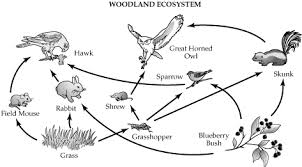
**UNIT 7:**

**Ecosystems, Relationships, Food Chains, Cycles of Matter, & Human Impact**

****

**Mastery Quiz:**

**Mastery Quiz:**

**Unit Test:**

**Notes 1: Ecosystems & Limiting Factors**

**U7-1**

**U9-1**

**BIOTIC: ABIOTIC:**

**Read the paragraph below. Circle the ABIOTIC factors. Draw a box around the BIOTIC factors.**

In recent years, the striped bass population in the Chesapeake Bay has been declining. This is due in part to “fish kills,” where a large number of fish die off. Fish kills occur when oxygen-consuming processes require more oxygen than the plants produce, which reduces the amount of oxygen available to the fish. One explanation is human activities that increased the amount of sediments suspended in the water, largely due to erosion from cutting down trees. The sediment acts as a filter for sunlight which causes a decrease in the amount of sunlight that gets to the aquatic plants in the Chesapeake Bay.

**Levels of Ecological Organization:**

**BIG**

**Only \_\_\_\_\_\_\_\_\_\_\_\_\_ include ABIOTIC factors too!**

**U9-1**

**SMALL**

|  |  |  |
| --- | --- | --- |
| **Ecosystem** | \_\_\_\_\_\_\_\_\_\_ and abiotic factors interacting together. | Just like Charlotte, NC |
| **Community** | A group of several  \_\_\_\_\_\_\_\_\_\_\_\_\_ in an area. | Just like Myers Park! |
| **Population** | A group of organisms of the  \_\_\_\_\_\_\_\_\_\_\_\_\_\_ species | Just like your grade level…9th, 10th, 11th |
| **Individual** | One \_\_\_\_\_\_\_\_\_\_\_\_\_\_, a living thing! | Just like you! |

**What is a limiting factor?!**

* Factors that prevent a population from \_\_\_\_\_\_\_\_\_\_\_ indefinitely (forever!)
* They can be \_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_
  + Examples**:** Predation (one species kills/eats another), food, water, space, shelter
* **Density-Dependent** – will limit population growth \_\_\_\_\_\_\_\_\_\_\_\_\_\_ as the population gets \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Examples: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, sickness, predator/prey
* **Density-Independent** – will limit population growth \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ regardless of how big or small the population gets
  + Examples: \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_, weather, pollution

**Practice:** Apply your knowledge!

1. In the Chesapeake Bay reading, what was the limiting factor in the ecosystem (what did the fish run out of)?
2. Is this an abiotic or biotic factor?
3. How did this limiting factor affect the fish populations? Why?
4. Is this a density-independent or density-dependent limiting factor?

**Notes 2: Relationships**

**U7-2**

1. **Symbiotic Relationships: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

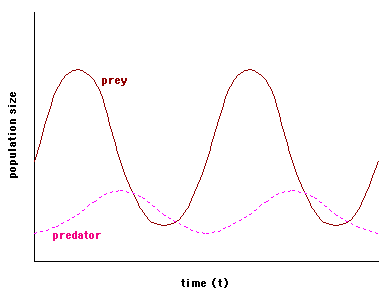
Key to Symbiotic Relationships:

☺ = Positive benefit

☹ = Negative

= No impact

* 1. **Mutualism:**
  2. **Parasitism:**
  3. **Commensalism:**

1. **Feeding Relationships**
   1. **Predator – prey: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**PREDATOR:**

**PREY:**

* 1. **Scavenger:** Organism eats the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of a \_\_\_\_\_\_\_\_\_ animal after another has already \_\_\_\_\_\_\_\_\_\_ it.
  2. **Feeding:** 
     + Carnivore: eats only \_\_\_\_\_\_\_\_\_\_\_\_\_
     + Herbivore: eats only \_\_\_\_\_\_\_\_\_\_\_\_\_
     + Omnivore: eats \_\_\_\_\_\_\_\_ plants and animals
     + Decomposer: eats \_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ matter (returns it to the \_\_\_\_\_\_\_)

**Practice: Identify** what type of relationship is described below and **justify** your response!

1. Ostriches and gazelles feed near one another. They both watch for predators in different ways and alert each other to danger.
2. The bacteria *E. Coli* makes its home in the digestive tract of humans so that they can have shelter from the outside world. In addition, there is available food in the digestive tract for the *E. Coli*. By eating certain particles in the humans’ digestive tract, the *E. Coli* bacteria aids in digestion for the human.
3. Ticks feed on the blood of a deer. This is not good for the deer.

What would happen if…

1. All of the rabbits died off in an ecosystem where they were the primary food for lynxes?
2. The number of predators (lions) increased in an ecosystem, but the number of prey (zebra) stayed the same?

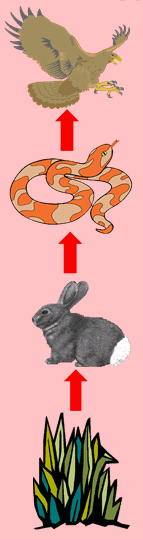
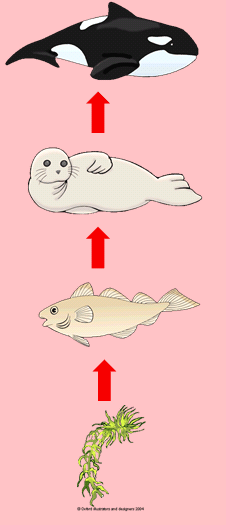
**Notes 3: Food Chains, Webs, Ecological Pyramids**

**U7-3**

**& Cycles of Matter**

**Food chain/web**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_!

* The arrow points \_\_\_\_\_\_\_\_\_\_\_\_\_\_ the organism that does the eating (into their belly!)
* Each level is called a \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_

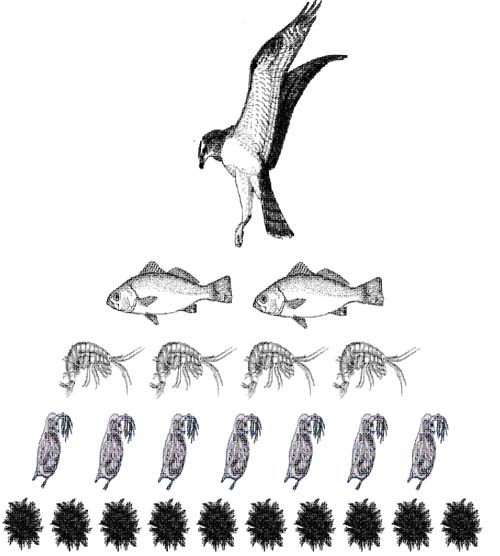


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**Energy Pyramid:** movement of \_\_\_\_\_\_\_\_\_\_\_

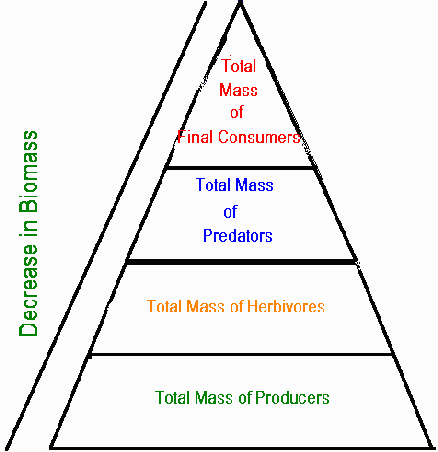
* The \_\_\_\_\_\_\_\_\_ is the source of ALL ENERGY
* Energy does NOT \_\_\_\_\_\_\_\_\_\_
* 90% of enery is lost as \_\_\_\_\_\_\_\_\_\_\_ during \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as it moves up a food web/chain
* Only \_\_\_\_\_\_% of energy is carried to the next trophic level

**As you move up, each level only receives \_\_\_\_\_\_\_\_\_% of the previous level’s energy!!**



**Numbers Pyramid:** \_\_\_\_\_\_\_\_\_\_ of organisms

* Shows \_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ present at each level
* Should always be \_\_\_\_\_\_\_\_\_\_\_\_ producers than consumers since they have the most \_\_\_\_\_\_\_\_\_\_\_\_\_



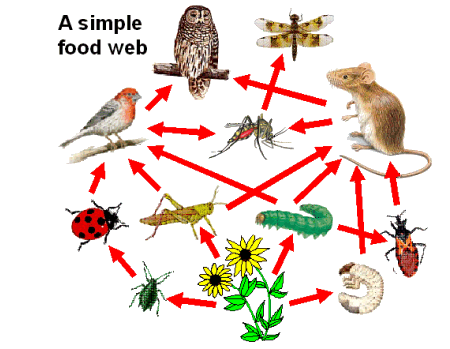
**U7-4**

**Biomass Pyramid:** \_\_\_\_\_\_\_\_ of organisms

* Bio = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ & mass = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Biomass is another word for \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Producers have the highest biomass

**Food Chain & Pyramid Practice**

1. Grass obtains 1,000 kcal of energy from the sun. Cows eat grass. John ate a burger last night; how much energy did he get from the hamburger meat? (HINT: Draw the food chain. How much energy is carried over into the next trophic level?)

**Answer the following questions about this food web:**

1. What are the **producers** in this food web?
2. What are the **primary consumers** (**herbivores**🡪 eat \_\_\_\_\_\_\_\_\_\_\_\_\_) in this food web?
3. What are the **secondary consumers** in this food web?
4. What are the highest level consumers in this food web?
5. Which **trophic level** (feeding level) contains the GREATEST amount of available energy?
6. Where did the producer in this food web get its energy?
7. Which organisms are the autotrophs and which organisms are the heterotrophs?
8. Identify one FOOD CHAIN in the above FOOD WEB



**CO2**

**Glucose**

**(C6H12O6)**

**See page U3-19 too!**

**Carbon Cycle**: movement of \_\_\_\_\_\_\_\_\_\_\_\_\_\_

* **Shows the relationship between \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ & \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
* Carbon comes in \_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_
* Matter is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_!
* Carbon dioxide (CO2)is released in

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and used by

producers In photosynthesis.

**Nitrogen Cycle:** cycling of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**U7-5**

* All organisms require \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to make \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_ which are used to build proteins. (Think back to Unit 2, organic molecules)
* Involves \_\_\_\_\_\_\_\_\_\_\_\_ converting atmospheric \_\_\_\_\_\_\_\_\_\_\_\_\_ into ammonia
* The ammonia is then turned into \_\_\_\_\_\_\_\_ & nitrites which producers can used to make \_\_\_\_\_\_\_\_\_\_\_\_\_.
* When organisms \_\_\_\_\_\_\_\_, decomposers return the nitrogen back to the soil as \_\_\_\_\_\_\_\_\_\_\_\_\_\_. (Think CYCLE)
* The ammonia can be used again by producers or returned back into the atmosphere (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)

**Water Cycle:** movement of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* All living things required water to survive
* Water moves between the \_\_\_\_\_\_\_\_\_\_\_\_\_\_, atmosphere, & \_\_\_\_\_\_\_\_\_\_\_\_.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is when water changes from liquid form to gas/water vapor
* Evaporation from leaves of plants is known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Water returns to Earth in the form of rain or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Some rain may seep into the soil which will become groundwater

**Cycles of Matter Practice**

**Carbon Cycle –** In the space provided, copy and paste the carbon cycle diagram and answer the questions**.**

1. What is the process by which plants convert carbon dioxide into energy rich carbon compounds?

2. Write and complete the sentence: Plants use energy from the \_\_\_\_\_\_\_\_ to convert \_\_\_\_\_\_\_ gas into \_\_\_\_\_\_\_\_\_\_\_\_\_\_ molecules.

3. What are the 4 sources, or processes, that ADD carbon to the atmosphere?

4. What process do animals carry out that adds carbon dioxide to the atmosphere?

5. How do animals and plants help maintain a balance of carbon dioxide in the atmosphere?

6. The combustion of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ by humans can add carbon dioxide to the atmosphere.

7. How is the carbon stored in plants transferred to animals?

8. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of dead organisms may return carbon to the soil.

**Nitrogen Cycle –** In the space provided, copy and paste the nitrogen cycle and answer the following questions**.**

**U7-6**

1. What percentage of the air consists of nitrogen?

2. Nitrogen fixing bacteria in the soil convert atmospheric nitrogen to a \_\_\_\_\_\_\_\_\_\_\_\_\_form.

3. How do plants obtain the nitrogen they need?

4. How do herbivores and carnivores obtain the energy they need?

5. How is nitrogen returned to the atmosphere? What is this process called?

**Water Cycle –** In the space provided, copy, paste, and LABEL the water cycle and answer the following questions**.**

1. How does water from rain travel from the land that it falls on to large bodies of water like the oceans?

2. How does a cloud form from water vapor in the air?

3. List at least 3 forms of precipitation.

4. How does transpiration differ from evaporation?

5. Describe how water is cycled through throughout the ecosystem.

**Notes 4: Population Growth**

**U7-7**

Logistic Growth = \_\_\_ Curve

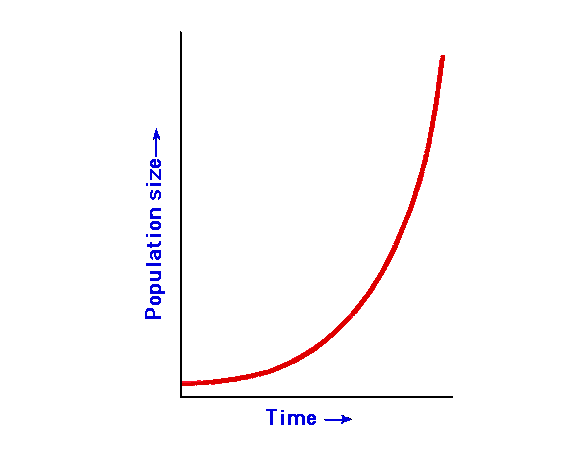
Levels off due to \_\_\_\_\_\_\_\_\_\_\_\_\_ factors

🡪Reaches \_\_\_\_\_\_\_\_\_\_\_\_\_\_ capacity = largest # of organisms the ecosystem can support

Exponential Growth = \_\_\_\_\_\_ Curve

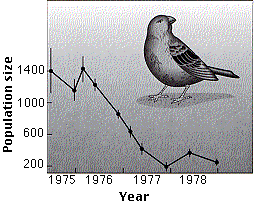
Grows at a fast, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rate

🡪no limiting factor!





**Practice: 2 Examples of Limiting Factors on Populations**

**PART I:** This graph shows the decline in the population of one of [Darwin's finches](http://users.rcn.com/jkimball.ma.ultranet/BiologyPages/S/Speciation.html#Darwin%27sFinches) (*Geospiza fortis*) on Daphne Major, a tiny member of the [Galapagos Islands](http://users.rcn.com/jkimball.ma.ultranet/BiologyPages/S/Speciation.html#Reunion). The decline (from 1400 to 200 individuals) occurred because of a severe drought that reduced the quantity of seeds on which this species feeds. The drought ended in 1978, but even with ample food once again available the finch population recovered only slowly.

1. What is the **species** name for Darwin’s finches? What is the **genus** name for Darwin’s finches?
2. What limiting factor affected the carrying capacity of the island for Darwin’s finches?
3. What was the approximate initial carrying capacity before the drought? Was the carrying capacity of the island after the drought?

**PART II:** In the summer of 1980, two islands, St. Paul and St. George were struck by an infestation of the gypsy moth (*Porthetriadispar*). As the summer wore on, the moths laid eggs. When the caterpillars (larvae) hatched from the eggs, they began to feed on trees in preparation for the pupa stage. The results were dramatic: 50-ft beech trees would be completely defoliated (defoliated = leaves eaten off). Despite it being summer time, the forest began to take on a winter appearance with their skeletons of bare branches. There were many caterpillars that died of starvation because there were not enough leaves for them to eat. The result: a massive die-off of not only the trees but also the caterpillar offspring of the gypsy moth.

Number of gypsy moth

1. What was the limiting factor for the gypsy moth?
2. What happened when the population of caterpillars exceeded the carrying capacity of the environment?

**U7-8**

1. Look at the population of gypsy moths on St. Paul Island before 1938. Was the caterpillar population growth primarily **exponential** or **logistic**? J curved or S curved?
2. Based on the graph, which island had a larger infestation of the gypsy moth - St. Paul or St. George island?
3. St. Paul island is larger than St. George island. What explains the difference in the size of the gypsy moth infestation between the islands? Be sure to discuss the limiting factor involved.

**The following data sets will be graphed on page U7-10**

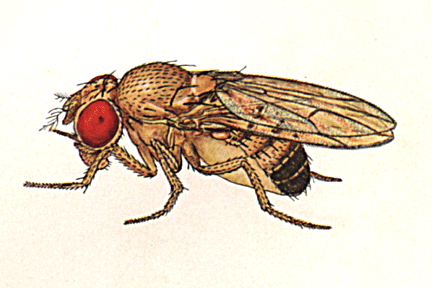
**Data Set 1: Rabbit Population Growth**

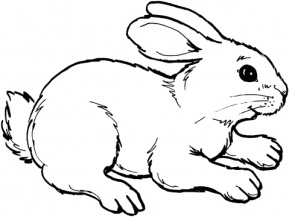
|  |  |
| --- | --- |
| **Rabbit Population Growth** | |
| Generation | Number of Rabbits |
| 1 | 100 |
| 2 | 105 |
| 25 | 1,000 |
| 37 | 1,600 |
| 55 | 2,400 |
| 72 | 3,350 |
| 86 | 8,000 |
| 100 | 13,150 |

**Analysis Questions**

1. What type of growth is exhibited by this population? How can you tell?
2. Did this population reach **carrying capacity**? Why or why not? If so, **WHEN** did the population reach carrying capacity and what is the max number of individuals that can be supported?
3. What **factors** are responsible for this type of growth pattern?
4. If predators like foxes and cats, which often prey on rabbits, were introduced into this environment during the 10th generation, what would happen to the population growth? Explain AND sketch your answer below:

**U7-9**

**Data Set 2: Fruit Fly Population Growth**

****

|  |  |
| --- | --- |
| **Fruit Fly Population Growth** | |
| Days | Number of Fruit Flies |
| 5 | 10 |
| 10 | 50 |
| 15 | 100 |
| 20 | 200 |
| 25 | 300 |
| 30 | 310 |
| 35 | 320 |
| 40 | 320 |

Your graphs will be pg. U7-10!

**Analysis Questions**

1. What type of growth is exhibited by this population? How can you tell?
2. Did this population reach **carrying capacity**? Why or why not? If so, **WHEN** did the population reach carrying capacity and what is the max number of individuals that can be supported?
3. What **factors** are responsible for this type of growth pattern?
4. What factors would allow this population to exhibit the **other** type of growth pattern (hint: what things need to be present in the environment?)

**Graphs:**

**U7-10**

**Data Set 1: Rabbit Population Growth**

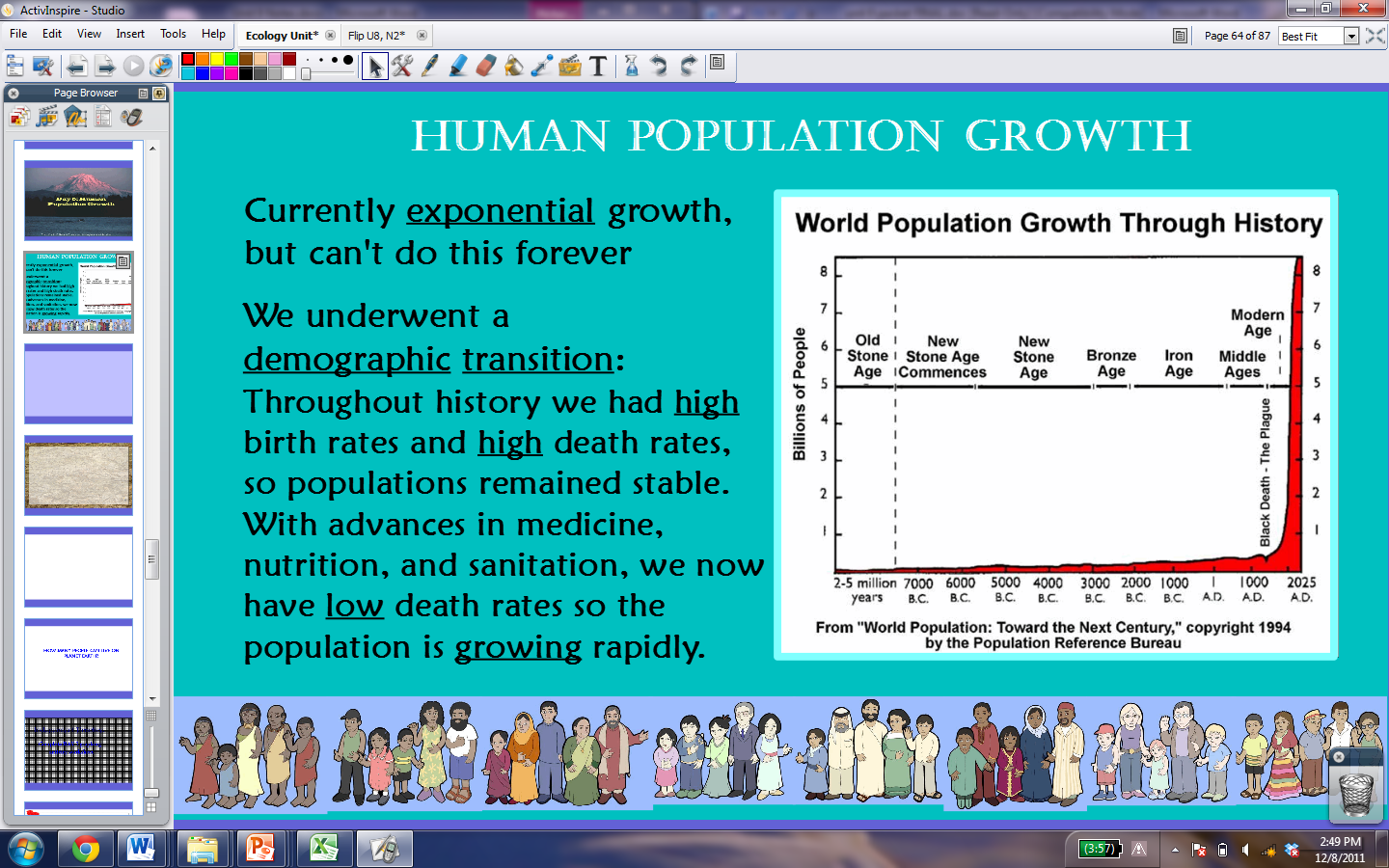


**Data Set 2: Fruit Fly Population Growth**



**Notes 5: Human Population Growth**

**U7-11**

**Human Population Growth:** Currently \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ growth, but can’t do that forever!

🡪 We underwent a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: Throughout history we’ve had \_\_\_\_\_\_\_\_ birth rates and \_\_\_\_\_\_\_\_ death rates, so populations remained \_\_\_\_\_\_\_\_. With advances in medicine, nutrition, and sanitation, we now have \_\_\_\_\_\_\_\_\_\_ death rates so the world population is \_\_\_\_\_\_\_\_\_\_\_\_\_ rapidly.

🡪4 Things can affect the size of a population:

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**The Earth's Carrying Capacity**  
Prior to 1950, the death rate was high, which kept the numbers of humans from increasing rapidly. In the 19th Century, the agricultural revolution increased food production. The industrial revolution improved methods of transporting food and other good. In the 20th Century, advances in medicine, sanitation and nutrition have decreased the death rates further. These factors combined to produce the rapid growth of the human population in the 20th century.

As with any population, humans are also limited by factors such as space, amount of food and disease. The carrying capacity is the number of individuals that a stable environment can support. Authorities disagree on the maximum number of people that the earth can support, though the numbers generally range for 8 to 10 billion. As the population approaches its limit, starvation will increase. Some countries have a much higher growth rate than others. Growth rate is the number of people born minus the number of people that die. Compare the growth rates of the following countries

Most countries are trying to reduce their growth rate. Zero population growth means that as many people are being born as there are dying - to achieve zero population growth, each couple would need to have no more than two children (to replace the parents). Even if this number is achieved, the population will continue to grow because the parents will still live on for decades, as their children have children and their children have children..and so forth. The United States reached zero population growth in the 1980's, and yet the overall population of the US still increases.

**Analysis**

1. What factors contributed to the world's overall population growth in the last 150 years.
2. Why does a population not level off during the same year it reaches zero population growth?
3. If the carrying capacity of the earth was 9 billion people, when would this number be reached (according to your graph)?
4. What will happen when the human population exceeds the earth's carrying capacity?
5. What changes do you believe the human population needs to make to ensure we don’t reach carrying capacity?

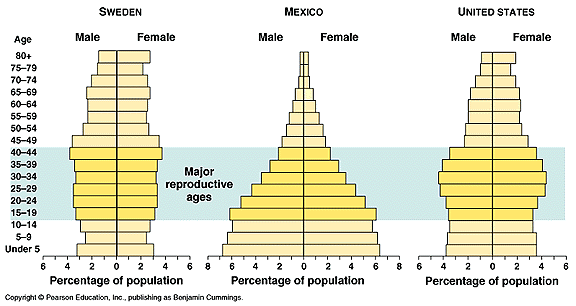
**Population Practice**

**U7-12**

**Making Predictions:**

|  |  |
| --- | --- |
| **Scenario** | **Population will:** Increase, Decrease, Remain Stable |
| High birth rate, high infant mortality rate |  |
| High birth rate, low death rate |  |
| Low birth rate, high death rate |  |
| High birth rate, high emigration rates |  |

**Age-Structure Diagrams:**



Label the populations to the left as:

**INCREASING**

**DECREASING**

**STABLE**

**Choose a word from the box below that best completes each sentence**.

births increases emigration deaths immigration abundant

1. When resources are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in a particular area, individuals may move into the population of this area. This movement of individuals into a population from a different population is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

2. A very cold winter has left many deer in a population hungry and sick. By the end of the winter, this population will likely decrease because of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

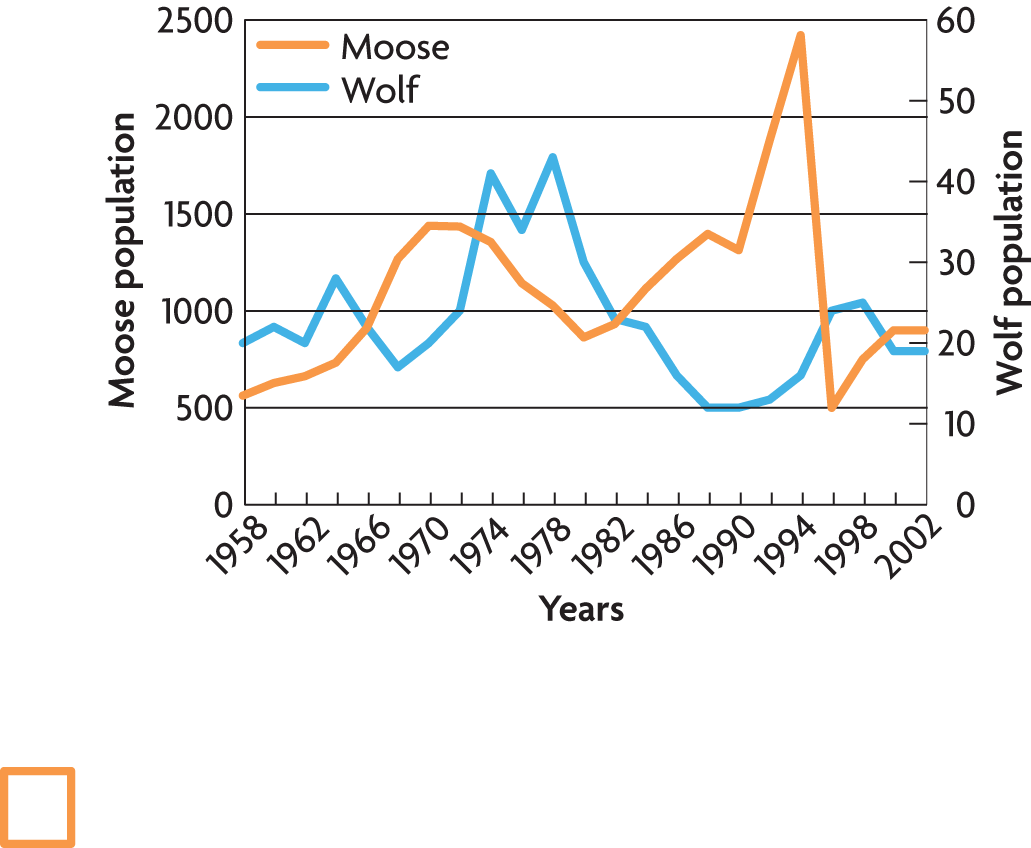
3. A deer population experiences growth when the rate of reproduction \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. This change in population size is due to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

4. As humans move into their territory, many members of a deer population move away and join other herds. This movement of individuals out of a population into a new population is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

5. How does the availability of resources affect population growth?

The population of a predator can be limited by the available prey, and the population of prey can be limited by being caught for food. Use the information in the graph below to answer the questions that follow.

1) Describe the pattern seen in the graph above.



2) How does the wolf population affect the carrying capacity of the moose population?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Definition | Causes | Consequences | Solution | Picture |
| Acid Rain |  |  |  |  | **Notes 6: Human Impact** |
| Deforestation |  |  |  |  |  |
| Climate Change  …also known as Global Warming | **Definition** | **Causes** | **Consequences** | **Solutions** | **U7-13**  **Picture** |
| Invasive Species |  |  |  |  |  |
| Ozone Depletion |  |  |  |  |  |
| Bioaccumulation |  |  |  |  | **U7-14** |

**Notes 6: Human Impact**

**U7-12**

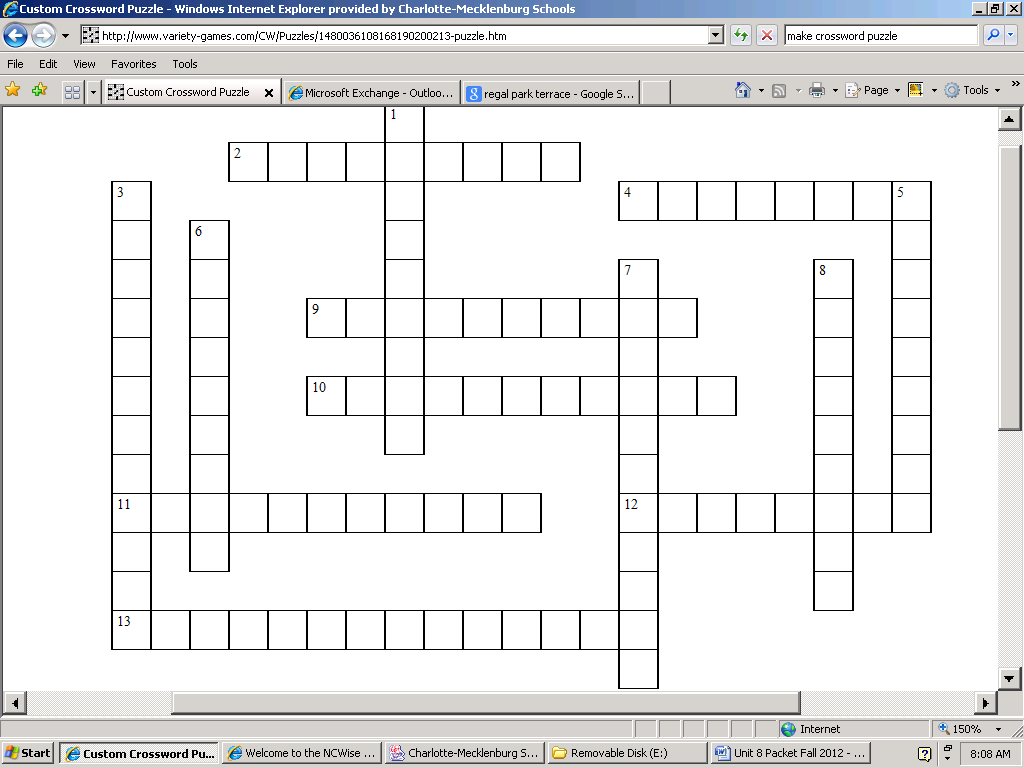
|  |  |  |
| --- | --- | --- |
| **Problem** | **Description** | **How can WE help?** |
| **Human Overpopulation** |  |  |
| **Pollution** |  |  |
| **Habitat Destruction** |  |  |
| **Invasive species**  **(Non-native Species)** |  |  |
| **Burning Fossil Fuels** |  |  |
| **Global Warming** | Greenhouse gases are \_\_\_\_\_\_\_ in an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that absorb and \_\_\_\_\_\_\_ radiation causing the Earth’s \_\_\_\_\_\_\_\_\_\_\_\_\_ to rise which causes **global warming**. |  |
| **Bioaccumulation**  **(pesticide use)** |  |  |

***Key Vocabulary Words***

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_= when organisms \_\_\_\_\_\_\_\_\_\_\_\_\_ over the same \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ like \_\_\_\_\_\_\_\_, food,\_\_\_\_\_\_\_\_\_\_\_\_, water, etc.
* **Diversity** = the \_\_\_\_\_\_\_\_\_\_\_ of different organisms in an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Unit 7 Crossword Puzzle**

**U7-17**



|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| |  |  |  | | --- | --- | --- | | **ACROSS** | | | | **2** |  | A close relationship between two or more different organisms that live together, which is often but not always beneficial | | **4** |  | Population growth that stabilizes due to limiting factors | | **9** |  | Any naturally occurring carbon or hydrocarbon fuel, such as coal, petroleum, peat, and natural gas, formed by the decomposition of prehistoric organisms | | **10** |  | Organisms that obtain energy from the food they eat | | **11** |  | Population growth that is not affected by limiting factors | | **12** |  | An animal that obtains its energy by eating both plants and animals | | **13** |  | Anything that causes the growth of a population to decrease | |  | |  |  |  | | --- | --- | --- | | **DOWN** | | | | **1** |  | The variety of different organisms in an ecosystem | | **3** |  | A step in a food chain or web | | **5** |  | An animal that obtains its energy by eating other animals; consumers | | **6** |  | Organisms that make their own food | | **7** |  | Heterotrophic organisms that obtain their energy by feeding on decaying organisms | | **8** |  | An animal that obtains its energy by eating plants; consumers | |

Unit 7 Study Guide

**U7-15**

**Vocabulary Matching:**

1. \_\_\_\_\_\_\_ Abiotic A. Organisms that eat only plants
2. \_\_\_\_\_\_\_ Biotic B. Organisms that make their own food; aka producers
3. \_\_\_\_\_\_\_ Mutualism C. Shown by a J curve; grows at a fast rate
4. \_\_\_\_\_\_\_ Commensalism D. When two organisms fight over the same resources
5. \_\_\_\_\_\_\_ Parasitism E. When two organisms benefit from the relationship ☺☺
6. \_\_\_\_\_\_\_ Predation F. Organisms that eat others for their food; aka consumers
7. \_\_\_\_\_\_\_ Carrying capacity G. Living things like plants, mammals, bacteria, and fungi
8. \_\_\_\_\_\_\_ Logistic growth H. Uses CO2 to make glucose; done by autotrophs
9. \_\_\_\_\_\_\_ Exponential growth I. When one organism benefits and the other is unaffected
10. \_\_\_\_\_\_\_ Competition J. Organisms that eat only meat
11. \_\_\_\_\_\_\_ Autotroph K. When an organism hunts and kills another for food
12. \_\_\_\_\_\_\_ Heterotroph L. Uses glucose to make CO2; done by all organisms
13. \_\_\_\_\_\_\_ Carnivore M. Nonliving things like water, temperature, and gases
14. \_\_\_\_\_\_\_ Omnivore N. Shows the amount of energy at each trophic level
15. \_\_\_\_\_\_\_ Herbivore O. When one organism benefits, and the other is harmed ☺☹
16. \_\_\_\_\_\_\_ Photosynthesis P. Organisms that eat both plants and animals
17. \_\_\_\_\_\_\_ Respiration Q. When the ecosystem cannot support any more organisms
18. \_\_\_\_\_\_\_ Energy pyramid R. Shown by an S curve; reaches carrying capacity and levels off

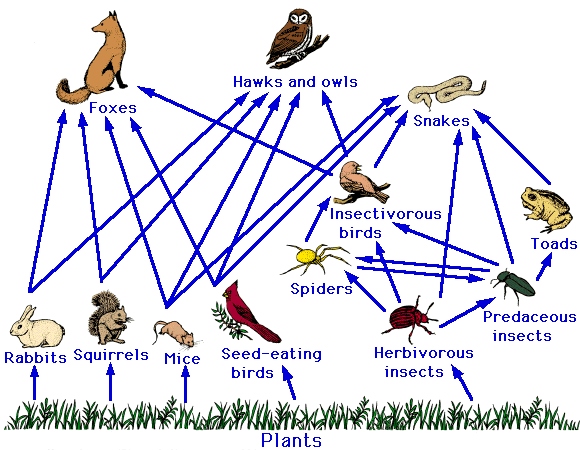
**Human Impact:** Match the problem with the correct description:

1. \_\_\_\_\_\_ Human Population A. The amount of pesticides increases in the food web
2. \_\_\_\_\_\_ Acid Rain B. Heat is trapped and causes an overall warming of the planet
3. \_\_\_\_\_\_ Deforestation C. Newly introduced organisms take over the ecosystem
4. \_\_\_\_\_\_ Global warming D. The number one cause of problems in the environment
5. \_\_\_\_\_\_ Bioaccumulation E. Loss of forests and habitats
6. \_\_\_\_\_\_ Invasive species F. Thinning of the ozone layer cause by the release of CFCs
7. \_\_\_\_\_\_ Ozone Depletion G. Water mixes with sulfur to form a substance that kills plants

**Population Growth:**

|  |  |  |
| --- | --- | --- |
|  | **S curve** | **J Curve** |
| **Draw a…** |  |  |
| **Exponential or Logistic?** |  |  |
| **Does it reach carrying capacity?** |  |  |
| **Are there any limiting factors?** |  |  |
| **Which one describes human pop.?** |  |  |

**Food Webs:** Using the food web below, identify the following organisms. Some may be used more than once!

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**IDENTIFY THE…**

Producers/Autotrophs:

Primary Consumers:

Secondary Consumers:

Tertiary Consumers:

|  |  |
| --- | --- |
| **What is the WATER CYCLE?** |  |
| **DRAW and LABEL the water cycle.** |  |
| **What is the CARBON CYCLE?** |  |
| **What are the TWO MAIN PROCESSES involved in the Carbon Cycle?** |  |
| **Why if the Carbon Cycle important?** |  |
| **What is the NITROGEN CYCLE?** |  |
| **How much of the atmosphere is made up of Nitrogen?** |  |
| **What role does BACTERIA play in the Nitrogen Cycle?** |  |
| **Why is the Nitrogen Cycle important?** |  |

**U7-16**