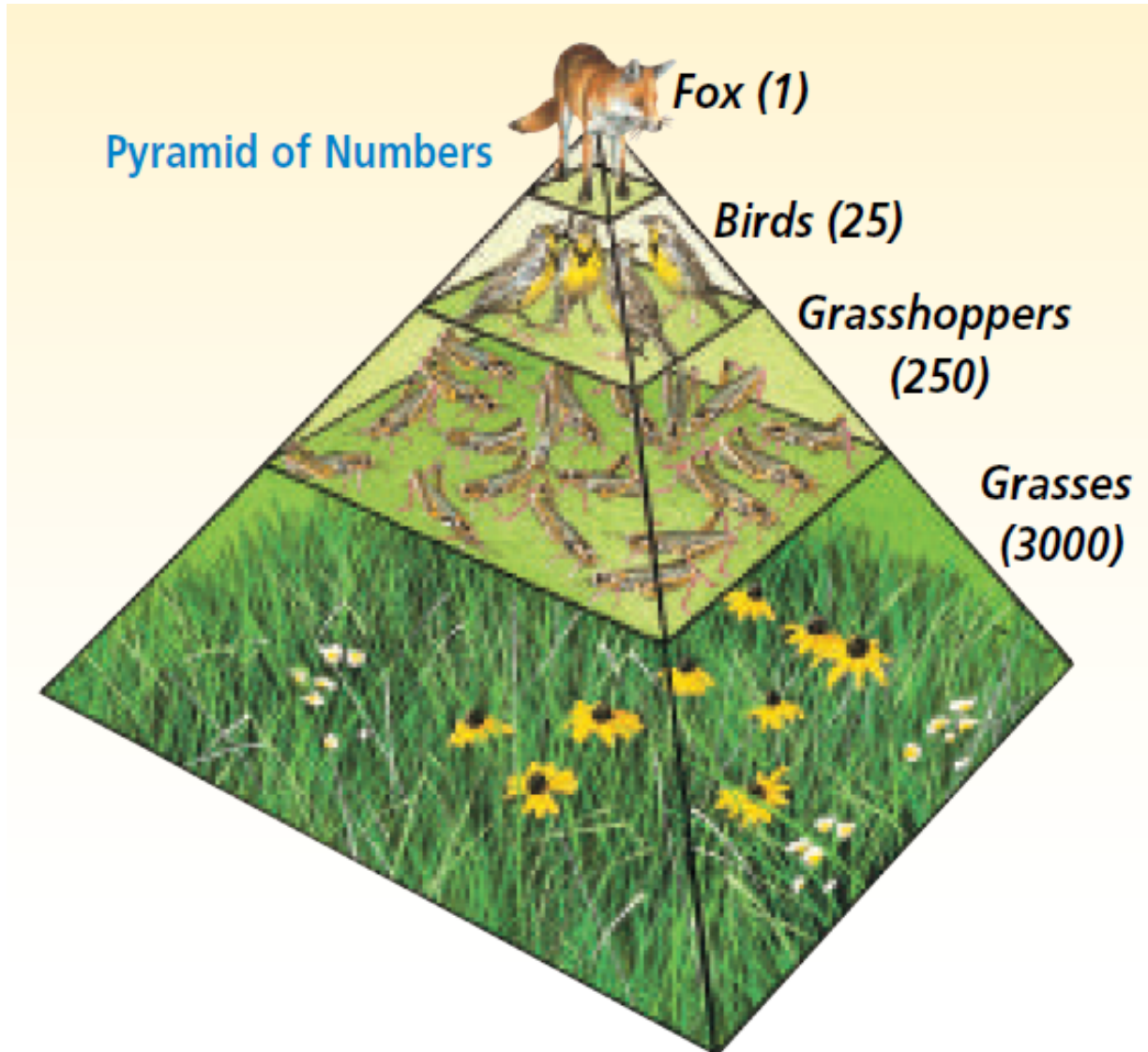
Pyramid of Energy



Biomass Pyramid



Pyramid of Numbers



Lab: Succession in a Jar

- Pages 84-85

FIELD Investigation

Before You Begin

Succession describes the changes that take place in ecosystems over a period of time. Succession is a process that is going on all the time. It can be observed in a micro-ecosystem, such as in a jar of pond water. The type and number of organisms in the container will change over time.

PROCEDURE

1. Examine the pond water sample provided.
2. Label the jars *A*, *B*, and *C*. Add your name and the date. Fill the jars with equal amounts of sterilized spring water.
3. Add the following to the appropriate jar:
to **Jar A**: Nothing else
to **Jar B**: 3 grains of cooked white rice
to **Jar C**: 3 grains of cooked white rice, one teaspoon of pond sediment, and a small amount of any plant material present in the pond water
4. Gently swirl the contents of each jar. Record the cloudiness of each jar in your data table. Score cloudiness on a scale of 1 to 10—1 meaning very clear; 10 meaning very cloudy.

5. Label glass slides *A*, *B*, or *C*. Using a different, clean dropper for each jar, prepare a wet mount of the liquid from each jar. **CAUTION:** *Handle glass slides, coverslips, and glassware carefully.*
6. Observe each sample under low power. Identify autotrophic and heterotrophic organisms by name, and either describe their appearance or make a sketch of each one.
7. Record the number of each type of organism.
8. Complete the data table for your first observations.
9. Cover each jar and place them in a lighted area.
10. Observe the jars every three days for several weeks. Repeat steps 4–9 each time an observation is made and collect data precisely.
11. **CLEANUP AND DISPOSAL** Determine ahead of time wise choices for disposing of these materials at the end of the investigation. **CAUTION:** *Wash hands with soap at the end of the lab.*

Lab: Succession in a Jar

Data Table

Date	Jar	Cloudiness	Name, Description, or Diagram of Organism Seen	Autotroph or Heterotroph?	Number Seen Per Low-Power Field
	A				
	B				
	C				
	A				
	B				