

CHAPTER

7

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POPULATIONS: CHARACTERISTICS AND ISSUES



Populations are collections of organisms of the same species. This group of Magellanic penguins constitutes a population with certain characteristics that may differ somewhat from the characteristics of penguin groups that inhabit other parts of South America.

CHAPTER OUTLINE

Population Characteristics

- Natality—Birthrate
- Mortality—Death Rate
- Population Growth Rate
- Sex Ratio
- Age Distribution
- Population Density and Spatial Distribution
- Summary of Factors that Influence Population Growth Rates

A Population Growth Curve

Factors that Limit Population Size

- Extrinsic and Intrinsic Limiting Factors
- Density-Dependent and Density-Independent Limiting Factors

Categories of Limiting Factors

- Availability of Raw Materials
- Availability of Energy
- Accumulation of Waste Products
- Interactions Among Organisms

Carrying Capacity

Reproductive Strategies and Population Fluctuations

- K-Strategists and r-Strategists
- Population Cycles

Human Population Growth

Human Population Characteristics and Implications

- Economic Development
- Measuring the Environmental Impact of a Population
- The Ecological Footprint Concept

Factors that Influence Human Population Growth

- Biological Factors
- Social Factors
- Economic Factors
- Political Factors

Population Growth Rates and Standard of Living

Hunger, Food Production, and Environmental Degradation

- Environmental Impacts of Food Production
- The Human Energy Pyramid
- Economics and Politics of Hunger
- Solving the Problem

The Demographic Transition Concept

- The Demographic Transition Model
- Applying the Model

The U.S. Population Picture

What Does the Future Hold?

- Available Raw Materials

- Available Energy
- Waste Disposal
- Interaction with Other Organisms
- Social Factors Influence Human Population
- Ultimate Size Limitation

ISSUES & ANALYSIS

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CASE STUDIES

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GOING GREEN

Increasing Populations of Red-Cockaded Woodpeckers 147

WATER CONNECTIONS

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OBJECTIVES

After reading this chapter, you should be able to:

- Understand that birthrate and death rate are both important in determining the population growth rate.
- Define the following characteristics of a population: natality, mortality, sex ratio, age distribution, biotic potential, and spatial distribution.
- Explain the significance of biotic potential to the rate of population growth.
- Describe the lag, exponential growth, deceleration, and stable equilibrium phases of a population growth curve. Explain why each of these stages occurs.
- Describe how limiting factors determine the carrying capacity for a population.
- List the four categories of limiting factors.
- Recognize that humans are subject to the same forces of environmental resistance as are other organisms.
- Understand the implications of overreproduction.
- Explain how human population growth is influenced by social, theological, philosophical, and political thinking.
- Explain why the age distribution and the status and role of women affect population growth projections.
- Recognize that countries in the more-developed world are experiencing an increase in the average age of their populations.
- Recognize that most countries of the world have a rapidly growing population.
- Describe the implications of the demographic transition concept.
- Recognize that rapid population growth and poverty are linked.