

FROM SPECIES TO ECOSYSTEM Photosynthesis is the base of all ecosystem. Sulfur dioxide and sulfate causes human health problems, damage buildings and vegetation, and reduce the visibility. The key natural processes that make nitrogen available are carried out by nitrogen fixing bacteria (including some blue-green algae) these organisms have highly specialized ability to fix nitrogen, meaning they change it to less mobile, more useful forms by combining it with hydrogen to make ammonia ( $\text{NH}_3$ ). Egg-Chicken – Conn Human Grasshopper Organism that photosynthesize – plants, algae known as producers Photosynthesis is described as primary productivity. Denitrifying bacteria break down nitrates into  $\text{N}_2$  and nitrous oxide ( $\text{N}_2\text{O}$ ) gases that return to the atmosphere, thus denitrifying bacteria compete with plant roots for available nitrates. Phosphorus compounds are removed from rocks by weathering and erosion and carried by rains to soil and water, then plant absorb phosphorus from soil by the roots and transfer to the animals when they eat the plants. (4) Nitrogen cycle Nitrogen is an important element because cannot exist without amino acids, and proteins, all of which are organic molecules containing nitrogen. Most of the earth's water is stored in oceans, but solar energy evaporates this water, and winds distribute the water vapor around the globe (Earth). Also the plants and animals add carbons to the atmosphere through the respiration, and human by burning of fossil fuels and the factories adding more carbons to the atmosphere. Plants take up inorganic nitrogen from the environment and used it to build their own protein molecules, which are eaten by consumers' organisms, digested, and used to build up their bodies. After nitrates have been absorbed into plant cells they are reduced to ammonium  $\text{NH}_4^+$ , which is used to build amino acids that become the building blocks for proteins. Their bodies are decomposed by fungi and bacteria, resulting ammonia and ammonia ions which then are available for nitrates formation. Ecosystem is a dynamic and complex system of plant, animal, and microorganism communities and their environment, all interacting as functioned unit with defined physical location. Carbon moves from the atmosphere to plants by collecting it through the process of photosynthesis and transfer to the animals (herbivores) in form of energy or food, and when animals or plants die the carbon move to the soil. Nitrite-forming bacteria combine ammonia with oxygen, forming nitrites, which have the ionic form  $\text{NO}_2^-$ . Another group of bacteria then convert nitrites to nitrates, which have the ionic form  $\text{NO}_3^-$  that can be absorbed and used by green plants. (5) Sulfur cycle: Sulfur plays a vital role in organisms, especially as a minor but essential component of protein. In addition, sulfur in particles and tiny air-borne droplets may act as critical regulators of global climate. Consumers: they are organisms which are incapable of producing their food, and they consume other organism. Consumers comprises of: 1– The herbivores: feed on plants (plant eaters) 2–The carnivores: feed on meat or flesh. Decomposers: They are organism that breaking down or decaying dead organic or inorganic materials. Living organisms emit the moisture, they have consumed through respiration, and perspiration. 1. The hydrological cycle. 2. Carbon cycle.