**Chapter 2: Principles of Ecology**

2.1 Organisms and Their Relationships

Ecology

The Biosphere

Biotic factors

Abiotic factors

Levels of Organization

• organism

• population

• biological community

• ecosystem

• biome

• biosphere

Figure 2.6

■ Figure 2.7 These trees are the habitat for the community of organisms that live there.

Ecosystem Interactions

Habitat and niche

Community Interactions

Competition

Predation

Symbiotic relationships

Mutualism

Commensalism

Parasitism

2.2 Flow of Energy in an Ecosystem

Energy in an Ecosystem

Autotrophs

Heterotrophs

Models of Energy Flow

Food chains

Food webs

Ecological pyramids

Pyramid of Energy

Pyramid of Biomass

Pyramid of Numbers

2.3 Cycling of Matter

Cycles in the Biosphere

The water cycle

The carbon and oxygen cycles

The nitrogen cycle

The phosphorus cycle