Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Topic Ecosystems Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Turn in at the end of the period. It is homework and due the following day if you do not finish in class.

**Warm Up:** How can an ecosystem affect population growth?

**Keep up with the notes and questions as the presentation goes along.**

1) **Population** (Recap) - all the members of a species living in the same place at the same time.

* Charles Darwin once theorized that a single pair of elephants could produce 19 million descendants within 750 years. He based this on the idea that the actual population size would be limited by their environment.

2) Properties:

**Density** - the number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ per unit area or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Dispersion** - the relative \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or arrangement if its individuals within a given amount of space.

* + Dispersion may be: Even, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, Random
  + Complete the table:

|  |  |  |
| --- | --- | --- |
|  | **Example** | **Example** |
| **Even** |  |  |
| **Clumped** |  |  |
| **Randon** |  |  |

3) Population Growth

* A female sea \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ may lay 2,000 eggs in her lifetime. However, if all of them survived, the turtle population would grow \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. There are many factors at play that help balance out population growth.

**Biotic potential -** the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rate a population can grow.

**Reproductive potential -** the max number of offspring each member of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can produce.

* Limited by their reproduction rate, environment, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, etc.
* Increases when organisms produce more offspring more rapidly
* Reproducing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in life has the greatest effect on reproductive potential.

4) **Exponential growth** - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ growth that constantly speeds up overtime.

* Natural conditions are neither ideal or constant, populations can't grow exponentially forever.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are eventually consumed and growth slows, causing population changes over time

**Carrying capacity (CC)** - the max \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ an ecosystem can sustainably support .

* At times, populations can fluctuate over and under the CC
* The CC is based on average long term population sizes.

5) **Resource Limits -** A species \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ its CC once it consumes a resource at the same rate it is produced within the ecosystem.

* The supply of the most limited resource typically \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the carrying capacity.

**Competition** - Members within a population use the same resources the same way, eventually they will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with each other when the population grows large enough.

* A way around this....Social dominance: members of a species will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for a territory to avoid competing directly for resources.
  + Ex. When a pride of lions control a territory, they will not have to compete directly with other lions for the right to hunt within the territory.

6) **Density Dependent regulation** - \_\_\_\_\_\_\_\_\_\_\_ occurs more quickly in a crowed population.

* Limiting resources, predation, and disease result in higher death rates.

**Density Independent regulation** - a certain \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the population dies regardless of density.

* This affects all members of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in a uniform way.

7) **Niche** - the unique role of a species within an ecosystem

* Includes the species' physical home, food resources, and how the species interacts with other species.
* An organism's habitat is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, a niche is an organism's pattern of use of its habitat.

Using what you now know about ecosystems and the components they need. Respond to the following question.

* Explain the following statement in 3-4 sentences below: “Animals have different strategies for maximizing reproductive success.”
* Provide 3 examples of how other animals maximize their reproductive success.
  + Ex. Sea turtles can lay dozens eggs so that one or two may survive; grizzly bear mothers are incredibly defensive of their young.
* You and your partner are golf course designers and you have agreed to design a golf course in the outskirts of Sammamish. Analyze and describe below the possible repercussions of the golf course on the surrounding ecosystem. Consider all the components of a local ecosystem.
* Discuss with your partner and respond below: How would you design the golf course to have the least amount of impact on the surrounding environment? Consider all the components of a local ecosystem.