Unit 3 Study Guide Key

Ecology

1. Name and define the five levels of organization of life we discussed in class?organism-individual living thing. Population-all members of the same species that live in the same area. Biological community-all populations living and interacting in an area. Ecosystem-biological community and the surrounding physical environment. Includes biotic and abiotic. Biosphere-the part of earth that supports life.
2. Define habitat. The environment where an organism can survive.
3. What factors define a habitat? temperature, precipitation, sunlight, etc.
4. Define critical factor. factor that plays the greatest role in determining the range of habitat. Example-fish need water.
5. Be able to label and answer questions about a tolerance graph. (draw an example )
   * Optimal Range greatest range on the bell curve-species abundant
   * Zone of Physiological Stress less range-species infrequent
   * Zone of Intolerance outermost range- species are absent
6. What is the difference between a community and an ecosystem? Communities are the living-biotic part. Ecosystems are both biotic and abiotic.
7. Define species. Organism that can mate and produce organisms.

How populations change: Evolution

1. Define gene.Carry genetic material
2. Define trait. The outcome of the genetic material
3. Define inherited trait. genetic outcomes passed from parent to offspring- ex. eye color
4. Define evolution. Natural changes over time that are advantageous to a species.
5. Define natural selection. The process that individuals become better suited to their environment than those that are not so suited.
6. Define artificial selection. human influenced genetic traits in offspring. example-black and white husky dogs. Both the mom and dad huskies are black and white with blue eyes so the puppies are. Another ex. seedless watermelons
7. What is the difference between natural selection and artificial selection? Natural is nature-artificial is forced by humans on other organisms.
8. Make sure you can identify examples of artificial selection or natural selection. natural selection-longer fur in cold areas, white fur like polar bears. Artificial- great danes and chihuahuas. Both completely different because of breeding desired traits.
9. List and define the three types of adaptations. physical, behavioral and physiologic (know the difference and give examples)
10. What must be present before an adaptation can develop in a population? a need for the adaptation, most are non advantageous.
11. How is sickle cell anemia an example of natural selection in the human race? the plasmodium protist that causes malaria and comes from mosquito bites doesn’t stick in a sickle cell. Only normal round red blood cells. So those with sickle cell are more immune to malaria.
12. What is coevolution? two species that evolve together and have traits that help each other (sort of like a symbiotic evolution. Example-hummingbirds have long beaks to drink the necter from lilies that have long petals.
13. Explain why we would believe that the Acacia Ants and the Acacia Tree are an example of coevolution? The ants and the tree work together and evolved traits that allowed this to happen more frequently. (from the video)

Community Interactions

1. Name and define the six community interactions we discussed in class?predator prey-one consumes the other, intraspecific competition-competition within members of a species, interspecific-competition with a different species, mutualism- both benefit, commensalism-one benefits the other is not helped or harmed, parasitism-one benefits the other is harmed but not killed (on purpose)
2. Be able to identify examples of each of the community interactions we discussed in class.
3. Know the difference between interspecific competition and intraspecific competition.

Population Growth Patterns

1. Define population density. Give an example. the number of organisms in a specific space. Example- humans in new york city have a greater population density than humans in Hogansville.
2. Provide three examples of density-dependent factors and explain why you consider each a density-dependent factor. Density dependent-disease, competition for food or mates Density independent-natural disasters like floods, forest fires, etc.
3. Provide three examples of density-independent factors and explain why you consider each a density-independent factor. see #24
4. What is carrying capacity? the max. population that can be sustained in an ecosystem
5. Draw an example of a logistical population growth graph? (s curve) When looking at this graph, how do you know when a population reaches its carrying capacity? It levels off.
6. Define exponential population growth. growth that continues over each generation. J curve. common for brief periods in bacteria, cant last indefinitely due to resources.
7. Be able to identify overshoot and dieback on a graph. Overshoot goes over carrying capacity, dieback happens after overshoot and goes under carrying capacity
8. Draw an example of an exponential growth graph. Draw a J curve, label carrying capacity.

Energy Flow in Ecosystems

1. Where does the energy in most ecosystems come from? The sun
2. Name an exception to this rule. decomposition- decomposers and also chemosynthesis (deep in the ocean)
3. What is another name for producers? autotrophs
4. What is another name for consumers? heterotrophs
5. Name and define the four types of consumers we discussed in class. primary-herbivores, secondary-omnivores, tertiary-carnivores, decomposers-detritivores.
6. What do the arrows in a food chain or food web represent? the intake of energy for metabolic processes.
7. Know the four trophic levels we discussed in class and what type of organisms you would expect to find at each level.
8. Be able to interpret a food chain, food web, and energy pyramid.
   * Identify the trophic levels, the percent energy from the sun at each level, the types of consumers at each level, and how much energy is passed from one trophic level to the next
9. What happens to the energy that is not passed to the next trophic level? lost as heat (10% rule)