Cycles of Matter

- The supply of matter in an ecosystem is limited. If matter could not be recycled, ecosystems would quickly run out of the row materials necessary for life.

Matter - made up of tiny particles called atoms.

Molecule - two or more atoms that are joined and act as a unit.

The Water Cycle - the continuous process by which water moves from Earth's surface to the atmosphere and back

- The process of evaporation, condensation and precipitation make up the water cycle.

evaporation - the process by which molecules of liquid water absorb energy and change to a gas.

condensation - the process by which a gas changes to a liquid.

precipitation - as water vapor condenses the drops of water in a cloud grow larger. Eventually the heavy drops fall back to Earth as precipitation - rain, snow, sleet or hail.

The Carbon and Oxygen Cycle

In ecosystems, the processes by which carbon and oxygen are recycled are linked. Producers, consumers, and decomposers play roles in recycling carbon and oxygen.

The Carbon Cycle -

Producers - take in carbon dioxide gas and use carbon to make sugar molecules

Consumers - eat producers - break down molecules and release CO_2 and waste products.

Decomposers - break down ↑ remains and return carbon compounds to the soil.

The Oxygen Cycle

Producers - release O_2 as a result of photosynthesis. Most organisms utilize O_2 to carry out life processes

The Nitrogen Cycle -

- Nitrogen moves from the air to the soil, into living things, and back into the soil.

nitrogen fixation - the process of changing free nitrogen into a usable form of nitrogen.

most nitrogen fixation is a result of certain kinds of bacteria. They live in nodules on the roots of legumes (clover, beans, peas, alfalfa and peanuts.

mutualism - both the plant, and the bacteria benefit from the relationship

Decomposers - return simple nitrogen compounds to the soil