



## The Amazon River Experience

### **Objective:**

1. The students will demonstrate an understanding of the location and impact of the Amazon River and the surrounding environment.
2. The students will evaluate environmental occurrences along the Amazon River and possible solutions to protecting the wildlife of the region.
3. Students will be able to identify several species of aquatic life in the Amazon River.

### **Performance Objectives:**

#### **Grade 3:**

Strand 2: Concept 2 PO 1, 2; Strand 3: Concept 1 PO 1, 2; Strand 4: Concept 3 PO 3, 4  
Concept 4 PO 1 – 3; CCSS 3. W. 2  
NGSS: 3LS1.B; LS1.D; LS2.C

#### **Grade 4:**

Strand 3: Concept 1 PO 1; Strand 4: Concept 1 PO 2  
Concept 3 PO 1 – 4; CCSS 4. W. 2  
NGSS: 4ESS.3.A

#### **Grade 5:**

Strand 2: Concept 2 PO 4; Strand 3: Concept 1 PO 2; Strand 4: Concept 1 PO 1/3  
NGSS: 5LS1.C; LS2.A; CCSS 5. W. 2

### **Background Information:**

One of the longest rivers in the world, the Amazon River, is home to thousands of living organisms and a life-sustaining ecological feature covering a vast area of South America. The Amazon River is known to be second only to the Nile River in

### **Grades: 3 - 5**

#### **Key Vocabulary:**

- **Tributaries**
- **Ectothermic**
- **Vertebrates**

#### **Related Literature:**

*Amazon Rainforest*  
William B. Rice

*The Great Kapok Tree*  
Lynn Cherry

*Amazon*  
Peter Laurie

length but carries a record volume of water along its path through several countries. This valuable water source flows through Peru, Bolivia, Venezuela, Colombia, Ecuador and Brazil as it makes its way over 4,000 miles to the Atlantic Ocean. The Amazon River is the source for numbers of **tributaries** along which clusters of people live and flourish as a result of the river's resources. A variety of ecosystems exist along the length of the river including the largest tropical rainforest in the world and even some dry grasslands. Amazon plants and wildlife range from the most microscopic species to various large aquatic species. The uniqueness of the region is enhanced by the diverse cultures of native people living and working along the Amazon River. (Refer to the maps.)

The origin of the famous river is high in the Andes Mountains of Peru. There are more than 1,000 tributaries, streams or rivers that flow from the main river, and 17 of those are over 1,000 miles long. The Amazon River contributes nearly one-fifth of all of the fresh water that flows on Earth. In addition, the Amazon Basin is so vast that it continues to be the location for exploration and discovery for potential new species. Some scientists believe that the Amazon Basin contains more species of fish than the Atlantic Ocean. Many of these species include electric eels, stingrays, pink dolphins and manatees.

Scientists believe that the Amazon River, with its enormous amounts of fresh water, provides an abundance of solid particles that flow into the Atlantic Ocean every year. These particles are loaded with minerals and nutrients that provide food for fish both in the river and the ocean. Some of the aquatic animals living in the river are 200-pound catfish; anaconda snakes; piranha fish, the most ferocious fish in the world; and over 2,000 other species of fish.



Piranhas are known for their razor-sharp teeth and aggressive nature when it comes to finding and eating food. Considered “ferocious” fish, they can grow to about 12 inches long and some live up to 25 years. Their diet consists of mainly insects and other fish. These stocky fish live in the fresh water of the Amazon River. (Public domain photo)

The fish in the Amazon River are well adapted to the fresh water and aquatic ecosystem. The aquarium fish at **Butterfly Wonderland** represent many of the types of fish found in the Amazon River. The Tinfoil Barb, Ruby Red Oscar and Giant Gourami are only a few of the beautiful aquatic fish to observe and enjoy.

Fish are called **ectothermic**, aquatic **vertebrates** and are categorized by their type of skeleton. The body temperature of an “ectothermic” animal is regulated by the surroundings, such as water temperature for fish. This means that fish must adapt to the water temperature to survive because they cannot regulate body temperature internally. Being “aquatic” means that they live in the water and process oxygen through the gills. Tropical fish, for example, are called “bony” fish because they have a skeleton made of bone. Sharks and rays are in a different group because their skeleton is made of cartilage. Generally, fish have skin covered with scales and their limbs are modified into fins for swimming. The scales protect the skin and internal parts of the fish. Even the body shape of the fish tells a story about how it lives. Fish with streamlined bodies are usually fast swimmers and capable of catching prey with great speed. Many tropical fish have a more flattened body as they do not require as much speed but need to fit into small crevices in rocks for protection. Other types of fish use their color to camouflage themselves for protection.

There are different fins on a fish: pectoral fins, pelvic fins, dorsal fin, caudal (or tail) fin and anal fin. These fins help the fish move in water and provide stability and support for the body of the fish. The tails of fish vary in shape depending on the type of fish and its anatomy. Most fish are visual predators and have fairly large eyes to help them locate food. Bony fish have no eyelids.

The Oscar is an interesting fish that exhibits the common features of all fish.



(Oscar fish - Public domain photo)

# Butterfly Wonderland

## Rivers of the Amazon Aquatic Life



(Photos taken at Butterfly Wonderland by Linda Hoyer)

Wikipedia Sources: Newman, Arnold. *Tropical Rainforest*. Checkmark Books, 1990; PBS/NOVA; Monterey Bay Aquarium; US Department of Natural Resources; Hubbard's Fish anatomy; Encyclopedia Britannica; Wikipedia.

## **Procedures and Pre-Activities:**

1. State the learning objective.
2. Read related literature on the Amazon River.
3. Review vocabulary.
4. Show the location of the Amazon River on a map of South America.
5. Present background information up to the notation to refer to the map.
6. Hand out the map titled: Amazon River Experience. Discuss location, elevation and tributaries of the Amazon River on the map.
7. Continue the background information ending with the picture of the piranhas.
8. Refer to the map again. Ask: How many tributaries can you count? Can you find Peru and the origin of the river? Locate the Atlantic and Pacific Oceans. Estimate how much of South America is impacted by the Amazon River resources (physical % of the land).
9. Discuss species and continue presentation of background information.
10. Quiz: use the map titled: South America. Have students label the map per directions. (Optional – use colored pencils to identify the river, etc.)
11. Review the parts of the fish (use fish diagram). Discuss the general external anatomy. Ask open-ended questions related to prior knowledge about aquatic animals.
12. Students should be prepared to observe the fish in all of the aquariums along with the touch tank. Paying close attention to the external anatomy of the fish, students should observe how each different fin functions to move the fish in all directions. Students should watch the motion of the fins and the tail and be prepared to explain their observations when they return to class. Students may want to observe the differences in how the fish move and how the rays move and compare the external anatomy of both.

## **Reflection and Assessment:**

After visiting **Butterfly Wonderland**, discuss the experience in the Rivers of the Amazon Aquatic Life.

**Activity:** Divide students into small groups (3-5). Give each group a 3x5 index card. In groups, students discuss the external anatomy of the fish and the patterns of movement within the aquariums. On the 3x5 card, each group lists 5 significant observations that they recall from viewing the fish in the aquariums. They should consider:

Physical Structure and Function

Fins and Movement

Habitat Variations

Compatibility of species in tanks

Upon completion of the task, each group presents one or two observations to the class. Class discussion follows the presentations.

**Quiz:** Students complete the quiz titled: Label the parts of the fish.

**Activity:** Essay Writing – Using the handout titled: The Amazon River Environment and the Writing Expository Essay outline, students evaluate the environment and possible solutions to protect the wildlife region.

**Optional Activity:** Students use the internet to label the flags of the countries through which the Amazon River flows.

**Optional Activity:** Students write a paragraph on the environmental impact the Amazon River has on the region.

**Optional Activity:** I Spy – Identify: Using the handout, students locate the two species and note their common names and where they were found at **Butterfly Wonderland**. ( Discus fish – aquarium # 1; Attacus Atlas Moth – atrium)  
Laminate pictures for easy handling.

**Materials:** Colored pencils (optional); 3x5 index cards; Print handouts

# Amazon River Experience



# South America



Locate and label the countries, the Amazon River and the oceans.



## South America Map (Key)



## Flags of the countries through which the Amazon River flows (Key)



Flag of Peru



Flag of Bolivia



Flag of Venezuela



Flag of Ecuador

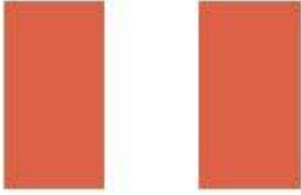


Flag of Columbia



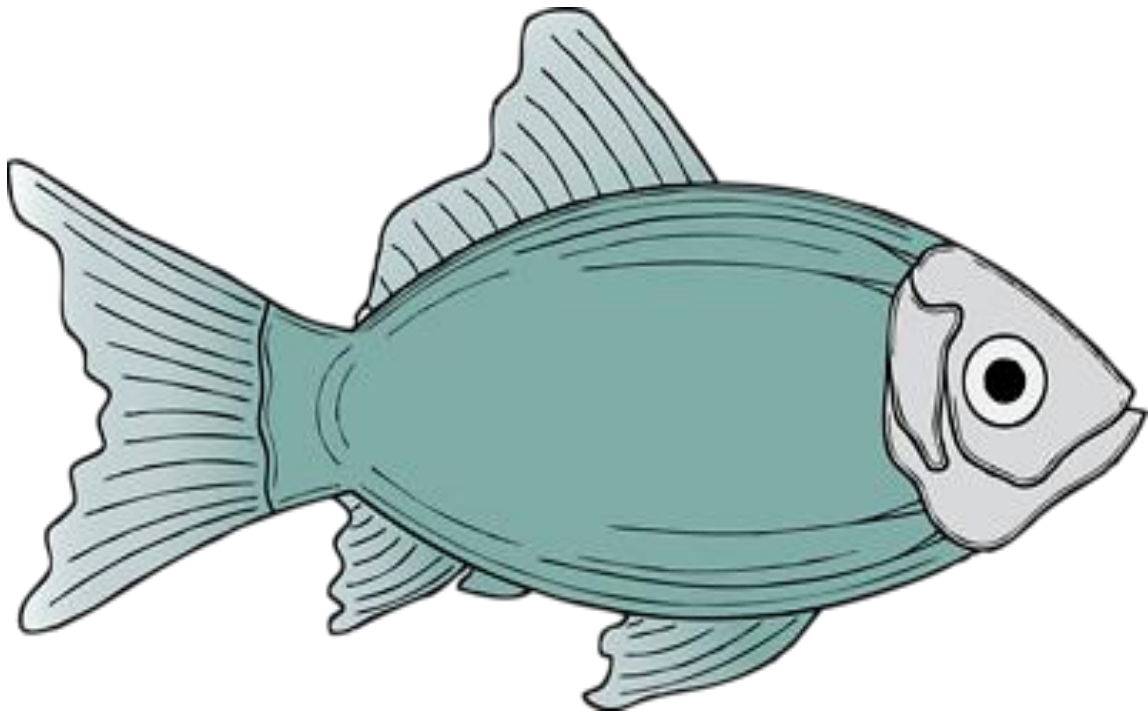
Flag of Brazil

Flags of the countries through which the Amazon River flows.



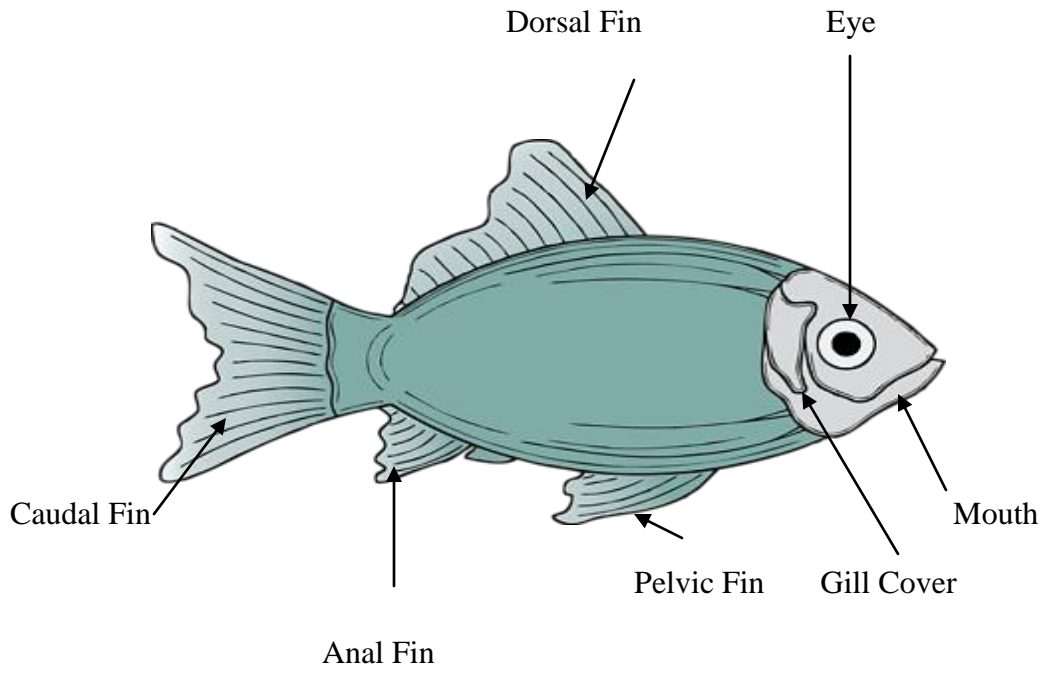
Label these flags

## Label The Parts Of The Fish



1. Gill Cover
2. Caudal Fin
3. Mouth
4. Eye
5. Pelvic Fin
6. Anal Fin
7. Dorsal Fin

## Label the Fish (Key)



## I Spy - Identify



## The Amazon River Environment

Ecosystems that are located in freshwater areas are important to human survival. The Amazon River region is one of those ecosystems. Scientists have discovered that 40 percent of the world's fish species live in freshwater ecosystems. Lakes, rivers, wetlands and streams are impacted by atmospheric and other forms of contamination that impact the health of the freshwater and the fish. Pollution in the watersheds ends up in freshwater areas that humans and animals rely on for drinking water. If freshwater areas are no longer suitable for human consumption or as safe habitats for animals, survival is questionable.

The Amazon River region provides a wealth of resources for the humans and animals living within the ecosystem. Parts of the Amazon River provide a means of transportation for the people that live along the banks and even the guests that visit the Amazon region. Plants that flourish in the environment are used for food, medicine and providing the recycling of carbon dioxide into oxygen. Considered by many to be the "Lungs of the Planet," the plants in the Amazon Rainforest are responsible for producing much of the world's oxygen.

The Amazon River produces a vast variety of fish that become a food source for both humans and other aquatic animals. The tropical climate of the river region provides a perfect place for fruits like avocados, coconuts, figs, oranges, bananas, guavas, pineapples, yams and squash to grow. These foods and many other types contribute to the world's food source on a daily basis. Spices such as black pepper, cinnamon, cloves, ginger, tumeric and vanilla are also plentiful in the region. Coffee and even chocolate are a major product in the Amazon region and can be found in markets all over the world.

Medicines are another product of the Amazon Rainforest region. Numerous medications are plant-derived and have been found to be useful in treating cancer, leukemia and many viruses.

The Amazon Rainforest is considered one of the world's greatest natural resources. The rainforest jungle is home to some of the most unique and rare species of plants, animals and birds on Earth. Insects such as butterflies, moths and more enjoy the moist climate and layered tree canopies that are home to many primates and endangered species.

With all that the Amazon Rainforest has to offer, there are serious considerations for the preservation of the region. Today, more than 20% of the rainforest in the Amazon has been destroyed. Parts of the land are being cleared for cattle ranching, logging, road building and other uses that negatively impact the natural ecosystem. Once these areas have been cleared or burned, they cannot be restored to their natural state again. Scientists are concerned for the future of the rainforest and all of the humans and animals sustained by the resources within the endangered region.

(Source: National Geographic; Physical Anthropologist Keri Granada)

# WRITING AN EXPOSITORY ESSAY

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## **Paragraph #1 – Introduction**

Topic Sentence: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Major Idea #1: \_\_\_\_\_

Major Idea #2: \_\_\_\_\_

Major Idea #3: \_\_\_\_\_

Closing Sentence: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

## **Paragraph #2 – Major Idea #1 is discussed completely and with evidence**

Topic Sentence: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Major Idea #1: \_\_\_\_\_

Major Idea #2: \_\_\_\_\_

Major Idea #3: \_\_\_\_\_

Closing Sentence: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**Paragraph #3 – Major Idea #2 is discussed completely and with evidence**

Topic Sentence: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Major Idea #1: \_\_\_\_\_

Major Idea #2: \_\_\_\_\_

Major Idea #3: \_\_\_\_\_

Closing Sentence: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_