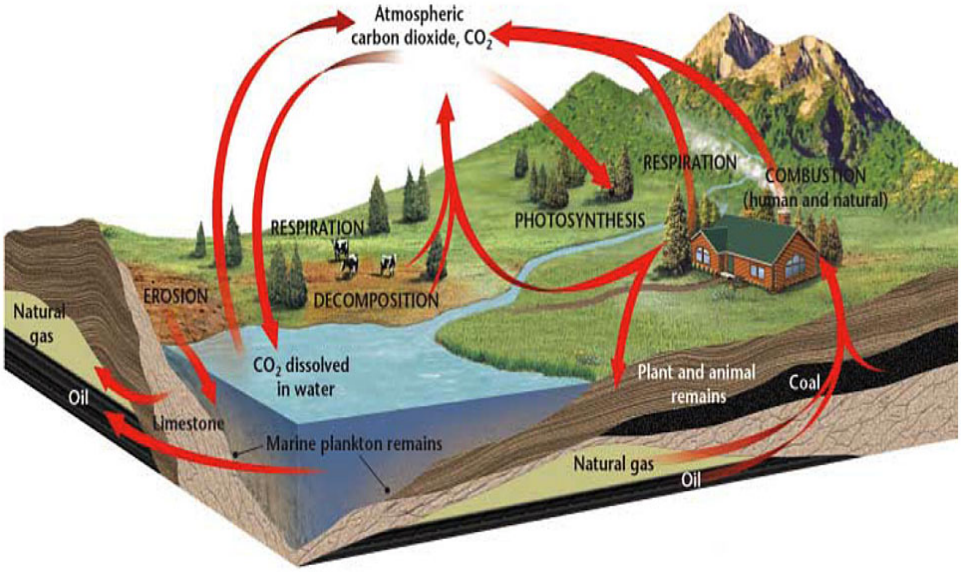
Chapter 5: How Ecosystems Work
Section 2, The Cycling of Materials

The Carbon Cycle

- The _____ is the movement of carbon from the nonliving environment into living things and back
- Carbon is the essential component of _____ which make up all organisms.

The Carbon Cycle

- Carbon exists in _____.
- Producers convert _____ in the atmosphere into carbohydrates during photosynthesis.
- Consumers obtain carbon from the carbohydrates in the producers they eat.



The Carbon Cycle

- During cellular respiration, some of the carbon is released back into the atmosphere as _____.
- Some carbon is stored in _____, forming one of the largest _____ on Earth.

The Carbon Cycle

- Carbon stored in the bodies of organisms as _____, may be released into the soil or air when the organisms dies.
- These molecules may form deposits of _____, which are known as _____.
- Fossil fuels store carbon left over from bodies of organisms that dies millions of years ago.

How Humans Affect the Carbon Cycle

- Humans burn fossil fuels, releasing carbon into the atmosphere.
- The carbon returns to the atmosphere as _____.

How Humans Affect the Carbon Cycle

- Increased levels of carbon dioxide may contribute to _____.
- Global warming is an _____ of the Earth.

The Nitrogen Cycle

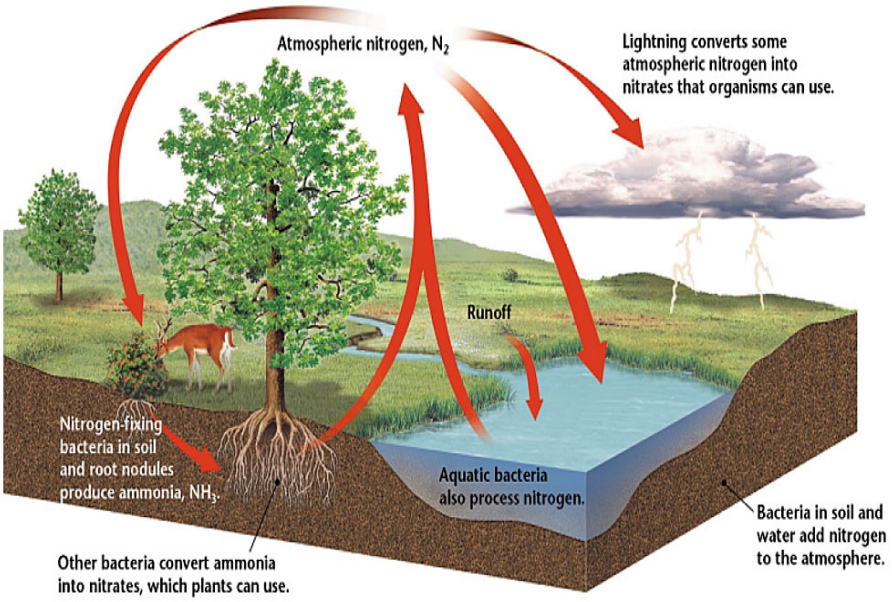
- The _____ is the process in which nitrogen circulates among the air, soil, water, plants, and animals in an ecosystem.
- All organisms need nitrogen to _____, which are used to build new cells.
- Nitrogen makes up _____ percent of the gases in the atmosphere.

The Nitrogen Cycle

- Nitrogen must be _____, before organisms can use it.
- Only a few species of bacteria can fix atmospheric nitrogen into chemical compounds that can be used by other organisms.
- These bacteria are known as _____ bacteria.

The Nitrogen Cycle

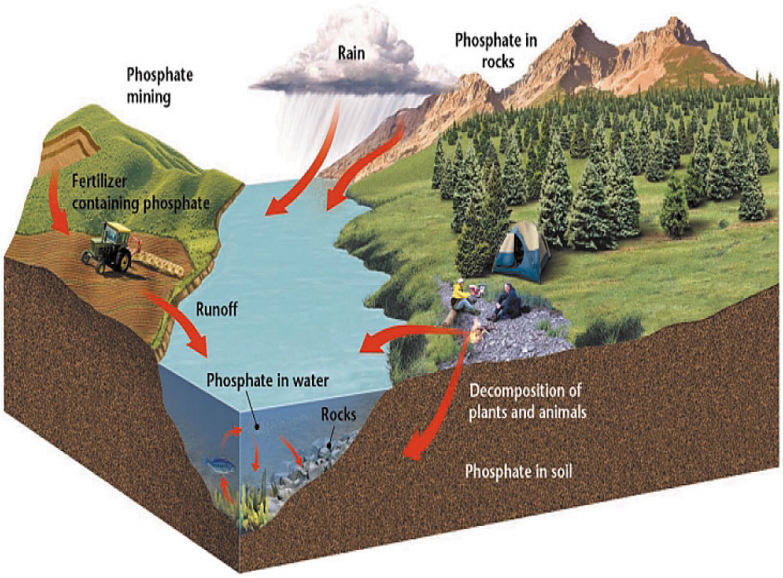
- _____ are bacteria that convert atmospheric nitrogen into ammonia.
- These bacteria live within the roots of plants called _____, which include beans, peas, and clover.
- The bacteria use sugar provided by the legumes to produce nitrogen-containing compounds such as _____.
- Excess nitrogen fixed by the bacteria is released into the soil.



Decomposers and the Nitrogen Cycle

- Nitrogen stored within the bodies of living things is returned to the nitrogen cycle once those organisms die.
- _____ break down decaying plants and animals, as well as plant and animal wastes.
- After decomposers return nitrogen to the soil, bacteria transform a small amount of the nitrogen into _____, which then returns to the atmosphere to complete the nitrogen cycle.

The Phosphorus Cycle



- _____ is an element that is part of many molecules that make up the cells of living organisms.
- Plants get the phosphorus they need from _____, while animals get their phosphorus by _____ that have eaten plants.
- The _____ is the cyclic movement of phosphorus in different chemical forms from the environment to organisms and then back to the environment.

The Phosphorus Cycle

- Phosphorus may enter soil and water when rocks erode.
- Small amounts of phosphorus dissolve as _____, which moves into the soil.
- Plants absorb phosphates in the soil through their roots.
- Some phosphorus washes off the land and ends up in the ocean.
- Because many phosphate salts are not soluble in water, they sink to the bottom and _____.

Fertilizers and the Nitrogen and Phosphorus Cycles

- _____, which people use to stimulate and maximize plant growth, contain both nitrogen and phosphorus.
- Excessive amounts of fertilizer can enter terrestrial and aquatic ecosystems through _____.
- Excess nitrogen and phosphorus can cause _____.
- Excess algae can deplete an aquatic ecosystem of important nutrients such as _____, on which fish and other aquatic organisms depend.

Acid Precipitation

- When fuel is burned, large amounts of _____ is release into the atmosphere.
- In the air, nitric oxide can combine with oxygen and water vapor to form _____.
- Dissolved in rain or snow, the nitric acid falls as _____.