

Chapter Nineteen: Cycles in Nature

Teacher Notes

Lesson One: The Cycles of Matter

- The Water Cycle
 - How Water Moves
 - Evaporation-the change of a substance from a liquid to a gas.
 - Condensation-the change of state from a gas to a liquid.
 - Precipitation-any form of water that falls to the Earth's surface from the clouds.
 - Water and Life
 - without water there would be no life on Earth
 - all organisms are composed mostly of water
 - water transports nutrients and wastes within an organism and when this leaves the body it is returned to the environment.
- The Carbon Cycle
 - most common molecules in living things are organic molecules or molecules that contain carbon.
 - the exchange of carbon between the environment and living things is known as the carbon cycle
 - Photosynthesis and Respiration
 - Photosynthesis is the basis of the carbon cycle; during photosynthesis plants use carbon dioxide from air to make sugars. Most animals get carbon from eating plants. Carbon returns to the environment when sugar molecules are broken down to release energy.
 - Respiration-is the release of energy. It uses oxygen. Carbon dioxide and water are released as byproducts of respiration.
 - Decomposition and Combustion
 - Decomposition-the breakdown of substances into simpler molecular substances.
 - Combustion-the burning of a substance.
- The Nitrogen Cycle
 - Converting Nitrogen Gas
 - about 78% of Earth's atmosphere is nitrogen gas and most organisms can't use this directly. Bacteria in the soil use a process called nitrogen fixation to convert it to a usable form.
 - other organisms get the needed nitrogen from eating plants or eating organisms that eat plants.
 - Passing It On
 - when organisms die, decomposers break down the remains. This releases nitrogen into the soil that plants can use.
- Many Cycles
 - minerals that living things need (calcium and phosphorus) are cycled through the environment.
 - all cycles are connected in many ways

Lesson Two: Ecological Succession

-Regrowth of a Forest

-Succession-the replacement of one type of community by another at a single place over a period of time.

-example-a burned forest and then what appears after it starts to grow back

-Primary Succession-when a community starts to develop in an area where other organisms had not previously lived.

-Pioneer Species-a species that colonizes an uninhabited area and that starts a process of succession.

-Secondary Succession

-when an existing community is destroyed by a natural disaster; the original community may regrow (secondary succession)

-Mature Communities and Biodiversity

-biodiversity-the variety of different species in a community

-biodiversity is important because the area is less likely to be completely destroyed.