

Ecology Review Packet

CHAPTER 3 : FOOD CHAINS, WEBS AND PYRAMIDS

1. List the way you can group organisms from smallest to largest.

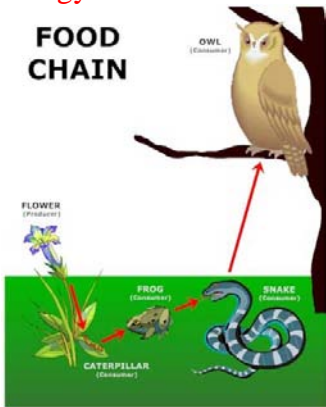
Individual, population, community, ecosystem, biome, biosphere

2. What makes a community different from a population?

A community encompasses more than one species while a population is made out of only one species

3. What is the main difference between a food chain and food web?

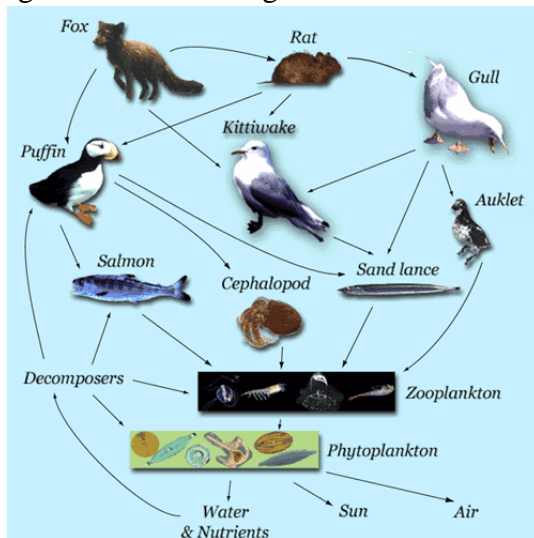
A food chain only maps one possible flow of energy where as the web maps many different ways that the energy can flow. There are two food web sin the review packet. Below I have posted a food chain.



4. What do the arrows represent in a food chain or web represent?

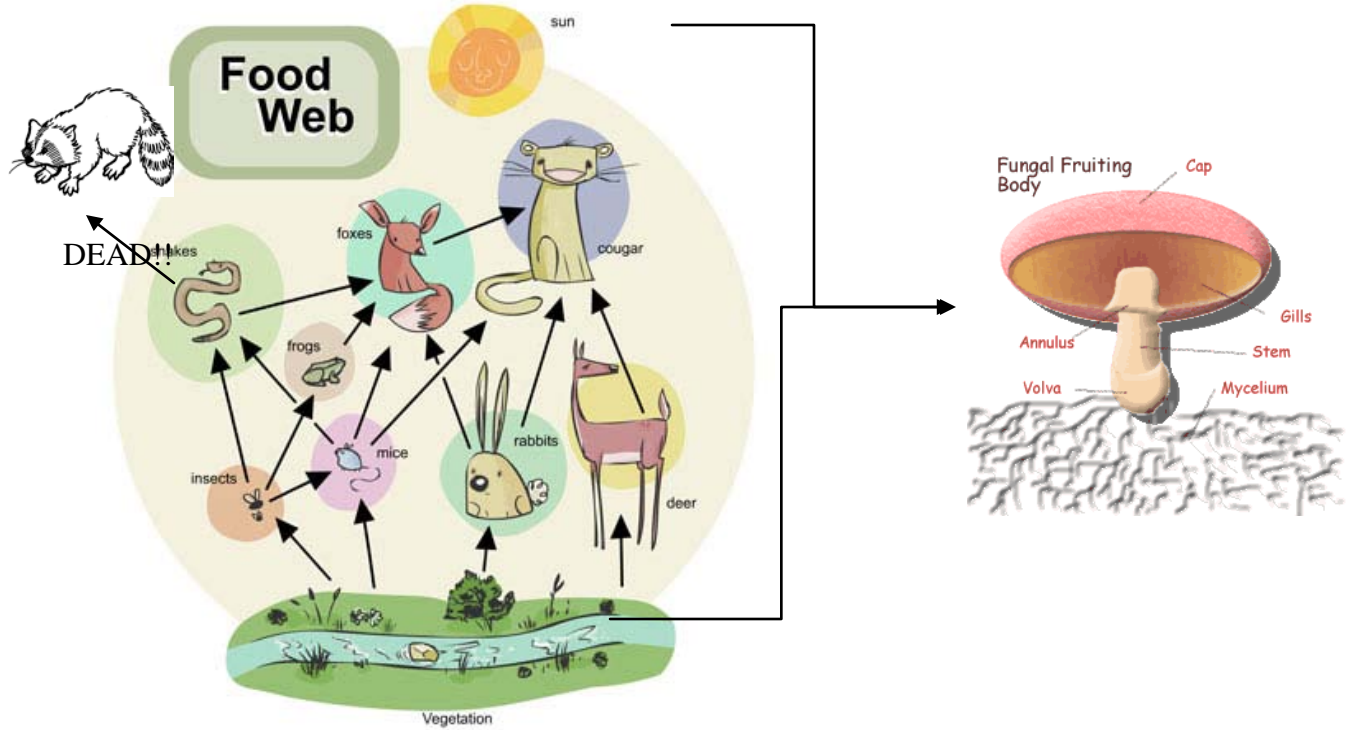
They represent the way the energy is flowing!

5. What is wrong with the following food web?



The arrows are pointed in the wrong direction and the sun and the air are not necessary.

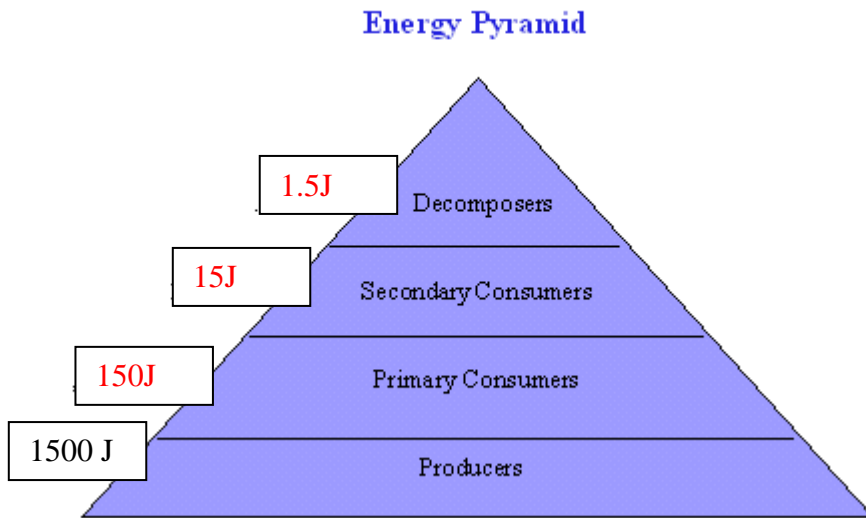
6. Use the following food web to answer the next few questions:



- Name an autotroph. **vegetation**
- Name a heterotroph. **Anything surrounded by a circle (any of the animals)**
- Name a carnivore. **Cougar or snake or frog**
- Name an herbivore. **insect, rabbit or deer**
- Name an omnivore. **Mouse**
- What might be a decomposer? Draw and label it in the food web!
fungus
- What might be a detritivore? Draw and label it in the food web!
raccoon
- Label the trophic levels for the food chain of the vegetation, mouse, fox, cougar

1st = vegetation 2nd = mouse 3rd = fox 4th = cougar

7. On the energy pyramid below label how much energy is at each level. You are told that the producers have 1500 J of energy (J=joules and it measures energy just like a meter measures a distance)



8. What are the other two pyramids that we talked about and what do they show us?

Biomass=shows that if took the mass of each of the different trophic levels, there would be the most of the first trophic level and as you increase trophic levels the amount of living matter decreases.

Numbers=shows that if you counted the number of organisms at the first trophic level there would be more than the number of organisms at the second trophic level and so on.

CHAPTER 4: SYMBIOSIS, BIOMES AND SUCCESSION

9. Determine the type of relationship between the following species:

Species	Type of Relationship
A clownfish (like Nemo from Finding Nemo) living in a sea anemone. The sea anemone provides a safe environment for the clownfish because their predators can't handle anemone stings and the clownfish protects the anemone from butterflyfish.	Mutualism-both species are benefitting
Mites are able to catch a ride on the back of dragonflies. The flies are not harmed by the mites being there.	Commensalism- the mites benefit and the flies are neither harmed or helped
Two trees living near each other have to fight to get enough sunlight water. One might have to grow taller with broad leaves to get enough sun.	Competition-both trees are harmed by the fact that they want the same sunlight
Lice living on the head of a first grader. The lice gets food from the head of the child.	Parasitism-the lice benefits but the child is harmed but not killed
A whale swimming through the ocean with its mouth open so that it can catch krill in its baleen.	Predation- the whale benefits and the krill are killed

10. What is succession?

A changing ecosystem

11. What is the main difference between primary and secondary succession?

Primary succession starts with bare rock and NO soil

Secondary succession starts with soil in place

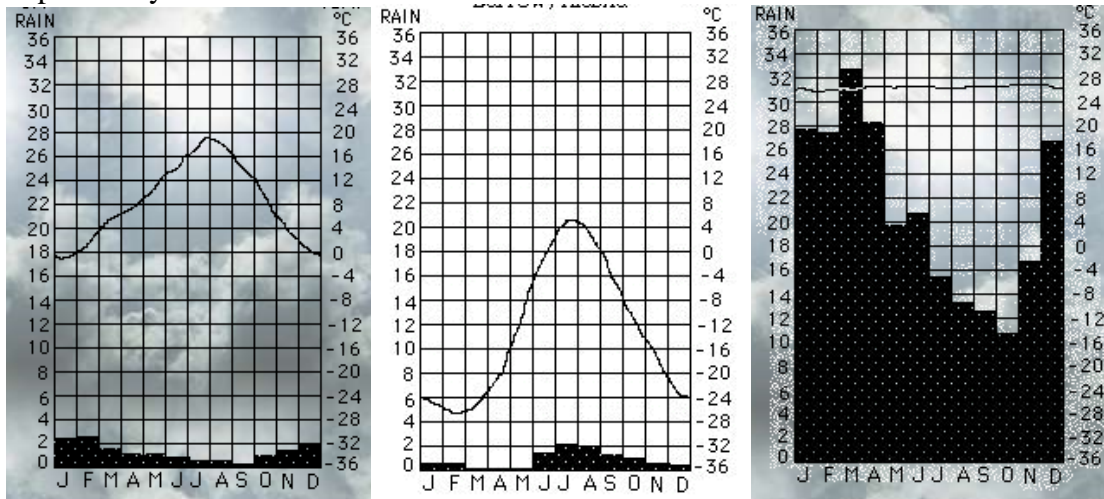
12. Give an example of both primary and second succession

Primary = glacier retreating or strip mining (no soil is remaining)

Secondary = forest fire or overgrazing (soil is still present when secondary succession begins)

13. Look at the three climatograms below. Try to determine which biome you might think they were from.

Explain why!

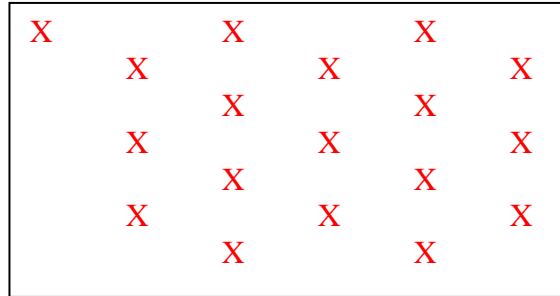
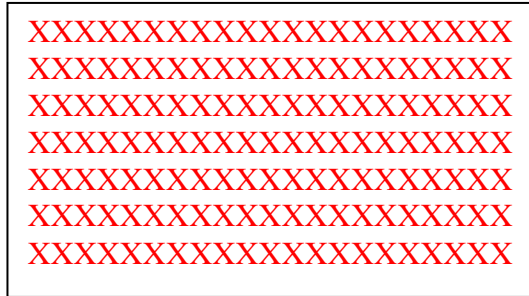


Desert-low rain high temp Tundra-low rain low temp Rain Forest-high temp high rain

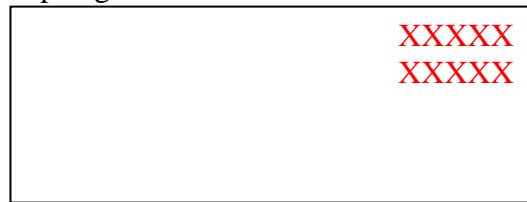
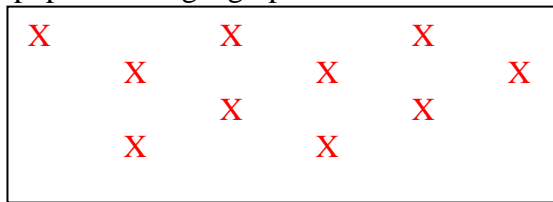
14. Fill in the chart with the major characteristics of each of the following biomes:

Biome	Characteristics
Grasslands	Savanna-high temp, seasonal rain, lots of grass with scattered trees, lions, cheetahs, hyenas, antelopes and zebras Temperate-warm to hot summers with colder winters, seasonal rain and fertile soil, lots of grasses, coyotes, prairie dogs, bison
Taiga	Long cold winters, short mild summers, spruce and fir trees, moose, beavers and timber wolves
Tundra	Long dark winters with short soggy summers, low precipitation, PERMAFROST, only small plants like mosses and lichen, caribou, arctic foxes
Desert	Low precipitation with variable temperature. Cacti, mountain lions, reptiles kangaroo rats, bats, roadrunners, hawks
Rain Forest	Hot and wet year round. Canopy and the understory. Broad leaved plants, Woody vines. Sloths, jaguars, toucans, frogs, boa constrictors, anteaters
Deciduous Forest	Cold to moderate winters with warm summers and year round precipitation. Deciduous trees that lose their leaves, flowering shrubs and ferns. Deer, black bears, squirrels raccoons and skunks
Coniferous Forest	Mild temperatures and lots of rain in the fall winter and spring. Redwood trees, firs and spruce. Bears, elk deer.

15. In the first box draw a population that has a HIGH population density and in the second box draw a population with a LOW population density:



16. In the first box draw a population that equally geographically distributed. In the second box have the population's geographic distribution be in the Top Right corner.



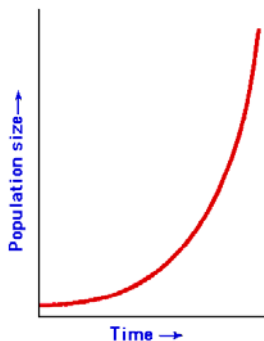
17. What factors determine population growth?

Density dependent and density independent factors can affect the growth rate. We also see that the birth rate, death rate, immigration and emigration all affect how a population will grow.

18. For each of the following situations describe the population growth:

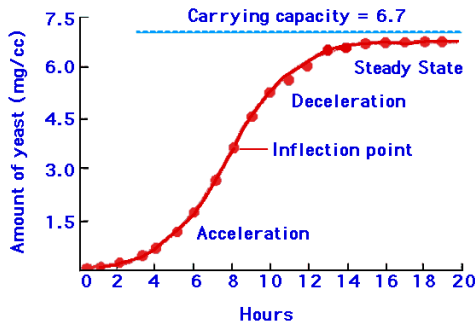
Birth Rate > Death Rate	Population Grows
Immigration < Emigration	Population falls
Birth Rate + Immigration = Death Rate + Emigration	Population remains the same

19. Draw a graph where the resources are unlimited: What type of growth is this?



exponential growth

20. Draw a graph where the resources are limited: What type of growth is this?

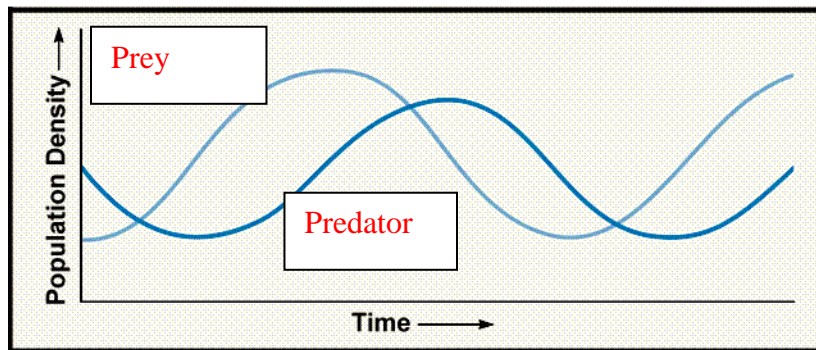


logistical growth

21. Determine whether or not the following are density dependent or density independent:

Disease	Density dependent
Deforestation	Density independent
Damming a River	Density independent
Competition	Density dependent

22. Look at the following graph. Determine which is the predator and which one is the prey. Label the lines in the boxes below.



23. What is the carrying capacity?

Carrying capacity is how many of a specific population an area can support

24. How has the human population changed over time? What are some of the major things that have had an effect on the human population?

Early on the population did not grow quickly because the birth rate and death rate were approximately the same however recently, the death rate had decreased which has caused a population boom. The industrial revolution created a large boom and then modern medicine and better agriculture also contributed greatly.

25. What type of growth is the human race currently displaying?

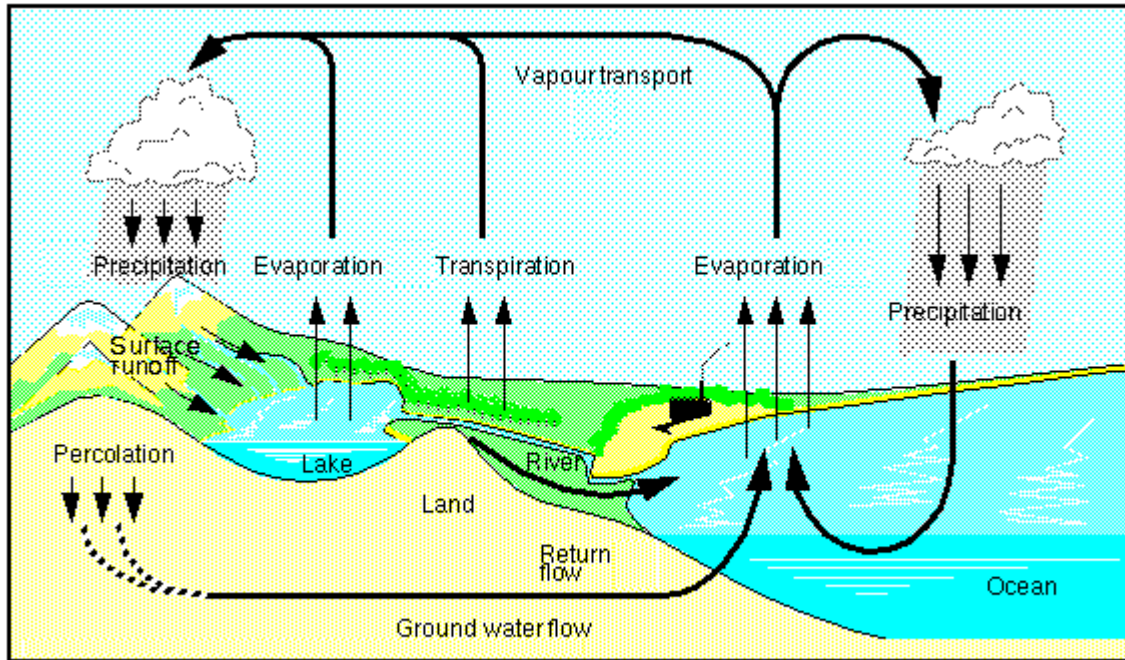
At the end of exponential growth

26. What type of growth will the human race show in about 100 years?

Logistical because the resources are going to become limited

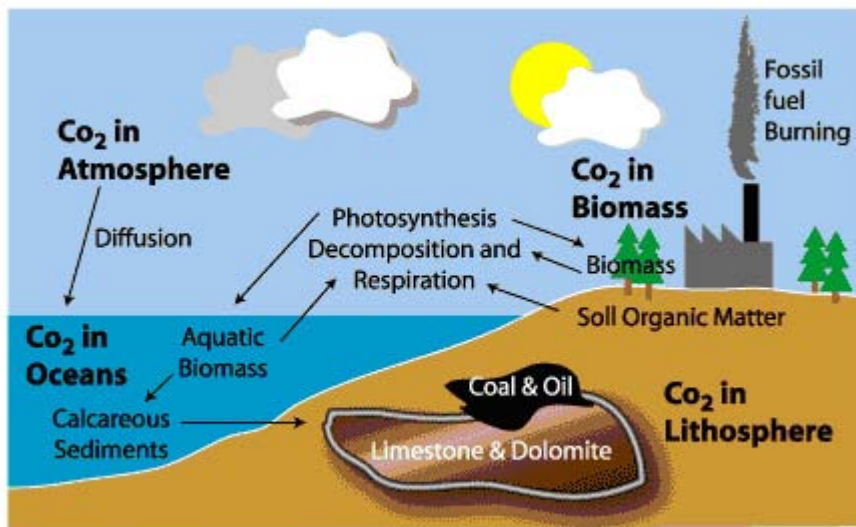
27. What are the three nutrient cycles that we talked about? Sketch the basic components of each one below?

Water:

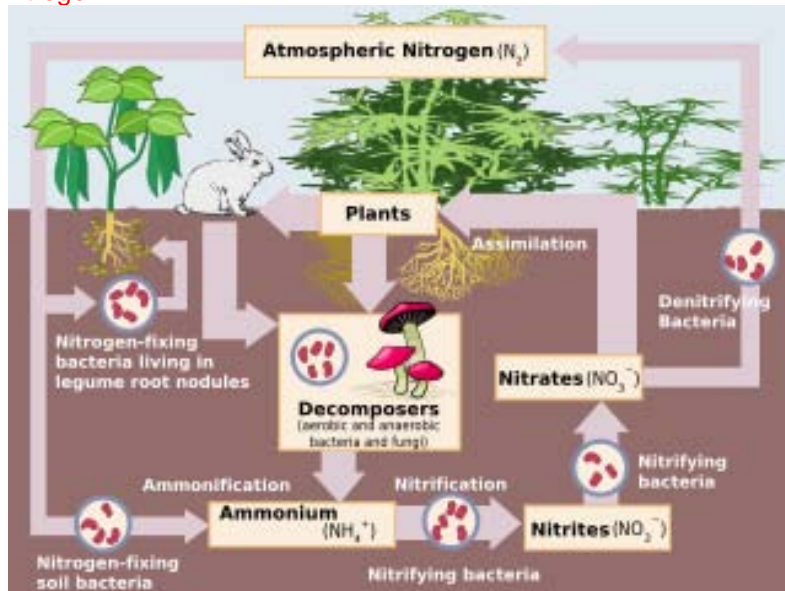


Courtesy Erich Roeckner, Max Planck Institute for Meteorology

Carbon:



Nitrogen



28. How does water enter the atmosphere? How does water return to the soil?
Enter Atmosphere: transpiration, evaporation
Enter Soil: Precipitation, seepage, runoff
29. How does nitrogen enter the atmosphere? How does nitrogen return to the soil?
Enter the atmosphere: Denitrification
Enter the soil: Nitrogen fixation, feces, lightning, decomposition
30. How does carbon enter the atmosphere? How does carbon return to the soil?
Enter the atmosphere: Respiration, Human Activity, Diffusion, Volcanoes
Enter the ground: Photosynthesis, decomposition, Diffusion, feces
31. What is the difference between an abiotic and a biotic factor? Give an example of each.
An abiotic factor is a nonliving thing that affects an organism – example: weather
A biotic factor is a living thing that affects an organism – example: invasive species