

BSCS Biology An Ecological Approach

Chapter 1: The World of Life

Mountain lion is a carnivore. Eats a deer that's an herbivore. They eat plants and I can tell you more. About the web of life!

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Introduction

All living things, including humans, are part of a very involved system of connections here on earth called the **web of life**. Humans are having an increased impact on the planet on which they depend for survival.

Interactions Among Living Things

Living things (**organisms**) do not live in isolation. They feed off one another. Green plants make food (**photosynthesis**) utilizing the sun's energy. Some animals eat plants (**herbivores**) while others eat other animals (**carnivores**) and some (like humans) eat both (**omnivores**). In the web of life, there are relationships between all living and nonliving things. The study of these associations is called **ecology** which is one aspect of **biology**, which is the study of all living things.

The Food Chain and Balance of Nature

Plants which utilize sunlight to make food (**producers**) are often eaten by animals (**consumers**) while dead plants and animals are broken down and returned to the earth by **decomposers** (often **microorganisms**). Groups of producers, consumers, and decomposers form **communities**. The transfer of food (and energy) from producers up through consumers is a **food chain** while a **food web** is several connected food chains in a community. **Equilibrium** in the natural world is achieved when there is a **balance** in the population of organisms.

Energy and Matter Flow

The **sun** is the primary source of energy in living things. Energy flows through food chains in the food web. Some energy is lost at each step through **heat** and is eventually lost entirely from each community. Energy must continually enter a community or it will die. **Matter** is made up of very small particles (**atoms**) which form **elements** which often combine with different elements to form **molecules**. These combine to form common **compounds** in living things such as water and carbon. Matter **cycles** back and forth through the food web between living and nonliving environments while energy **flows**.

Earth is Home

All living things along with the air, water, and soil that surround them make up the **biosphere**. Humans are part of the biosphere and have more impact on it than any other organism. The growing population of humans on earth is consuming increasing amounts of energy while at the same time contributing to increasing destruction of the natural environment. Human-caused changes in the biosphere are leading to far-reaching often negative consequences for future generations

Hypothesis and Observation

Science is a process of observing and understanding our world. The process involves observation(s) and the asking of questions, followed by an explanation (hypothesis.)