Interdependence Notes

Ecology =

- The interdependence of organisms can be organized into _____ and changes in one level can have _____ on other levels

Levels of Organization:

1. Biosphere – thin volume of Earth and its _____ that supports _____
2. Ecosystem – all _____ and _____ parts of a particular place
3. Community – _____ interacting organisms living in a area
4. Population – all members of a _____ living in one place
5. Organism – _____ living thing in a population

Organism/Ecosystem

Within an ecosystem, the two types of environmental factors are:

1) Biotic =
   Ex

2) Abiotic =
   Ex

Habitat =

Niche =

- Species can live in the _____ but _____ the same _____ due to _____ for resources
-

Responses to Changing Environments:

1. Tolerance curve – graph of _____ versus an _____ variable
   Ex) If a fish's water gets too hot or too cold, then they will slow down then eventually die

2. Acclimation – adjustment to an _____
   Ex) increase in red blood cells when you go up in altitude

3. Migration – _____ to another more favorable _____

Nutrient Cycles

Why is it important to recycle nutrients such as C, O, N, P, and water?

- Matter (elements and compounds) must be _____ (recycled) in order for organisms to be able to use them again
- Necessary for life to continue

Water Cycle

Nitrogen Cycle

Carbon Cycle

Phosphorous Cycle

<u>Energy Flow</u>

Food Chain = _____ feeding relationship from _____ _____ to the next

Trophic level = organism's _____ in the food chain or web

Food Web = feeding relationship with several _____ _____

Parts =

What is the ultimate source of energy for living things?

How much energy is transferred? _____ Why?

Community

Can organisms share a habitat, niche, or both in a community? Explain.

Natural selection = organisms with traits _____ for an environment will _____ and _____ while other organisms _____

- Passing the beneficial trait to offspring creates an _____

Variations in trait occur from: _____, _____, and random fertilization

Succession = series of _____ in the composition of an _____ over time

2 Types:

1. Primary succession = building up of a community where life _____ previously exist

   Ex

2. Secondary succession = building up of a community where life _____ previously exist

   Ex

3. Pioneer species = _____ to grow in an area

   Ex:

4. Climax community = stable, _____ community that undergoes _____ in species
   - When equilibrium is reached after succession occurs

Species Interactions - (_____)

1) Predation =

Ex

2) Competition =

Ex

3) Parasitism =

Ex

4) Commensalism =

Ex

5) Mutualism = both organisms benefit

Ex

Population

Population Growth Rate

_____ - _____ = _____

How do we determine population sizes in the real world?

Limiting Factors = any factor that can affect the size of a population

2 Types:

1. Density-Independent - Limiting factors that influence a population _____ of _____ are in the population

Ex:

2. Density-Dependent - Limiting factors that _____ the population as it becomes _____

Ex:

Population Growth Models:

Exponential Model
- Population growth under _____ conditions
- _____ growth over a _____ period of time

Graph:

Logistic Model
- Population growth that is _____ by limiting factors as the population size _____

Graph:

Carrying capacity = _____ amount of organisms that can live off the _____ in an area

Biomes (Biosphere) -
What are the factors that define a biome?

Terrestrial Biomes:

1. Tundra/Polar
   - _____ and largely treeless, lichen/moss and grasses/wildflowers
   - has layer of _____ (permanently frozen soil)
   - little precipitation and short growing season, nutrient _____ soil
   - furthest northern-most biome
   - reindeer and _____ / polar bears and penguins

2. Taiga
   - _____-bearing trees
   - plants adapted to long cold winters, short summers, and nutrient poor soil
   - animals either _____ in winter or _____, wolves and rabbits

3. Temperate Deciduous Forest
   - biome we live in
   - trees lose _____ in the fall
   - have pronounced _____, warmer winters and longer summers
   - deer, birds, small animals, and bears

4. Grasslands
   - includes the steppe, praire, and savanna
   - dominated by _____
   - too _____ to support trees and has rich, fertile soil
   - prairie dogs and snakes

5. Savanna
   - have alternating _____ and _____ seasons
   - plants and animals deal with long periods without rain, some umbrella _____
   - soil low in nutrients compared to mid-west grasslands
   - zebra and lion

6. Desert
   - _____ precipitation
   - vegetation is sparse except for plants that have adapted to dry conditions
   - not all are hot
   - jackrabbits and _____

7. Tropical Rain Forest
   - lots of _____; tall trees
   - located on the equator
   - stable, year round growing season
   - large _____ of life

Aquatic Biomes:

1. Marine – Contains salt water
   - Many zones divide the ocean and different organisms are found in each zone
     - Oceanic zone – _____ ocean
     - Neritic zone – over _____ and can contain coral reefs
     - Intertidal zone – area is exposed by air part of the day due to _____
     - Photic zone – has _____
     - Aphotic zone – _____ light

2. Freshwater – Inland body of water, can vary in size with _____

3. Estuary/Wetlands – _____ of fresh and salt water, located along the coast and behind islands