

ENVIRONMENTAL SCIENCE

Toward a Sustainable Future

Eight Edition

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1 Introduction: Sustainability, Stewardship, and Sound Science

1.1 The Global Environmental Picture

- Population Growth
- The Decline of Ecosystems
- Global Atmospheric Changes
- Loss of Biodiversity

1.2 Three Unifying Themes

- Sustainability
- Stewardship
- Environmentalism
- Sound Science
- A New Commitment

Environment on the Web

- Review Questions
- Thinking Environmentally
- Web References
- Ethics: What Is the Stewardship Ethic?
- Earth Watch: Agenda 21

PART ONE

Ecosystems and How They Work

2 Ecosystems: What They Are

2.1 What Are Ecosystems?

The Structure of Ecosystems

- Trophic Categories
- Trophic Relationships: Food Chains, Food Webs, and Trophic Levels
- Nonfeeding Relationships
- Abiotic Factors

2.3 Global Biomes

The Role of Climate

Microclimate and Other Abiotic Factors

Biotic Factors

Physical Barriers

2.4 Implications for Humans

Three Revolutions

Environment on the Web

- Review Questions

Thinking Environmentally

Web References

Ethics: Can Ecosystems Be Restored?

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3 Ecosystems: How They Work

3.1 Matter, Energy, and Life

Matter in Living and Nonliving Systems

Energy Considerations

Energy Changes in Organisms and Ecosystems

3.2 Principles of Ecosystem Function

Energy Flow in Ecosystems

Biogeochemical Cycles

3.3 Implications for Humans

Sustainability

Value

Managing Ecosystems

Environment on the Web

Review Questions

Thinking Environmentally

Web References

Global Perspective: Light and Nutrients:

The Controlling Factors in Marine Ecosystems

Earth Watch: Biosphere 2

4 Ecosystems: Populations and Succession

4.1 Population Dynamics

Population Growth Curves

Biotic Potential versus Environmental Resistance

Density Dependence and Critical Numbers

4.2 Mechanisms of Population Equilibrium

Predator–Prey Dynamics

Competition

Introduced Species

