

The Aquatic Food Web

Applicable TEKS

Science Grade 4	Science Grade 5	Science Grade 6
4.3 A 4.9 A, B	5.3 A 5.9 A, B	6.3 B 6.12 A, F

Duration

One 40-minute lesson

Objectives

The students will learn about the aquatic food web. They will also learn why dissolved oxygen increases and decreases.

Prerequisites

None.

Materials

► Handout 3—The Aquatic Food Web

Procedure

1. Review with your students the information in the guide under “Aquatic Food Web.” Your students should realize that all living things respire and know the reactants and products of photosynthesis and respiration.
2. When ready, have your students open their binder to *Handout 3—The Aquatic Food Web*. They should work together to draw arrows between the different plants and animals.
3. Afterwards, the students should complete the fill-in-the-blank section of the handout, using the words in the word bank.

Fill in the-Blanks

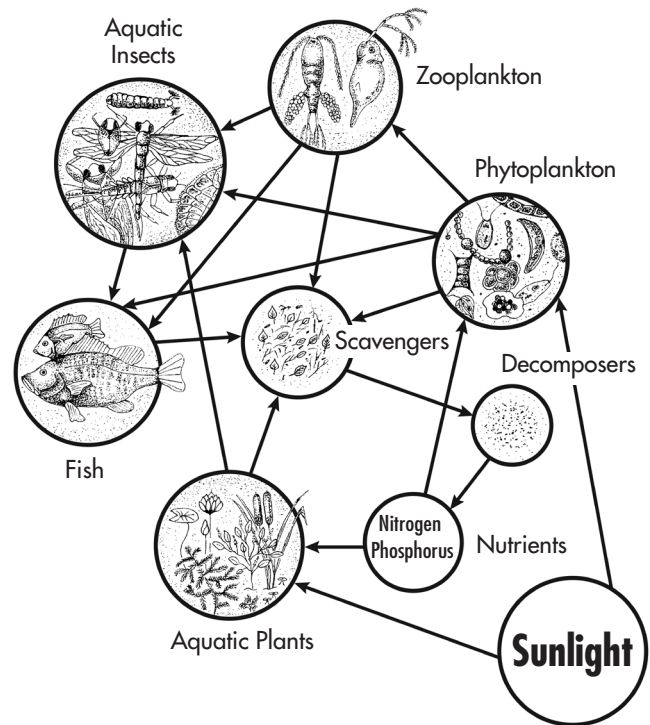
Aquatic food webs for surface water ecosystems begin with the **sun**, the source of light. Certain wavelengths of light are absorbed by **primary producers** (also called autotrophs). Through a process called **photosynthesis**, primary producers use this light to convert **carbon dioxide** and **water** into carbohydrates and oxygen. The primary producers will use a portion of the carbohydrates and oxygen during **respiration**—the process in which carbohydrates and oxygen are converted into carbon dioxide, water, and energy. Primary producers can grow and reproduce if energy and certain nutrients are available.

Animals must also respire so they can create energy to move, grow, etc. Since animals cannot produce their own **food** like the primary producers, they must consume (eat) their food. Animals that eat primary producers are called **primary consumers** (herbivores, or plant eaters). Animals that eat primary consumers are called **secondary consumers** (carnivores, or meat eaters). The secondary consumer group may contain more than one level of carnivore; therefore, a food web may have **tertiary consumers**—animals that eat secondary consumers. In addition, a food web may also contain **omnivores**—animals that eat plants and meat.

Animals that eat dead organic materials are called **detritivores** (scavengers). They are an important part of the food web because they help in decomposition by shredding and eating dead organic materials. **Decomposers** (bacteria and fungi) are the final link in the **food web**; they break down dead material and release **nutrients** that can be used by primary producers.

Handout Answers

Food Web



Aquatic Food Web

Food chains are simplified models that describe the general flow of energy and food pathways that link different species in an ecosystem. Basically, food chains tell you what an organism eats. A food chain links an organism to one source of food whereas a food web (a more realistic model) may link an organism to many sources of food.

Aquatic food webs for surface water ecosystems begin with the sun, the source of light. Certain wavelengths of light are absorbed by primary producers (also called *autotrophs*). Through a process called *photosynthesis*, primary producers use this light to convert carbon dioxide and water into carbohydrates and oxygen (Figure 1 illustrates this chemical reaction). The primary producers will use a portion of the carbohydrates and oxygen during respiration—the process in which carbohydrates and oxygen are converted into carbon dioxide, water, and energy (see

Figure 1.
Photosynthesis

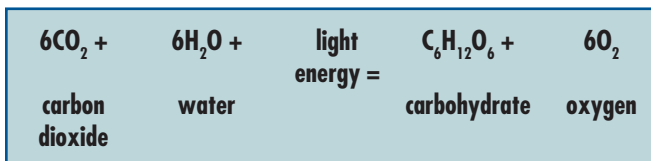


Figure 2.
Plant Respiration

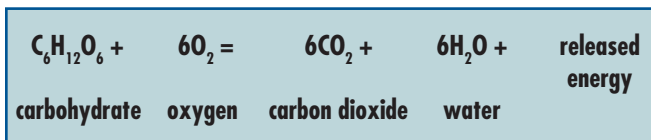


Figure 2). Primary producers can grow and reproduce if energy and certain nutrients are available.

Animals must also respire so they can create energy to move, grow, etc. Since animals cannot produce their own food like the primary producers, they must consume (eat) their food. Animals that eat primary producers are called primary consumers (*herbivores*, or plant eaters). Animals that eat primary consumers are called secondary consumers (*carnivores*, or meat eaters). The secondary consumer group may contain more than one level of carnivore; therefore, a food web may have tertiary consumers—animals that eat secondary consumers. In addition, a food web may also contain *omnivores*—animals that eat plants and meat.

Animals that eat dead organic materials are called *detritivores* (scavengers). They are an important part of the food web because they help in decomposition by shredding and eating dead organic materials. Decomposers (bacteria and fungi) are the final link in the food web; they break down dead material and release nutrients that can be used by primary producers.