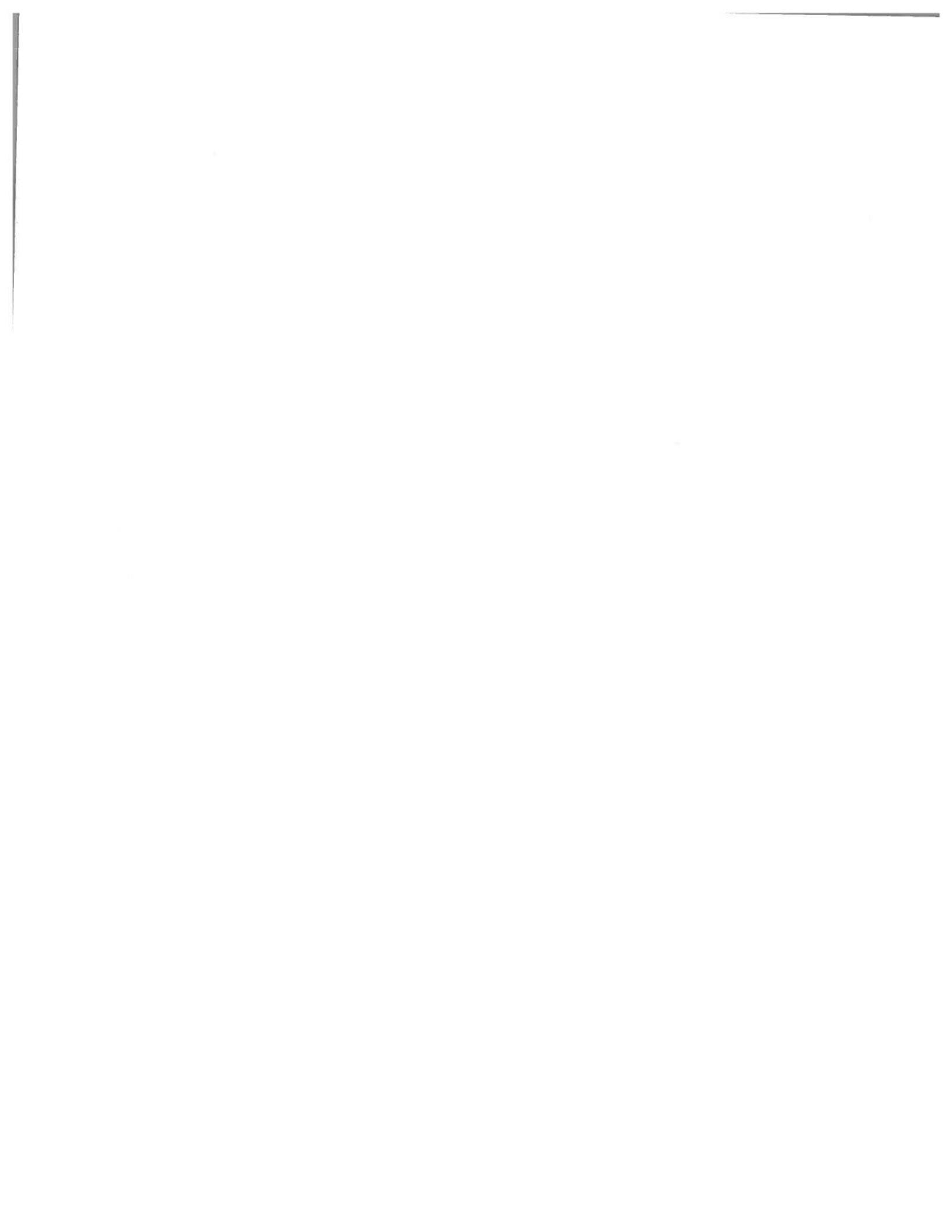


Biology Online Assignments for Weeks 7-9

Week 7 - Ecology - 1. Read through the Ecology slideshow notes and fill in the Ecology Vocabulary sheets as you go through it. 2. Complete the Food Chains and Food Webs Worksheet. 3. Complete the Week 7 Assessment on Google Classroom.

Week 8 - DNA Day - 1. Read through the DNA Day Project rubric, look over the project choices, and choose ONE project to complete

Week 9 - Endangered Species Project - read through the Endangered Species Research Project Rubric and choose an endangered species and answer the 7 questions about it in detail.
2. Complete the End of Year Evaluation for Mr. B.

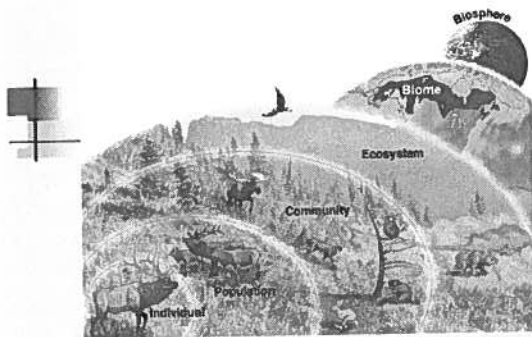


Ecology:

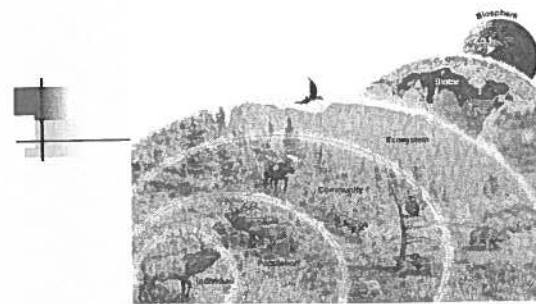
- The study of interactions among organisms and their environment including:
 - Biotic Factors** are living parts of the ecosystem (plants, animals, etc)
 - Abiotic factors** are nonliving factors (temp. soil, air, rocks, water)

Populations vs. Communities:

- A population is a group of organisms of the same species living in a certain area
- All populations interacting together in a given area is a community
 - Ex. Frogs + fish + algae = community



ORGANISM	POPULATION	COMMUNITY
	SAME SPECIES LIVING TOGETHER IN AN AREA Ex: "herd"	DIFFERENT POPULATIONS LIVING TOGETHER IN AN AREA



ECOSYSTEM	BIOME	BIOSPHERE
All the organisms that live in a place together with their NON-living environment	Group of ecosystems that have same climate and similar communities	The portion of the planet in which all life exists

Habitats are:



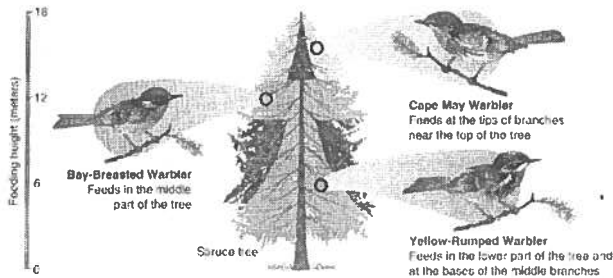
- Place in the ecosystem where an organism lives
- Determined by both biotic and abiotic factors
 - Ex. Earthworm = moist soil, dead organic material

Niche:

- The specific role of an organism in its environment

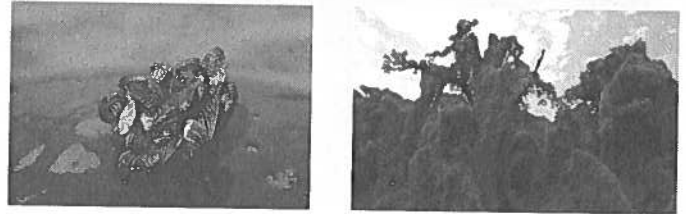
NICHE includes: Where it lives PLUS . . .
 What it eats? What eats it? Where in the habitat it lives? Ex = In a tree, in a pond, underground
 Its actions... hibernating, migrating, etc
 When / how it reproduces?

Niche partitioning = No 2 species can share the same niche. Instead they have separate specialized niches
WHY? = less competition!



Invasive Species

- An **invasive species** is a non-native species that has a tendency to spread to a degree that causes damage to the ecosystem



Symbiosis

(Symbiotic Relationships):

Close physical interaction between two or more species living together where at least 1 organism benefits

3 types of symbiotic relationships:

- Mutualism
- Commensalism
- Parasitism



Populations:

- Most stabilize rather than continuously grow
- As populations increase in #, it puts more demand on the resources available such as food, shelter, and water
- Environmental factors that limit the size of a population are called limiting factors.

Limiting Factors:

- Environmental factors that limit the size of a population
- The availability of resources
 - Ex. Food, water, shelter, oxygen, sun

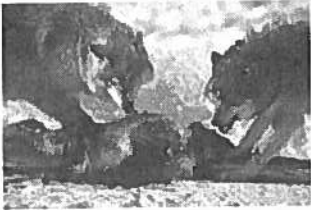
Competition

Interspecies competition - competition of resources between members of **different** species

Intraspecies competition - competition of resources amongst members of the **same** species

COMPETITION

Organisms in an ecosystem have to compete with each other for available resources. **FOOD**



COMPETITION

Organisms in an ecosystem have to compete with each other for available resources: **shelter**



COMPETITION

Organisms in an ecosystem have to compete with each other for available resources: **space/territory**



Prairie dogs - 5 to 35 per acre

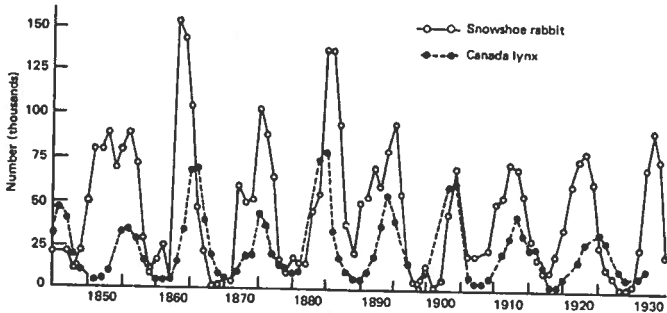
Mountain lion- 1 male per 50-300 sq. mi

Density-Dependent Factors:

- limit the growth of a population when the population reaches a certain size
 - Ex. Disease, competition, predators, and food
- Density-Independent Factors:**
 - Limit population size regardless of population density
 - Ex = Weather, natural disasters, deforestation

Population Cont.

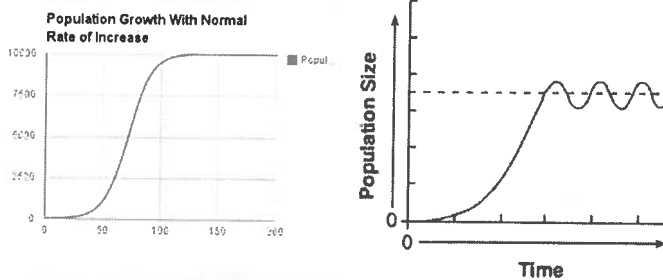
predator- prey population cycles



Carrying Capacity:

- The maximum number of organisms (of one species) that can be supported for an unlimited amount of time
- Occurs when # of deaths and births are about equal
 - If a population goes over the carrying capacity the number of deaths is greater than the # of births and population decreases

Carrying Capacity Graphs



Population Growth Rate Also Involves:

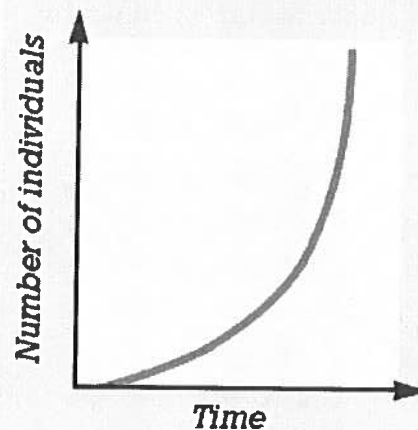
- **Immigration**-movement of individuals into a population
- **Emigration** -movement of individuals out of a population

Graphs & Populations

Exponential Model:

- Describes a population that increases rapidly after only a few generations
- The larger the population gets, the faster it grows
- "J" shaped curve

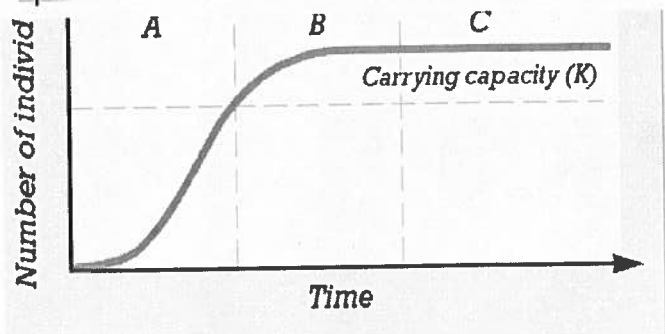
The Exponential Model



Logistic Model:

- Describes a population where growth rate decreases as the population reaches its carrying capacity.
- Takes Limiting Factors into account
- Includes carrying capacity -the number of individuals the environment can support over a period of time
- Growth will decrease and then level out when a population reaches the carrying capacity.
- "S" shaped curve

Logistic Population Growth



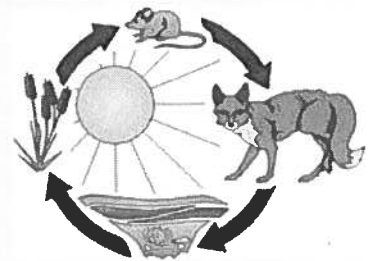
Energy Flow in an Ecosystem:

Includes:

- Producers** (Autotrophs) make their own food
- Consumers** (heterotrophs) obtain or eat their food from the environment
- Decomposers** (a.k.a saprobes or detritivores) break down left over remains of plants and animals

FOOD CHAINS:

- Are 1 pathway of energy transfer through an ecosystem
- Solar Energy from the sun is converted by producers (photosynthesis) into chemical energy or FOOD for consumers



FOOD CHAINS cont...

- Show the relationship b/w Producers and Consumers
 - Energy is transferred from the sun to the producer to the consumer that eats it.
 - Herbivores are first order consumers gaining the most energy from the producers
 - Omnivores and Carnivores are secondary consumers getting left over energy

FOOD CHAINS cont...

- The feeding relationship shows the transfer of energy which forms a food chain
- The transfer of energy moves from the sun to producer to consumer to decomposer**
 - Ex. Sun -> plant -> grasshopper -> bird -> cat

Decomposers

Food Chain Example

Producers (plants)	Consumers (1st level) Herbivores	Consumers (2nd level) Carnivores	Consumers (3rd level) Carnivores
-----------------------	--	--	--

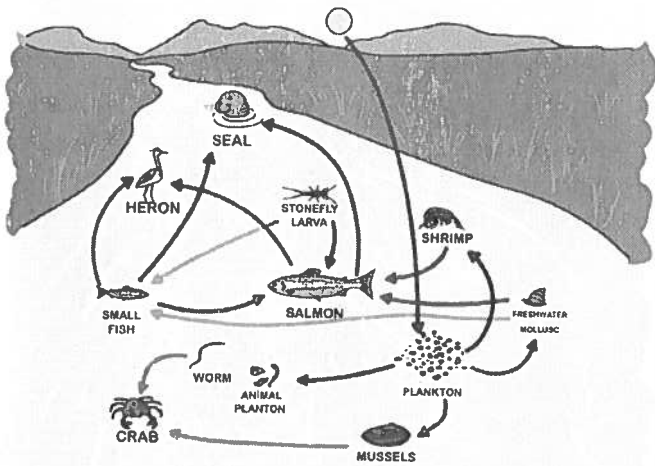


Grass → grasshoppers → robins → hawk

FOOD WEB

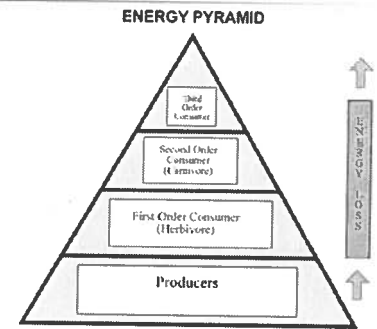
- food chains (1 pathway of energy) which are interconnected = food webs
- Food webs are many food chains interacting together

Each arrow in the food web (or chain) points towards the consumer (thing doing the eating)



Energy Pyramids ARE:

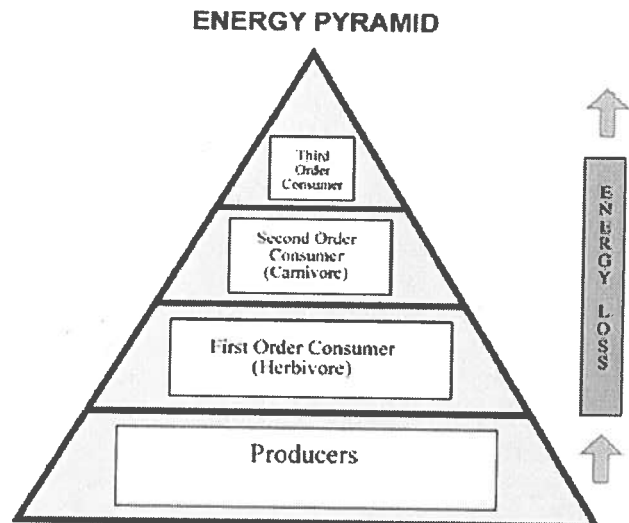
Another way of showing the flow of energy in an ecosystem



Energy Pyramids

Each step in a feeding relationship is called a trophic level

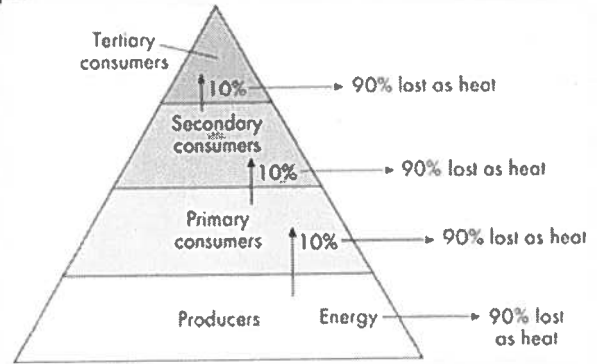
- 1st trophic level = producers
- 2nd trophic level = primary consumers
- 3rd trophic level = secondary consumers



The greatest amount of energy is at the bottom of the pyramid / beginning of food chain (producers), the least amount of energy is at the top / end.

10% Rule

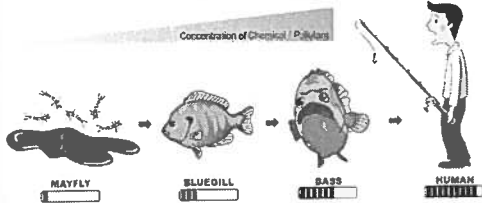
- only 10% of available energy is transferred to the next trophic level in a food chain



Bioaccumulation

-The taking in of chemicals or toxins in the tissues of an organism, typically due to diet

-The higher up an organism is on the food chain, the more these toxins build up. This is called **biomagnification**





Name _____ Per _____

Ecology Vocabulary

Ecology - The study of _____ of organisms and their _____

Biotic Factors - _____ parts of the ecosystem (Ex = _____)

Abiotic Factors - _____ parts of the ecosystem (Ex = _____)

Population - A group of organisms of the same _____ living in a certain _____

Habitat - The _____ in the _____ where an organism _____

Niche - The specific _____ of an organism in its _____

- It includes where it _____, what it _____, when / where it _____
- WHY? _____

Niche Partitioning - No _____ species can _____ the same niche. Instead they have separate _____ niches

Invasive Species - A _____ species that has a tendency to _____ to a degree that causes _____ to an ecosystem

Symbiosis - _____ physical _____ between 2 or more species _____ together in which at least _____ species _____

Limiting Factors - _____ factors that _____ the _____ of a _____ (Ex = _____)

Interspecies competition - competition between members of _____ species

Intraspecies competition - competition between members of the _____ species

Density-dependent factors - _____ the _____ of a population when the _____ reaches a certain _____ (Ex = _____)

Density-independent factors - _____ population size _____ of the population _____ (Ex = _____)

Carrying capacity - The _____ number organisms (of one _____) that can be _____ for an _____ amount of _____
- Occurs when _____ of _____ and _____ of _____ are _____

Exponential growth graph -

Logistic growth graph -

-The transfer of energy moves from the _____ to _____ to _____ to _____

-Each arrow in a food web points _____ the _____

-The greatest amount of _____ is at the _____ of the pyramid / _____ of the food chain (_____) and the least is at the _____ / _____

10% Rule - Only 10% of _____ is _____ to the next _____ of a food chain

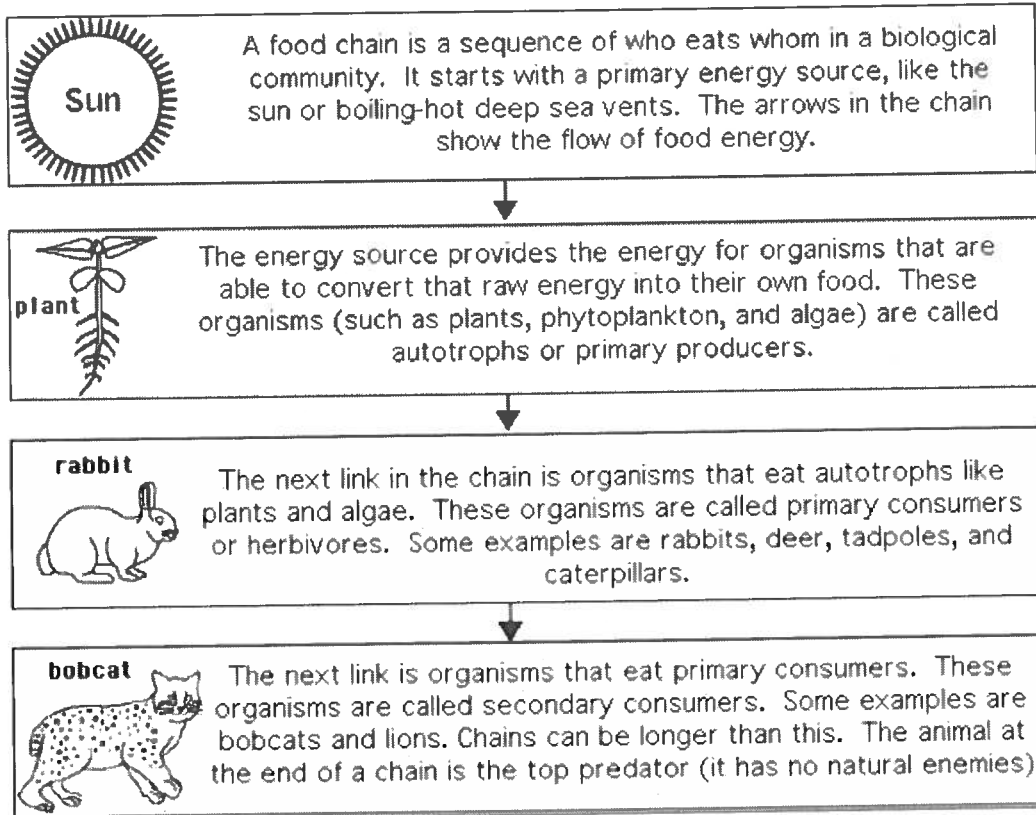
Bioaccumulation - the accumulation of _____ or _____ in the _____ of an organism, typically due to _____.

Biomagnification - The _____ an organism is on the _____, the more these _____ build up.

Name _____ Per _____

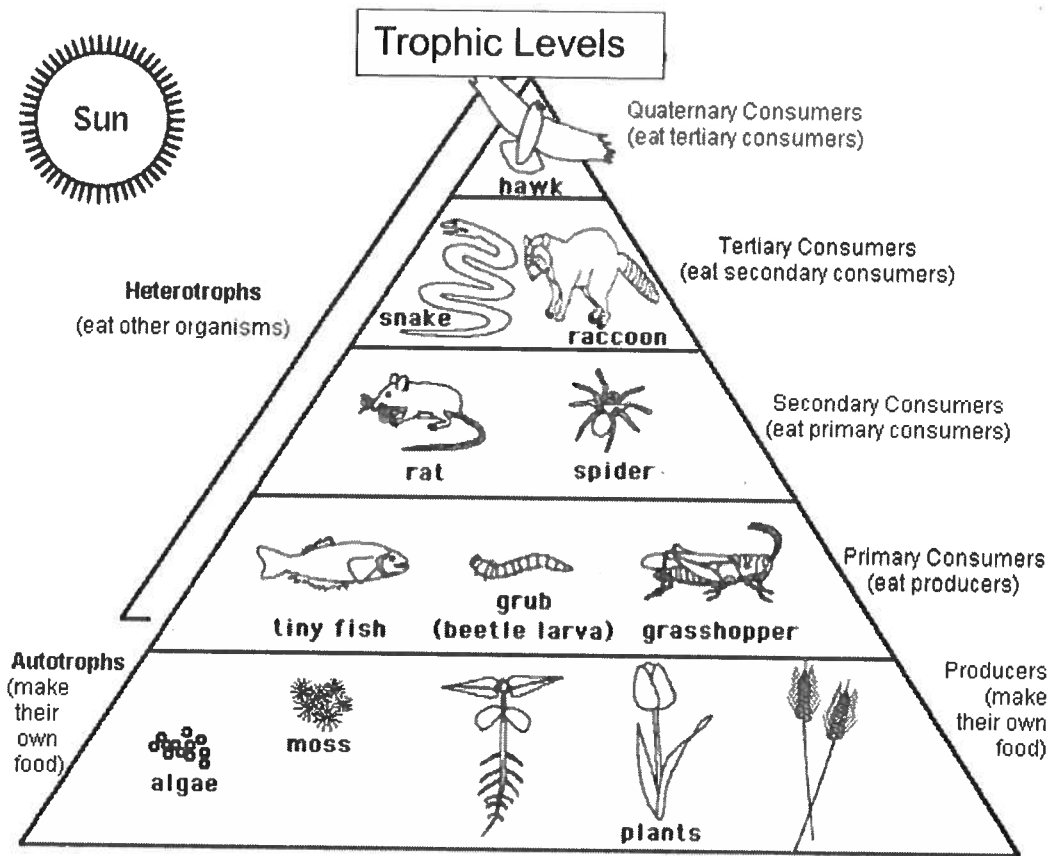
Food Chains and Food Webs

Directions: Read the passages below, and then answer the questions.



Questions

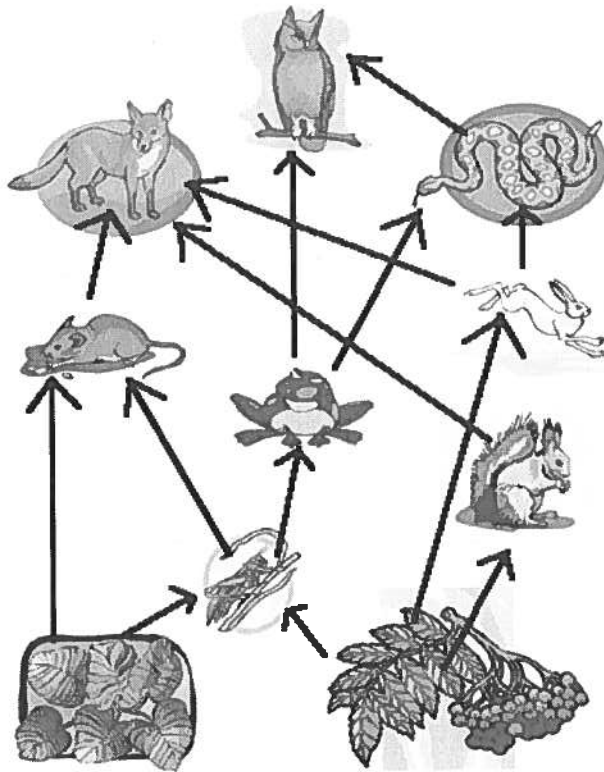
1. What do the arrows of a food chain represent? _____
2. A food chain starts with a _____ source.
3. Organisms that make their own food are called _____ or _____
4. Organisms that eat plants are called _____ or _____
5. An animal at the top of a food chain with no natural enemies is called a _____



Questions

1. There are many more _____ than there are primary consumers.
2. Grass is an example of a(n) _____
3. Zebras (grass eaters) are examples of _____
4. Lions (meat eaters) are examples of _____
5. On average, how much energy is lost from each trophic level? _____ (think of the rule)
6. Why are there so few tertiary and quaternary consumers in a food web? _____

Food Web Example:



Use the food web to the left and identify one example of each of the following:

1. Producer _____

2. Primary Consumer _____

3. Secondary Consumer _____

4. Higher order consumer _____

5. Herbivore _____

6. Carnivore _____

7. Omnivore _____

8. What consumers are missing from this food web?

9. What will be a consequence to this food web if the MICE INCREASE dramatically in numbers? Why?

10. Predict what will happen to this food web if the OWL is removed from the ecosystem? (and explain)



Week 8 - DNA DAY PROJECT

National DNA Day is every year on April 25th and commemorates the completion of the Human Genome Project in 2003 and the discovery of DNA's double helix in 1953. To honor this day and learn more about DNA, you will choose ONE of the project choices from the list to complete.

Criteria (read carefully)

- All summaries and essays must be 1 full page typed size 12 font.
- All Slideshows must be 12 slides minimum.
- Be sure to cite your sources or you will lose points.
- Attach file and submit on Google Classroom

Project Choices:

*****CHOOSE ONE!**

- 1) Write an essay or make a slideshow summarizing the Human Genome Project (what it is, why it is important, how it has been beneficial to society, etc.)
- 2) Write an essay or make a slideshow summarizing your research on the process of cloning and an example of a specific animal that has been cloned
- 3) Write an essay or make a slideshow about a famous scientist that contributed to the understanding of DNA and genetics. (jobs they had, their major accomplishments/discoveries, a quote by them, etc.)
- 4) Choose a controversial genetics topic (human stem cell research, human genetic engineering, human cloning, etc.) and then research and choose a side and write a persuasive essay about whether or not you believe is moral/ethical and if you think it should be legal
- 5) Make a timeline of slides with dates and pictures showing at least 12 important genetic discoveries and a detailed description of each.



WEEK 9 - Endangered/Threatened Species Research Project

Name of Chosen Endangered species: _____

Objective: Students will investigate causes of endangerment and efforts being taken to conserve species while also raising awareness about the species.

- Choose an endangered or threatened species from one of the websites listed below. You may choose an animal or a plant.

<http://www.earthsendangered.com/index.asp>

<http://www.fws.gov/endangered/>

<http://www.endangeredspecie.com/map.htm>

- Research your organism and answer the following questions IN DETAIL.

1. What is the common name and scientific (Latin) name of the plant/animal?
2. What does the organism look like? Describe and be specific about variations in size, shape, color etc. Copy and paste 2 photos of your organism.
3. Where does it live, what is its natural habitat? Be descriptive and either describe or include a picture of a map that shows its current range vs. its previous range.
4. Where does it fit into its ecosystem's complex food web? Such as what does it eat and what eats it? What other organisms will be affected if it becomes extinct?
5. What are some evolutionary adaptations of this organism that make it unique and allow it to survive in its environment?

ONE LAST THING!

I value your input and want to know what things I did right this year and what things I need to improve on in the future. I made a short "quiz" where I ask that you provide me some feedback on what you liked and what you didn't like about my class.

1. Go to the following website

www.socrative.com

2. Click the blue "Login" button at the top right of the page.

3. Select "Student Login"

4. When it asks for the Room Name, enter the following

BESANCON4035

5. When it says "Enter your name" you may choose to put your real name if you want me to know it is you rating me or you can put in an alias / nickname to keep your answers and comments anonymous.

THANK YOU for a great year and I hope you all have a great summer! Stay safe, make good decisions, and remember that I love you guys! If you ever need anything please don't hesitate to ask and make sure to stop by and say hi next year. Stay true to who you are and always do your part to make the world a better place!

Mr. B

