Chapter 5: How Ecosystems Work
Section 1, Energy Flow in Ecosystems

Life Depends on the Sun

- Energy from the sun enters an ecosystem when plants use sunlight to make sugar molecules.
- This happens through a process called _____.

Life Depends on the Sun

- Photosynthesis is the process by which plants, algae, and some bacteria use

  _____.
- End result of photosynthesis is a _____.
- Gives you energy to do daily activities

From Producers to Consumers

- Because plants make their own food, they are called _____.
- A **producer** is an organism that can make _____.
- Producers are also called _____.

From Producers to Consumers

- Organisms that get their energy by eating other organisms are called _____.
- A **consumer** is an organism that eats _____ instead of producing its own nutrients or obtaining nutrients from inorganic sources.
- Consumers are also called _____.

From Producers to Consumers

- Some producers get their energy directly from the sun by absorbing it through their leaves.
- Consumers get their energy indirectly by eating producers or other consumers.

An Exception to the Rule

- Deep-ocean communities of worms, clams, crabs, mussels, and barnacles, exist in total darkness on the ocean floor, where photosynthesis cannot occur.
- The producers in this environment are _____ present in the water.
- Other underwater organisms eat the bacteria or the organisms that eat the bacteria.

What Eats What?

- Organisms can be classified by what they eat.
- Types of Consumers:
  - Herbivores –

    _____
  - Carnivores –

    _____
  - Omnivores –

    _____
  - Decomposers –

    _____

What Eats What in an Ecosystem

	Energy source	Examples
Producer	makes its own food through photosynthesis or chemical sources	grasses, ferns, cactuses, flowering plants, trees, algae, and some bacteria
Consumer	gets energy by eating producers or other consumers	mice, starfish, elephants, turtles, humans, and ants

Types of Consumers in an Ecosystem

	Energy source	Examples
Herbivore	producers	cows, sheep, deer, and grasshoppers
Carnivore	other consumers	lions, hawks, snakes, spiders, sharks, alligators, and whales
Omnivore	both producers and consumers	bears, pigs, gorillas, rats, raccoons, cockroaches, some insects, and humans
Decomposer	breaks down dead organisms in an ecosystem and returns nutrients to soil, water, and air	fungi and bacteria

What Eats What?

- Consumers that eat producers to get energy are what we call _____.
- In other words they are _____.
- Most of the energy will be used up by the consumer (herbivore).
- A consumer that eats another consumer is called a _____.

Burning the Fuel

- An organism obtains energy from the food it eats.
- This food must be broken down within its body.
- The process of breaking down food to yield energy is called _____.

Burning the Fuel

- Cellular respiration is the process by which cells produce

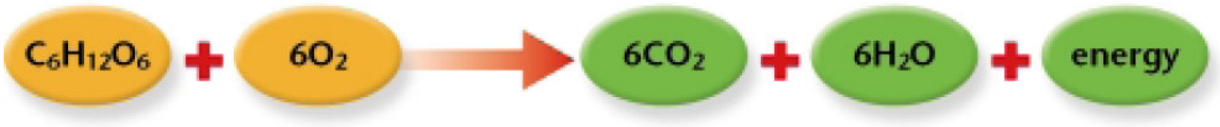
  _____; atmospheric oxygen combines with glucose to form water and carbon dioxide.
- Cellular respiration occurs inside the _____ of most organisms.

Burning the Fuel

- During cellular respiration, cells

  _____.

- Through cellular respiration, cells use _____ and oxygen to produce carbon dioxide, water, and energy.



Burning the Fuel

- Part of the energy obtained through cellular respiration is used to carry out daily activities.
- Excess energy is stored as _____.

Energy Transfer

- Each time an organism eats another organism, an _____ occurs.
- This transfer of energy can be traced by studying _____.

Food Chains

- A _____ is a sequence in which energy is transferred from one organism to the next as each organism eats another organism.

Food Webs

- Ecosystems, however, usually contain more than one food chain.
- A _____ shows many feeding relationships that are possible in an ecosystem.

Trophic Levels

- Each step in the transfer of energy through a food chain or food web is known as a _____.
- A trophic level is one of the _____; examples include producers and primary, secondary, and tertiary consumers.

Trophic Levels

- Each time energy is transferred, some of the energy is lost as _____.
- Therefore, _____ is available to organisms at higher trophic levels.
- One way to visualize this is with an _____.

Trophic Levels

- Each layer of the pyramid represents one _____ level.

- Producers form the _____ of the energy pyramid, and therefore contain the _____.
- The pyramid becomes smaller toward the top, where less energy is available.

Energy Loss Affects Ecosystems

- Decreasing amounts of energy at each trophic level affects the organization of an ecosystem.
- Energy loss affects the _____ at each level.
- Energy loss limits the _____ in an ecosystem.