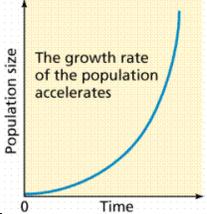
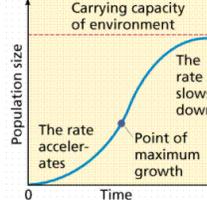


<p><b>Why is biodiversity highest at the equatorial (tropical) latitudes?</b></p>	<p>More solar radiation: more heat, light, evaporation and precipitation) = year-round growing season. Also no ice ages. Both have resulted in more time for speciation</p>
<p><b>What is detritus, what is a detritivore, and what is the significance of both?</b></p>	<p>Detritus is dead organic matter. A detritivore is a consumer that derives its energy from nonliving organic matter. Detritivores recycle nutrients back to primary producers (i.e. plants).</p>
<p><b>In terms of communities, what is species richness, relative abundance, and biodiversity?</b></p>	<p>Species richness = total number of different species; relative abundance = a measure of how rare or abundant a specie is; biodiversity (heterogeneity) considers both richness and relative abundance.</p>
<p><b>Describe the following interspecific interactions in a community:</b>  <b>Competition</b>  <b>Predation</b>  <b>Mutualism</b>  <b>Commensalism</b></p>	<p>Competition (- , -)  Predation (+ , -)  Mutualism (+ , +)  Commensalism (+ , 0)</p>
<p><b>What are abiotic factors?</b>  <b>List some significant examples:</b></p>	<p>Nonliving chemical and physical factors: temperature, light, water, nutrients, concentration of oxygen and carbon dioxide</p>
<p><b>What is a producer/autotroph?</b>  <b>List some examples:</b></p>	<p>A producer makes its own food. Plants, algae, and blue-green bacteria have chlorophyll and perform photosynthesis.  Bacteria around deep-sea thermal vents use chemosynthesis to produce their food.</p>
<p><b>What are primary consumers?</b>  <b>What are secondary consumers?</b>  <b>What are tertiary consumers?</b></p>	<p>Primary consumer: herbivore; Secondary consumer: carnivore that feeds on herbivores;  Tertiary consumer: carnivore that feeds on other carnivores</p>
<p><b>What is the nature of a predatory relationship?</b>  <b>Describe some categories of this type of relationship</b></p>	<p>(+,-)  Classic predator-prey such as lion and antelope;  Parasites/Pathogens such as human malaria and TB;  Herbivory, such as a locust feeding on the vegetation of the African savannah</p>
<p><b>What is the nature of a mutualistic relationship?</b>  <b>Provide an example:</b></p>	<p>(+, +)  Certain species of Central and South American Acacia trees house ants in hollow thorns, feed them nectar and protein rich food; ants attack invaders, clip surrounding vegetation</p>

<p><b>What is an ecological niche?</b></p>	<p>It is the sum total of a species' use of the biotic and abiotic resources in its environment. It is like the combination of an organism's habitat (address) plus the organism's occupation.</p>
<p><b>What is intraspecific and interspecific competition?</b></p>	<p>Intraspecific is competition between any two individuals of the same species for the same limited resource. Interspecific is competition between members of different species.</p>
<p><b>What do the arrows in a food web indicate?</b> <b>Which direction do the arrows go?</b></p>	<p>The arrows in food webs indicate the direction of energy transfer. The arrow always points from the organism into the belly of the other organism that eats it.</p>
<p><b>What is the definition of a key stone species?</b> <b>Provide an aquatic and terrestrial example:</b></p>	<p>They exert strong control on community structure by their ecological role or niches. They can be recognized by removal experiments. Aquatic example: sea star, sea otter; Terrestrial example: wolves, African Elephant</p>
<p><b>What is the definition of carrying capacity?</b></p>	<p>Carrying capacity is the number of organisms that a given habitat can support sustainably. In a logistic function, it is the place where the slope evens out close to or at zero.</p>
<p><b>What is the ecological role of decomposers?</b> <b>List some common decomposers:</b></p>	<p>A decomposer is a consumer that derives its energy from dead organic matter. Decomposers recycle nutrients back to primary producers (i.e. plants). Common examples: bacteria, fungi, earthworms</p>
<p><b>What is population density?</b> <b>How is it calculated?</b> <b>How is it estimated?</b></p>	<p>Population density is the number of organisms per unit area or volume (for aquatic ecosystems). It can be estimated by mark-recapture.</p>
<p><b>How can similar species coexist in a community?</b></p>	<p>Through resource partitioning, each species has a slightly different niche so they are not in direct competition (as they would if having identical niches). Example: Anolis lizards feeding on insects from different locations in forest</p>
<p><b>Give an example of mutualism:</b></p>	<p>Certain species of Central and South American Acacia trees house ants in hollow thorns, feed them nectar and protein rich food; ants attack invaders, clip surrounding vegetation</p>

<p><b>How are species richness and latitude related?</b></p>	<p>In general, species richness increases as one moves from the poles toward the equator.</p>
<p><b>Draw an exponential function: Describe the function:</b></p>	 <p>J-shaped curve, rate starts off slow, then accelerates: rate of increase higher when population size is higher</p>
<p><b>Draw a logistic function: Describe the function:</b></p>	 <p>S-shaped curve, levels off (at carrying capacity), rate of growth starts slow, becomes largest at intermediate population size, then slows again</p>
<p><b>Give some examples of density-dependent population regulation:</b></p>	<p>Competition for resources (plant roots compete for limited soil moisture); toxic waste (yeast produces the alcohol ethanol); disease (TB strikes a greater percentage of people in densely populated cities); territoriality: best or all territories claimed (cheetahs)</p>
<p><b>Tell the story of predator elimination and the Kaibab deer:</b></p>	<p>The removal of predators (and ban on hunting) allowed deer populations to overshoot carrying capacity. Deer devoured all vegetation, which eventually led to starvation and a crash in population.</p>
<p><b>Describe the pattern of human population over time:</b></p>	<p>Human population is thought to have been relatively stable (and low) until the advent of agriculture, when it began to increase. The most rapid rate of increase occurred following the industrial revolution. The increase has been exponential.</p>
<p><b>Describe the age-structure diagram for a country with rapid population growth such as Kenya. Do the same for a country that is not increasing in population, such as Italy</b></p>	<p>Kenya would have most of its population in the pre and reproductive years (giving it population momentum and a pyramid shape). Italy would have its population fairly evenly distributed across the different ages (giving it a rectangular shape).</p>
<p><b>Why are the equatorial zones more species rich than the poles?</b></p>	<p>Ice ages at the higher latitudes Growing seasons (time for speciation) higher at the equator Higher solar-input and moisture availability at the equator</p>
<p><b>What is evapotranspiration? What is the relationship between evapotranspiration, species richness, and latitude?</b></p>	<p>Evapotranspiration is evaporation from the soil and through a plant (stomata). It integrates both solar-input and water availability. It is highest at the equator as is species richness.</p>