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