BIO 10-18-11

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Cont. Ch 15

**Energy Flow w/n an ecosystem**

 -Primary Producers

 -Primary Consumers

 -Secondary Consumers

 -Tertiary Consumers

(some animals can be more than one type of consumer)

**Energy Flows**: through a system (ex. from sun to primary producers to prim. consumers to secondary to tertiary)

 -losses at every 'step' in a food chain

 -inefficiency of energy transfers

**Biomass**: (take all the living stuff and weigh it)

 -10% rule

 -only 10% of the available energy at each level is able to be converted to the next level

 -because of this rule, energy availability dwindles very quickly and so it limits the amount of levels of consumers

 -likely to be an essay question, math question

 -where does 90% go? keep body running (cellular respiration), waste

-*Why vegetarianism more energetically-efficient than meat eating in humans?*

 -because of the 10% rule

**-Essential Chemicals**

 -cycle through ecosystems

 -thus recycling of molecules/nutrients

**3 Most Important Chemical Cycles**

 1. carbon

 2. nitroggen

 3. phosphorous

**Carbon Cycle**

 short and long-term cycle

 **Short-Term:**

 -carbon dioxide in atmosphere

 -plant takes it out of atmosphere w/photosynthesis

 -animals eat plants/eachother and use the carbon

 -exhale carbon dioxide back into atmosphere to restart cycle

 **Long-Term:**

 -over time, lots of organisms made of carbon sometimes accumulates in ground

 -with time, transformed into coal, oil, natural gas, locked in ground

 -humans take those resources and burn them as fuel

 -releases carbon dioxide into the atmosphere

 -increases the percent of CO2 in the air over and over

 -bc of this: far larger amount of CO2 in atmosphere than has been the case in 50m years

 -causes global warming bc of CO2's greenhouse effect (traps energy from sun from escaping into the atmosphere and thus heats up the earth)

Nitrogen Cycle

 -chemical structure in air completely unusuable by most organisms

 -must be 'fixed' into usable form

 -2 things can fix it

 1. bacteria can fix it in soil that enters into plants and then into animals

 -organisms use it to build protein

 2. by lightning/electricity, charge fixes the nitrogen from atmosphere, causing it to fall to the ground and be made available to plants/animals

 -plants take up the fixed nitrogen, animals get it from plants/animals

 -then when animals/plants die/decompose, the nitrogen returns to the soil