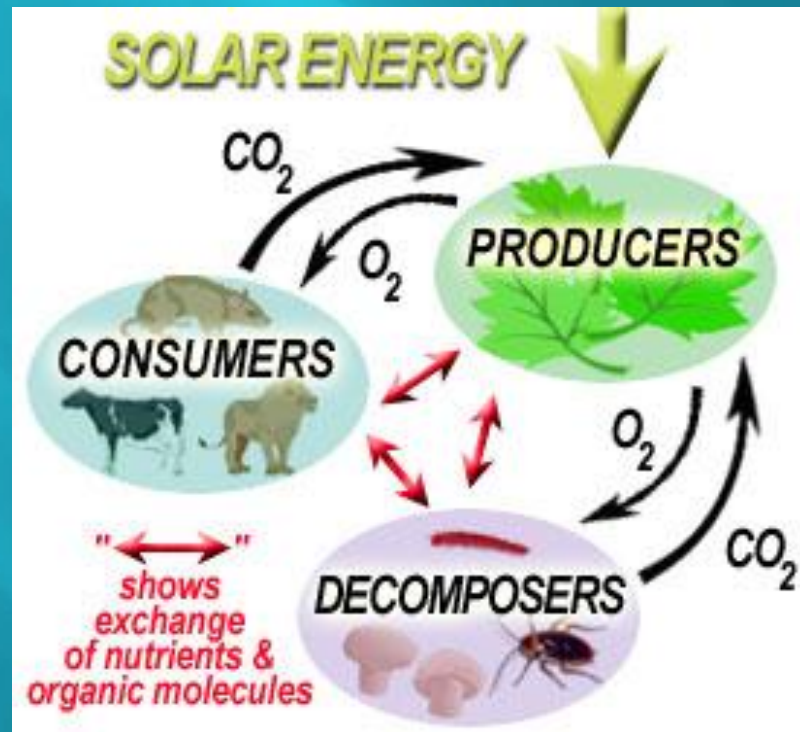
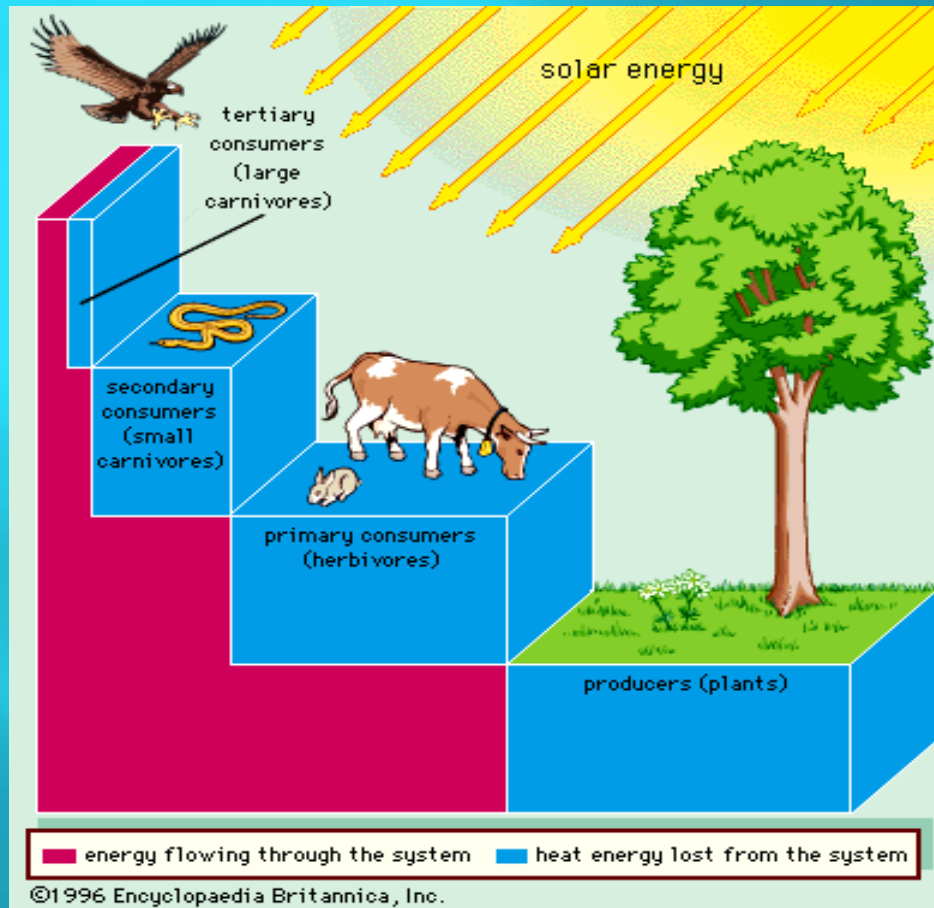


# CYCLING OF MATTER

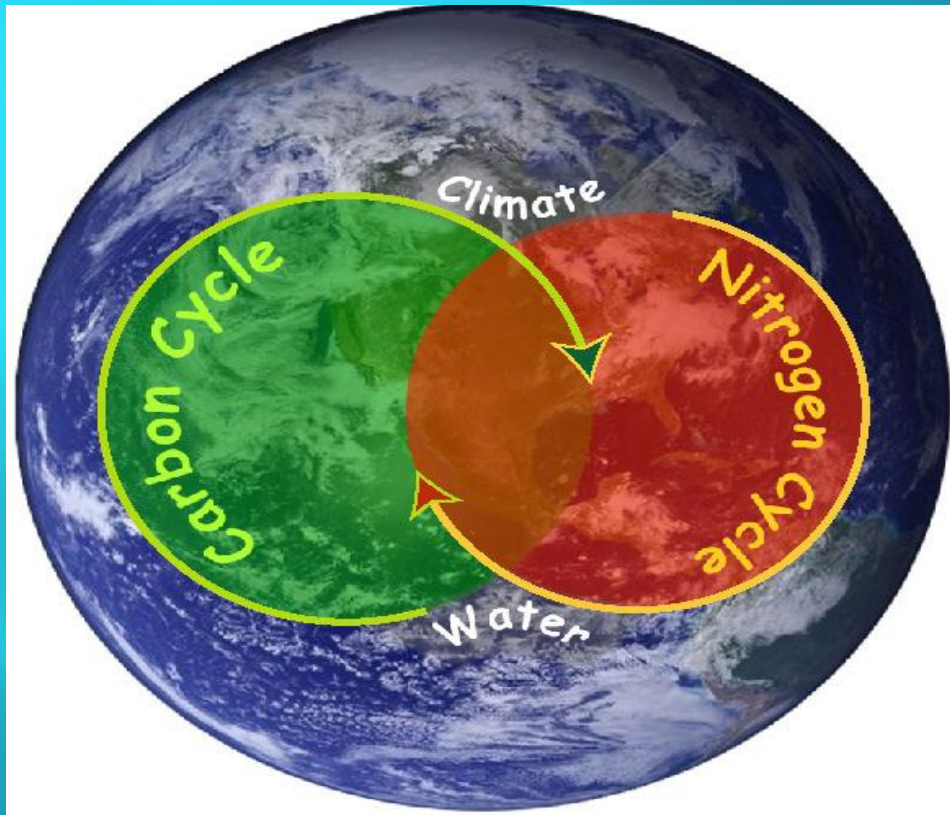


# ENERGY TRANSFER



- Solar energy is transformed into cellular energy by photosynthesis
- Energy cannot be created, or destroyed, only passed
- Most energy is lost as heat, but the rest is transferred to the consumer

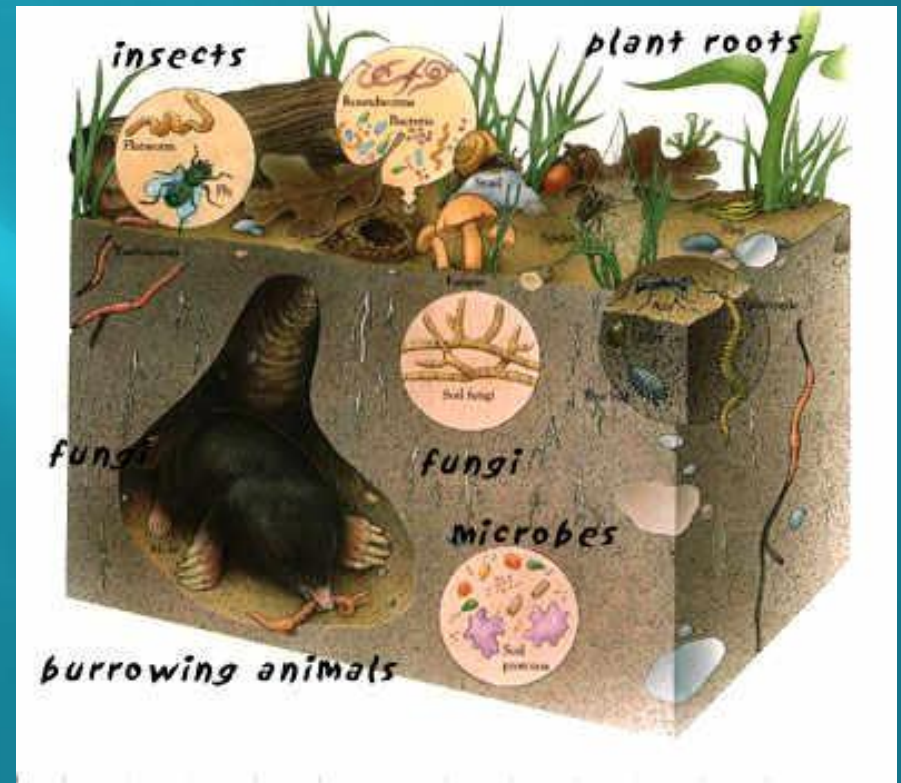
# CYCLING OF MATTER



- certain types of matter exist in self sustaining cycles, such as Nitrogen and Carbon

# CYCLING OF MATTER

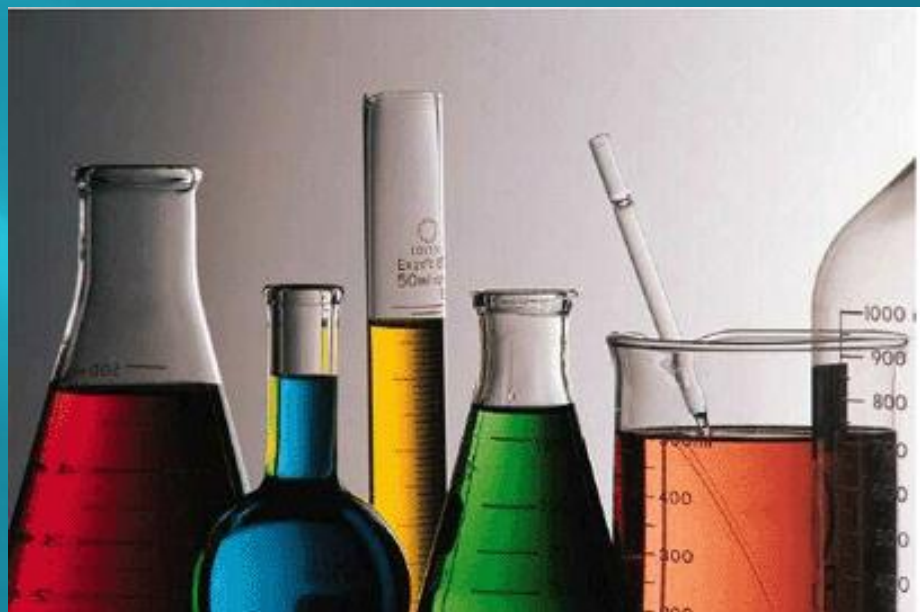
- Matter is continually cycling through ecosystems but it is only the organic matter that forms a continuous cycle.
- **ORGANIC MATTER** is matter that contains atoms of carbon and hydrogen. They often contain oxygen and nitrogen atoms as well.





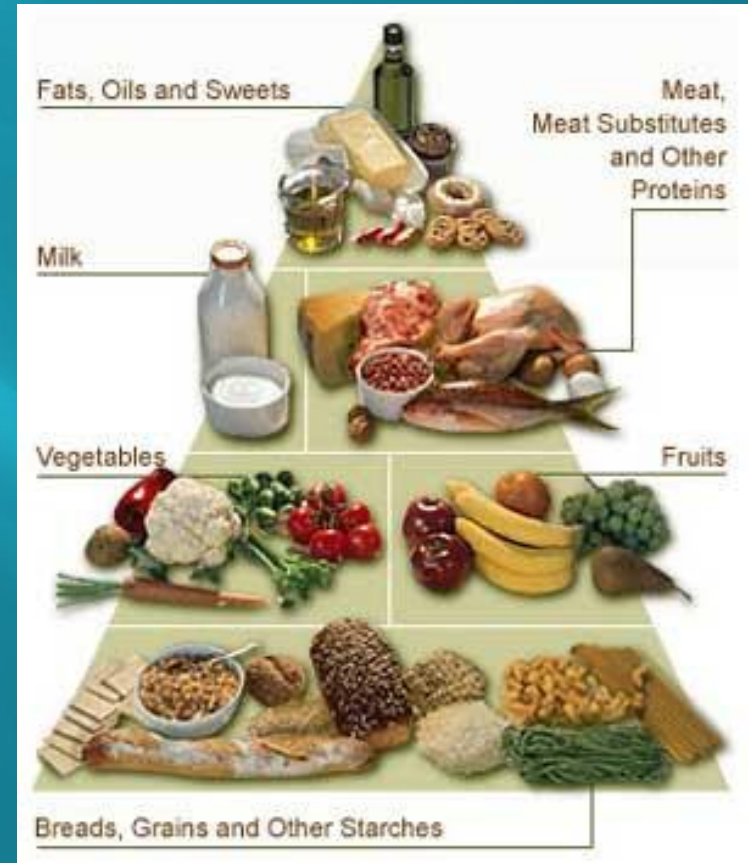
# ORGANIC MATTER

- ▣ Proteins, sugars, and fats are all examples of organic compounds that your body is made up of & needs.
- ▣ Organic chemicals undergo changes within living things & within ecosystems. Their complex structures are broken down and rebuilt in a continuous cycle.



# ORGANIC MATTER

- Food is organic matter that is continually being cycled throughout our bodies.
- Through the process of digestion, complex organic molecules are broken down into simpler ones. The cells in our body use the simple molecules to build complex ones which become a part of our structure.



# ORGANIC MATTER

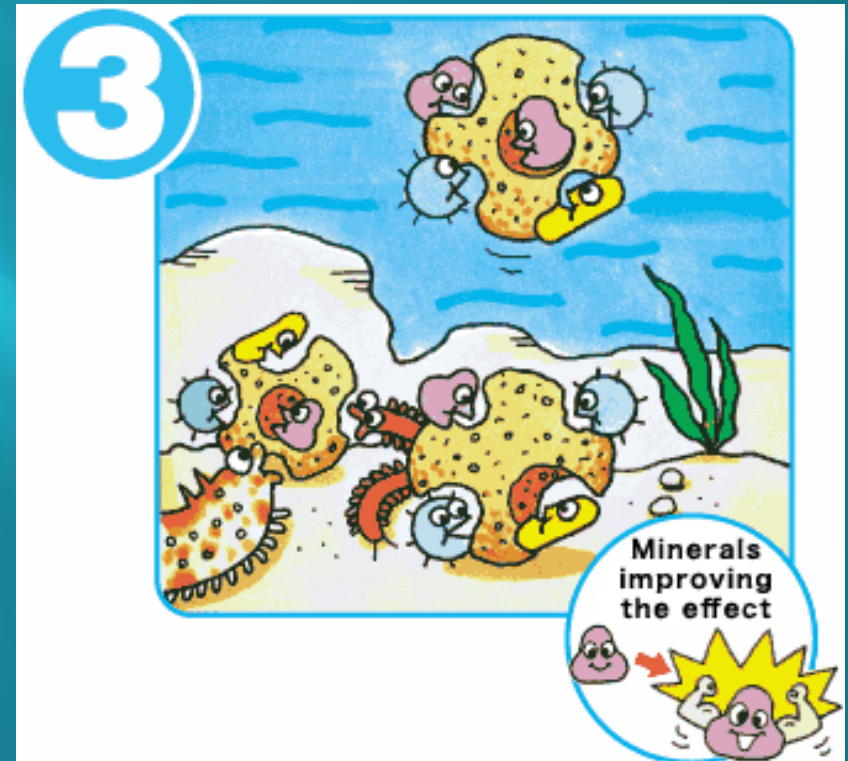
- ▣ **DECAY** is another way that organic material is cycled.
- ▣ **DECOMPOSERS** break down dead organisms and waste products like feces into small inorganic compounds.
- ▣ These compounds then pass into soil or water and provide vital nutrition for that ecosystem.





# INORGANIC MATTER

- ▣ Matter that does not contain a combination of carbon and hydrogen are called **INORGANIC**.
- ▣ Carbon dioxide, minerals, ammonia, & water are all inorganic compounds.

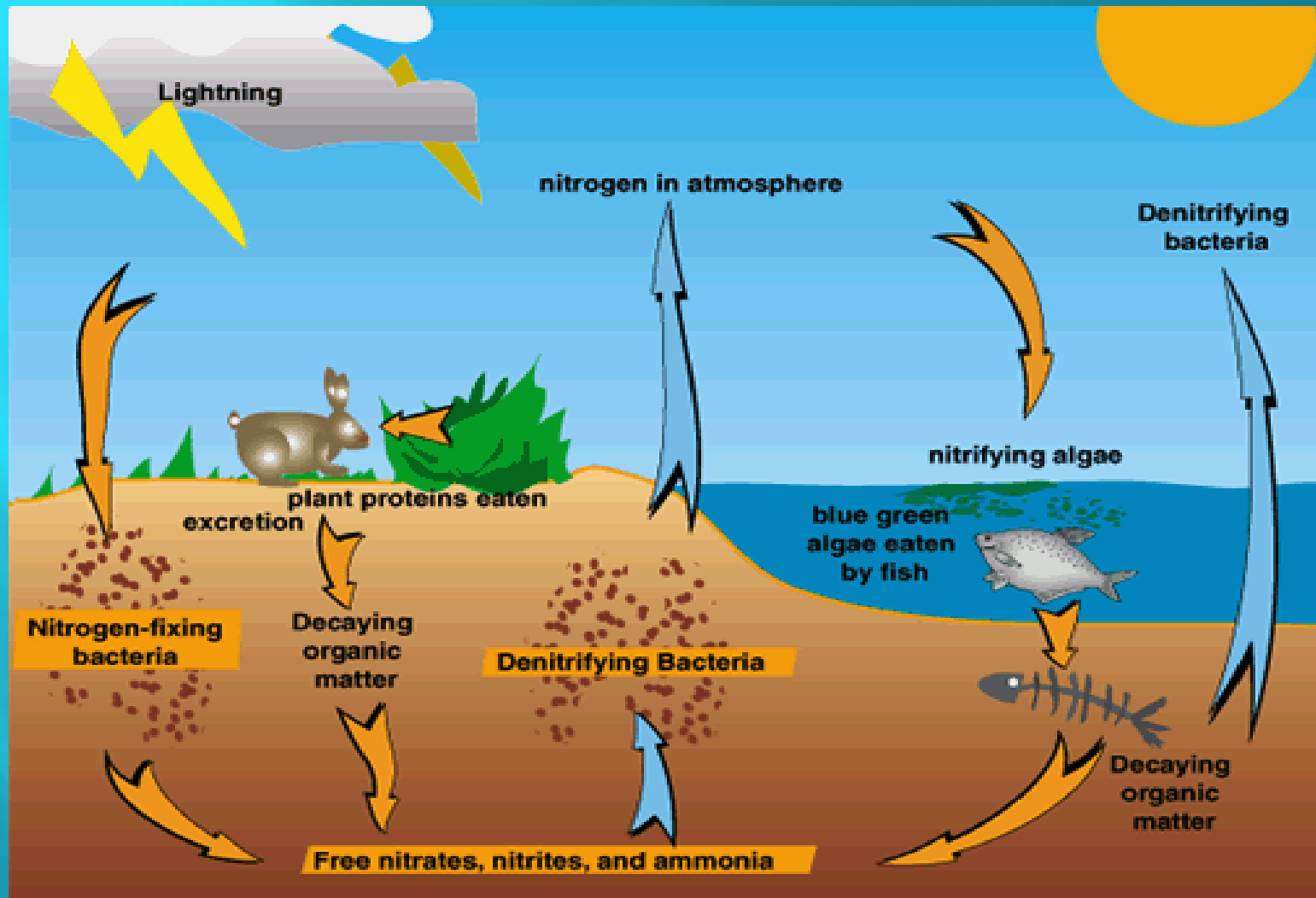




# THE NITROGEN CYCLE

- ▣ The atmosphere is mostly  $N_2$ , which most living things cannot use, they must “fix” the  $N_2$  into usable nitrates.
- ▣ Nitrogen-fixing bacteria live within the roots of a few plants such as: beans, peas, clover, and alders.
- ▣ The bacteria use sugar provided by the plants and in exchange produce ammonia which is a form of nitrogen that the plants can use (**MUTUALISM**)
- ▣ Excess nitrogen from the bacteria is released into the soil.
- ▣ Plants which don't have the nitrogen-fixing bacteria get nitrogen from the soil above.
- ▣ Animals get their nitrogen from the plants they eat or the animals they eat that eat those plants.

# THE NITROGEN CYCLE



# THE CARBON CYCLE

- ▣ When Producers (PLANTS) take in carbon dioxide ( $\text{CO}_2$ ) from the atmosphere during **PHOTOSYNTHESIS**.
- ▣ consumers eat the plants they get the carbon they need and breathe out excess  $\text{CO}_2$  through the process of **CELLULAR RESPIRATION**
- ▣ Plants and animals eventually decay and become fossil fuels.
- ▣ The fossil fuels are burned releasing more carbon dioxide in the atmosphere to start the process again.



# THE CARBON CYCLE

