Chapter 2: Populations

We will love the Earth wherever we roam,
For this big blue marble is our home.
Michelle Martin

Introduction

All living things of the same kind form groups known as **populations**. Humans form the only population that has the ability to change its environment in a big way. Increasing human populations are cause for concern as they often conflict with the needs of other organisms including different populations of other humans.

How to Describe a Population

To describe a population, we must identify the organisms, the time in history, and the location of these living things. A change in the population of one living group may influence one or more different populations. Our knowledge of populations can help predict the impacts of population growth on the environment.

Population Size

Over time, populations change in numbers. The size of a population is determined by any combination of four factors in a location:

1. How many organisms die over time (**mortality**)
2. How many organisms are born over time (**birthrate**)
3. How many organisms move in (**immigration**)
4. How many organisms move out (**emigration**)

Population Factors and Change

The environment is everything living (**biotic**) and nonliving (**abiotic**) that surrounds and impacts an organism. The nonliving factors include such things as sunlight, soil, weather and climate, and especially water and space. Living factors include all the living or recently dead parts such as mice, grass, and rotting logs. These factors that can affect the growth of a population are called **limiting factors**. The greatest number of organisms that can live in a given space is known as **carrying capacity**. A population reaches **homeostasis,** with a stable population, when the number of organisms remains relatively the same over time. Populations may increase and decrease in numbers (population fluctuations) and these changes have an impact on the community. Sometimes populations can move into another area (**dispersal**) but often natural obstacles (mountains, lakes, or deserts) keep populations from relocating.

Human Populations

We humans are members of an increasing population on earth of more than 6 billion people. Human population is increasing rapidly due to several factors including a birthrate that is greater than mortality, and our ability to change and live in many different environments. One reason that this is possible is technology. Technology often uses up many of the earth's limited resources. There are factors which can and will limit human population growth including food, water, and space. Food for humans is not equally distributed on earth. The amount of land available on earth for growing food is decreasing. There are occasions when many people starve to death (**famine**) due to food shortages. It takes less land to grow food than to produce meat. Humans have changed the earth's environment more that any other organism. Such changes are often not good for human or other populations and include such phenomena as acid rain, air and water pollution, and increasing desert land. Different human populations must cooperate in order for present and future generations and other organisms to live and grow on earth.