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| L-1 What does abiotic mean?  (non-living factors in the environment) | L-1 Name three biotic factors  (plants, animals, fungi, bacteria) | L-5  Order the levels of ecological organization from smallest to largest  (organism/species, population, community, ecosystem, biome, biosphere) |
| L-2 Describe a biological community  (several populations living in the same area at the same time) | L-2 How to animals obtain the carbon needed to build new cells?  (consumer plants or other animals) | L-2  Name the 3 types of symbiosis  (mutualism, commensalism, parasitism) |
| L-5 Describe how Earth (biosphere) is both a closed & open system?  (Open to energy from the sun & closed to matter) | L-2 All biotic and abiotic factors in a specific environment is termed?  (ecosystem) | L-2 Name three types of biomes  (tropical forest, grassland/savanna, desert, temperate forest, tundra, tiaga, etc) |
| L-2  Name two types of primary consumers  (photosynthesizers, chemosynthesizers) | L-1 Describe the main difference between an autotroph & heterotroph  (autotroph gain energy through non-living resources, heterotrophs gain energy through consumption) | L-2 Describe the flow of energy  (always in ONE direction) |
| L-1 \_\_\_\_\_ is living tissue  (biomass) | L-3 Name three types of ecological pyramids  (biomass, numbers, energy) | L-2 \_\_\_\_\_\_\_\_\_\_\_ are elements that are recycled through an ecosystem?  (biogeochemical cycles) |
| L-2 Name three types of biogeochemical cycles  (water, carbon, nitrogen, phosphorus) | L-4 Why are is the term “pyramid” not always correct for what occurs in a food web?  (a forest may only have a few large producers & main consumers/birds…the bottom level of a numbers pyramid would be smaller than the next level) | L-2 How does carbon exit the atmosphere?  (taken up by producers during photosynthesis) |
| L-3 Describe nitrogen fixation  (conversion of nitrogen from a non-usable gas to a usable form) | L-1 What organism is responsible for nitrogen fixation?  (bacteria) | L-2 \_\_\_\_\_\_\_\_\_ is nitrogen being released to the atmosphere through decomposers  (denitrification) |
| L-1 \_\_\_\_\_\_\_\_\_\_\_ is where an organism lives.  (habitat) | L-2 \_\_\_\_\_\_\_\_\_\_\_ is a position of an organism in a food chain.  (trophic level) | L-3 If only 10% of energy is available for the next trophic level, where does the other 90% of energy go?  (used for reproduction, growth, heat from movement) |

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| L-3 Describe why an invasive species is a problem (give a real-life example)  (Ex. Burmese python has no natural predators in the Florida area & can reproduce unchecked, consumes local species & disrupts food webs) | L-4 Describe the niche of a idaho bumblebee?  (role is to locate pollenating flowers, drink nectar, produce honey, build hive in forest willow trees) | L-5 What is the results if two species occupy the same niche?  Competitive exclusion |
| L-2 Describe the difference between immigration & emigration  (immigration- organisms moving into a pop. & increasing the pop. Emigration- organisms leaving a pop., causing pop. Decrease) | L-3 How does density effect fluctuations in population size  (increased density results in density dependent limiting factors) | L-3 Name three types of density dependent limiting factors.  (increased transmission of disease, increased predation, limited resources) |
| L-1 Provide a local example of a density-independent limiting factor  (Oregon/Idaho fires, high snowfall, human industry) | L-2 Describe exponential population growth.  (population doubles in each generation) | L-4 What assumptions (3) must be made to simulate the process of exponential growth?  (availability of unlimited resources, no death rate, each population member reproduces) |
| L-4 Name & describe the five types of heterotrophs  (Herbivores -consumes plant  Carnivores-consumes animal tissues  Omnivore- consumes plants  /animal tissues  Detritivores – consumes decaying matter  Decomposer -break down organic matter | L-2 \_\_\_\_\_\_\_\_\_\_ two species that live together in a prolonged relationship that benefits at least one species  (symbiosis) | L-4 Provide a real-life example of the three symbiotic relationships  answers will vary…  mutualism +/+  commensalim +/unaffected  parasitism +/-) |
| L-5 Describe 3 predation defenses:  1. Coloration- Camouflage & Warning  2. harmless species mimics the coloration of a harmful species  3. species with the same defense strategy look alike or taste alike. | L-2 \_\_\_\_\_\_\_\_\_ population growth of slows or stops due to a limiting factor.  (logistic growth) | L-1 Describe carrying capacity.  (max. population number that the environment can support) |
| L-4 Thinking about population size change, how can a species become extinct?  (if carrying capacity falls low enough & cannot support even a small pop.) | L-1 If primary producers produce 5000 energy units, how much energy is available for the secondary consumers?  (50 energy units) | L-4 Why is carbon & nitrogen vital to a living organism?  (Carbon-main component of a cells & energy source  Nitrogen- component of proteins & DNA) |
| L-4 Describe the process of a population experiencing logistic growth.  1. starts out with exponential growth  2. resources become less available as the pop. Grows  3. growth rate levels off & hits carrying capacity  (students can describe the process above in a real-life scenario) | L-5 How did the reintroduction of Yellowstone wolves change the rivers?  (wolves preyed on deer/pronghorn that reduce the consumption of shrubs & trees along rivers edges & strengthened soil to reduce river erosion) | L-3 How will a predator-prey population study graph look?  (the predator population with always lag behind the prey population, prey population will experience “exponential” growth when predators are few, and predators will experience “exponential” growth when prey are high in number. |