



Where Are Aquatic Ecosystems?

1. **Circle** the word **TRUE** if the statement is TRUE or **Circle** the word **FALSE** if it is FALSE.

a) Plants produce the oxygen needed by animals for survival.

TRUE **FALSE**

b) Most animals are able to perform photosynthesis.

TRUE **FALSE**

c) Some lakes contain salt water.

TRUE **FALSE**

d) Plants have the role of producers in an ecosystem.

TRUE **FALSE**

e) The source of a river is called an estuary.

TRUE **FALSE**

2. Put a check mark (✓) next to the answer that is most correct.

a) The products of photosynthesis are:

- A oxygen and carbon dioxide
- B carbon dioxide and water
- C water and sugar
- D sugar and oxygen

b) A plant adapted to live in a large lake is *most* likely to also survive in a:

- A river
- B spring
- C small pond
- D large ocean

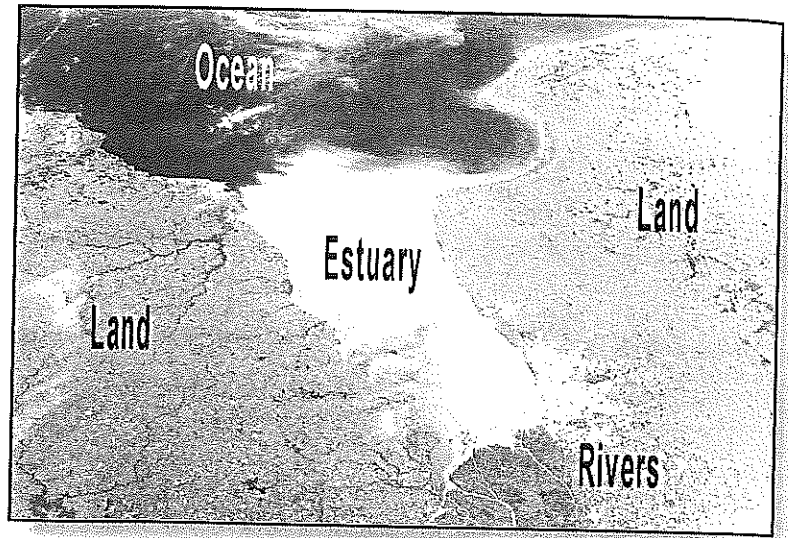
c) What type of organism are algae?

- A fish
- B insects
- C plants
- D viruses



Where Are Aquatic Ecosystems?

Aquatic ecosystems were the first ecosystems on Earth. These first ecosystems developed in the ocean several billion years before land ecosystems appeared. These early marine ecosystems were made up only of plants that could use **photosynthesis** to harness energy directly from the sun.



An Estuary

Oxygen gas is one of the products of photosynthesis. When early marine plants had added enough oxygen to the atmosphere, Earth's oceans could support both plant and animal life. This shows how the parts of an ecosystem fit together. Plants get energy from the sun and transfer it to animals. Plants also provide the oxygen that animals need. When animals use the energy in plants, they produce **carbon dioxide**, which is a resource that plants need.

Organisms that live in marine ecosystems are adapted to live in **salt water**. Any body of water that is more than 1% salt is considered salt water. In addition to the ocean, this includes some inland salt lakes. Water that is less than 1% salt is classified as fresh water.

All ocean marine ecosystems are interconnected because all oceans are connected. Ocean ecosystems do vary from place to place. The differences depend mostly on temperature and depth. Marine ecosystems cover much more area and have much more volume than freshwater ecosystems. Oceans cover 71% of Earth's surface and contain 97% of Earth's water.



Where Are Aquatic Ecosystems?

Freshwater ecosystems can be classified as either **lentic** (still water) or **lotic** (moving water). Lentic aquatic ecosystems include lakes, ponds, and swamps. Lentic ecosystems can exist in a puddle so small you can step across it or in a lake so broad you cannot see across it.



What is the source of energy for almost all aquatic ecosystems?

Algae are the most important **producers** in a lentic ecosystem. Water plants also help provide energy for the system. Some plants are rooted to the bottom, and some are free-floating. **Consumers** include **invertebrates**, such as insects and crayfish, and **vertebrates**. The vertebrates include many species of fish; amphibians, such as frogs; many species of water birds; reptiles, such as alligators; and mammals, such as beavers. With the exception of the fish, most vertebrates spend part of their lives on land, and so are part of more than one ecosystem.

Lotic ecosystems include springs, streams, and rivers. Because the water is always moving in a lotic ecosystem, these systems have more variation than lentic systems. Lotic systems vary both over time and from place to place along the course of the flow. All plants and animals in a lotic system have in some way adapted to be able to live in moving water.

Algae are even more important as producers in lotic systems than in lentic systems because not many plant species can adapt to rapidly moving water. Consumers in lotic systems include many of the same invertebrates and vertebrates as do lentic systems. Fish species in these two ecosystems differ somewhat depending on whether they are better adapted to still or moving water.

One final type of aquatic ecosystem is located where salt and fresh water meet and intermingle. These conditions are found where a river flows into an ocean. When the river mouth is large and extends inland, it is called an **estuary**.



Where Are Aquatic Ecosystems?

1. **Circle** the word **TRUE** if the statement is TRUE or **Circle** the word **FALSE** if it is FALSE.

a) Lentic refers to ecosystems in still water.

TRUE **FALSE**

b) Lotic refers to ecosystems in moving water.

TRUE **FALSE**

c) Oceans can contain either fresh water or salt water.

TRUE **FALSE**

d) Algae are consumers.

TRUE **FALSE**

e) Fish are consumers.

TRUE **FALSE**

2. Use the words or groups of words in the list to complete each sentence. Use each word only once. Some words will not be used.

lentic oxygen carbon dioxide lotic
photosynthesis fresh salt consumers

a) Rivers are _____ ecosystems.

b) Crayfish are _____.

c) _____ is one of the products of _____.

d) The Great Lakes contain _____ water.

e) If a small puddle of fresh water contains organisms, it is a _____ ecosystem.



Where Are Aquatic Ecosystems?

3. Answer the questions in complete sentences.

a) Explain why all ocean ecosystems are interconnected.

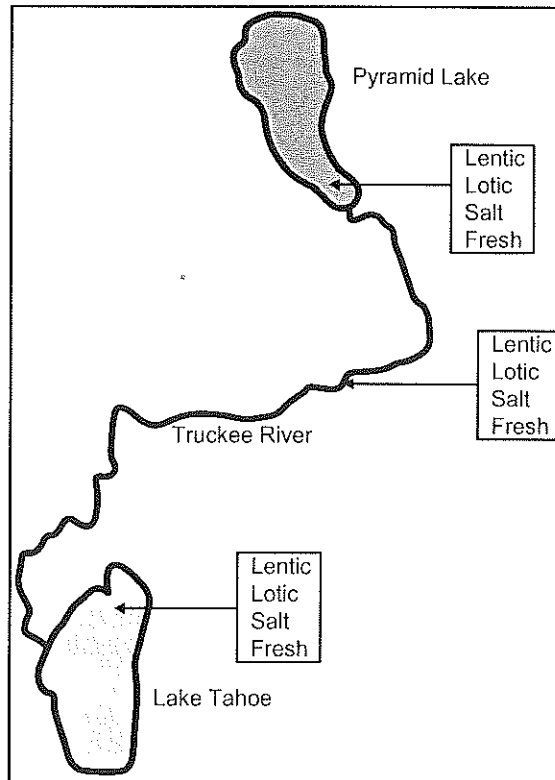
b) Identify two producers and three consumers in a freshwater lake ecosystem.

Producers: _____

Consumers: _____

Extensions & Applications

Rough Draft Worksheet



The map shows three bodies of water: Lake Tahoe, Pyramid Lake, and the Truckee River. The Truckee River begins at Lake Tahoe and ends at Pyramid Lake. Show the characteristics of each body of water by circling two words in each box.

See page 129 for Final Version Worksheet.