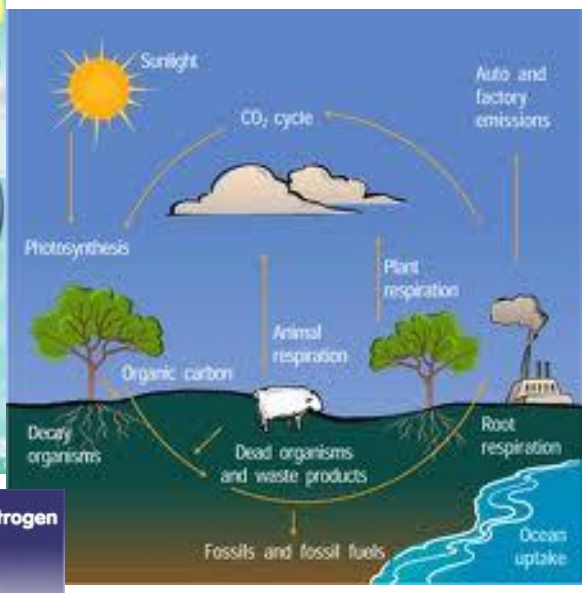
Chapter 3 Ecosystem Ecology

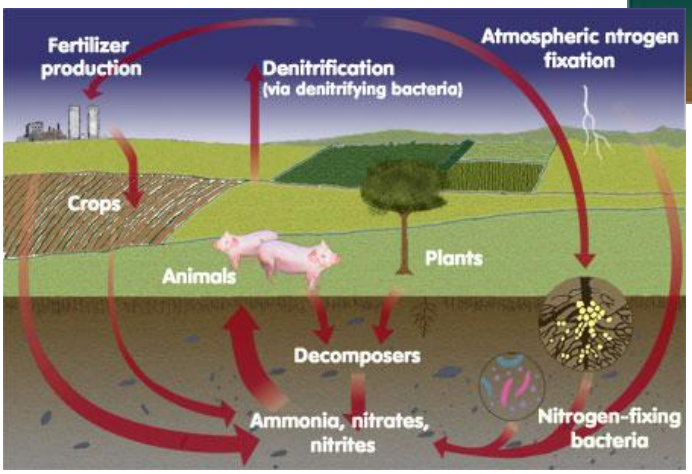
Case Study: the case study is trying to tell us about the people in Haiti and how they aren't letting the trees grow because of their need for the wood to make charcoal. This is hurting the land by letting erosion take place and disruptions of natural cycles.

Energy: plants absorb energy directly from the sun. The energy is then spread throughout the ecosystem as herbivores eat the plants and carnivores eat the herbivores. All of the energy is not passed on to the consumer, some of the energy is lost as heat. The amount of energy available in an ecosystem determines how much life the ecosystem can support.

Food Web/Chain: There are producers (algae), primary consumers (zooplankton), secondary consumers (fish), and tertiary consumers (eagle). This is an example of a food chain, there are food webs that contain more organisms and show how they interact.

Matter Cycles Through the biosphere:





Disturbances: disturbances can affect the energy flow of an ecosystem and can occur over short term or long term scales. Sometimes the ecosystem can recover to original form and in other times, it can't.

What we can do: We can try to keep the ecosystems around us working and try not to create anything that will disrupt the natural flow. We need to learn what we do affects the things around us, and all of the natural things that save us money and time like insects pollinating plants.

Key Terms

biogeochemical cycles: movements of matter within and between ecosystems
biomass: total mass of all living matter in a specific area
consumers: obtain energy by consuming other organisms
Heterotrophs
decomposers: fungi and bacteria that complete the breakdown process by recycling the nutrients from dead tissues and wastes back into the ecosystem
detritivores: specialize in breaking down dead tissues and waste products into smaller particles
ecological efficiency: proportion of consumed energy that can be passed from one trophic level to another
ecosystem: particular location on Earth distinguished by its particular mix of interacting biotic and abiotic factors
food chain: movement of energy from producers through consumers
food web: (ecology) a community of organisms where there are several interrelated food chains
GPP: Gross Primary Productivity - the total amount of solar energy that the producers in an ecosystem capture via photosynthesis
hydrologic cycle: movement of water through the biosphere
instrumental value: has worth as an instrument or tool that can be used to accomplish a goal
intermediate disturbance hypothesis: ecosystems experiencing intermediate levels of disturbance are more diverse than those with high or low disturbance levels
intrinsic value: has worth independent of any benefit it may provide to humans
leaching: nitrate is transported through the soil with water
limiting nutrient: single essential nutrient that limits productivity in an ecosystem
macronutrients: nitrogen, phosphorous, calcium, potassium, magnesium and sulfur
nitrogen fixation: converting N^2 gas directly into ammonia
NPP: Net Primary Productivity - energy captured minus the energy respired by producers
NPP = GPP - Respiration by producers
photosynthesis: process producers use to get energy
primary consumer: heterotrophs that consume producers
producers: use the Sun's energy to produce useable forms of energy Autotrophs
provisions: goods that humans can use directly
resilience: rate at which an ecosystem returns to its original state after a disturbance
resistance: measure of how much of a disturbance can affect the flows of energy and matter
restoration ecology: returning an ecosystem to its original state
runoff: water flowing across land surface and into streams and rivers
scavengers: carnivores that consume dead animals
secondary consumer: carnivores that eat primary consumers
standing crop: amount of biomass present in an ecosystem at a particular time
tertiary consumers: carnivores that eat secondary consumers
transpiration: plants release water from their leaves into the atmosphere
trophic levels: levels of organisms that are consuming one another
trophic pyramid: way to represent the distribution of biomass among trophic levels
watershed: all land in a given landscape that drains into a particular stream, river, lake or wetland