



Second Grade

Amazon Rainforest Conservation, Brazil

National Standards for Second Grade Lessons

Writing

Standard 3 Level 1: K-2

1. Generates questions about topics of personal interest.
2. Uses a variety of sources to gather information.

Reading

Standard 7 Level 1 Grade K-2

1. Uses reading skills and strategies to understand a variety of informational texts.
4. Relates new information to prior knowledge and experiences.

Listening and Speaking

Standard 8 Level 1 Grade k-2

8. Listens and responds to a variety of media.

Thinking and Reasoning

Standard 1 Level 1 Grade K-2

Understands and applies the basic principles of presenting an argument.

Standard 5 Level 1 Grade K-2

Identifies simple problems and possible solutions

Standard 3 Level 1 Grade K-2

1. Identifies the similarities and differences between persons, places, things and events using concrete criteria.

Mathematics

Standard 1 Uses a variety of strategies in the problem-solving

Level 1 Grade K-2

1. Draws pictures to represent problems.
2. 4. Makes organized lists or tables of information necessary for solving a problem.

Standard 3 Level 1 Grade K-2

3. Understand basic estimation strategies

Standard 4 Level 1 Grade K-2

2. Understand the basic Measures of length, width, height, weight, and temperature.

Life Sciences

Standard 6 Level 1 Grade K-2

1. Knows that plants and animals need certain resources for energy and growth
3. Know that living things are found almost everywhere in the world and that distinct environmental support the life of different types of plants and animals.

Standard 13 Level 1 Grade K-2

Understands that in science it is helpful to work with a team and share the findings with others.

Standard 12 Level 1 Grade K-2

1. Knows that learning can come from careful observations and simple experiments.

Standard 5 Level 1 Grade K-2

1. Knows the basic needs of plants and animals (air, water, nutrients, light or food, shelter).
2. Knows that plants and animals have features that help them live in different environments.

Standard 4 Level 1 Grade K-2

3. Knows that differences exist among individuals of the same kind of plant or animal.

Standard 7 Level 1 Grade K-2

2. Knows that there are similarities and differences in the appearance and behavior of plants and animals.



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Amazon Rainforest Conservation, Brazil

Lesson 1: Rainforest Complexity and Diversity

Concept

Maintaining interdependence and diversity among plants and animals is essential in sustaining rainforests.

Essential Question

How can so many plants and animals share such a small space?

Additional Resources:

- **Resource Index** - Check out this page at <http://www.rainforest-alliance.org/programs/education/teachers/curriculum/resources/index.html> for additional supplemental materials that complement these dynamic units and to access many of the resources listed below.
- **Slideshow** – The Learning Site provides a slideshow and script about Brazil that includes background information about the animals, people and landscape of this region. The slideshow can be downloaded for viewing in the classroom, printed out and read as a story, or viewed online with the students.
- **Unit-Specific Story** - The Rainforest Alliance has developed an original story for use with this unit, available in English, Spanish and Portuguese. The story is available to download and print or can be viewed on-screen.

Brothers of the Rainforest

- **Species Profiles** – The species profiles, available to view on screen or download from the beginning of the unit or the Resource Index, include photos, habitat, foraging behavior, group relationships, threats and many more facts.
 - Heliconia
 - Amazonian Tapir
 - Kapok Tree
 - Leafcutter Ant
 - Amazon River Dolphin
- **Rainforest Poster:** Download and print out this colorful two-page poster, which is available for you to use in explaining the layers of the rainforest, its products and the environmental threats facing many rainforests around the world.

Inside the Canopy – Structure and species of the rainforest
Status Report – What is happening to the rainforest

- **Rainforest Products** – Visit <http://www.rainforest-alliance.org/resources/forest-facts/lives.html> for a summary of products found in our homes and supermarkets that either originated in tropical forests or are currently produced there.
- **IMAFLORA** - Check out this online resource for more information about the Rainforest Alliance's partner group in Brazil: <http://www.rainforestalliance.org/programs/aar/brazil.html>
- **Profiles in Sustainability** – Visit <http://www.rainforest-alliance.org/programs/profiles/index.html> for case studies on companies who work closely with the Rainforest Alliance to ensure that their practices protect wildlife, workers and communities.
- **Venn Diagram Template** – Print out a photocopy-ready Venn diagram for use in this unit.
- **Certificate of Accomplishment** – Print out colorful rainforest certificates for your students to commemorate their completion of these units.

Informational Introduction for the Teacher

In nature, diversity is the total amount of different living things in a place, and is a result of environmental conditions in that place. Rainforests are complex, and host an extraordinary level of diversity.

Rainforests are home to a fantastic variety of plant life. A typical 10 km square area contains 1,500 kinds of flowering plants and 750 tree species. These plants form a system of layers in the rainforest called the forest floor, understory, canopy and emergent layer.

The rainforest is an ideal place for many types of animals to live. There is plenty of water, shelter and food, and it is warm all year. These conditions mostly benefit the insects that can grow and reproduce the year round, unlike the annual cycle in colder climates. Some insects grow very large. "Walking sticks" reach lengths of over 12 inches. Beetles can be as large as your hand and some moths are the size of small birds. But the really amazing thing about them is their variety. One tree in the Amazon can house 200 different types of insects; not 200 insects but 200 different types! Scientists believe many insect types have yet to be named and catalogued.

It is important to understand that the rainforest animals play a vital role in maintaining their habitat. Because there is no wind in the lower layers to carry pollen from one flower to another, many plants depend on insects for pollination. The 900 varieties of fig tree is a good example of this process as there are 900 different kinds of wasps that pollinate them. In order for plants, like the fig tree, to survive they need fruit-eating birds, mammals and even fish to help spread their seeds.

Informational Introduction for the Students

Tall, mighty trees, millions of insects, constant sounds, monkeys climbing overhead and more birds than you've ever seen in one place --Tropical rainforests are places of tremendous amounts of life. How can so many things share such little space? Rainforests are complex systems. Our exploration of how they work will involve understanding the weather, the structure of the forest, the way that each plant and animal depends on another...basically how complex and fragile a rainforest is.

Step 1 - CONNECT (The Concept to Prior Knowledge)

Challenge

Students understand the diversity and complexity of different biomes including their particular biome and that of the rainforest system. The diversity and complexity of the rainforest will emerge by comparing plants and animals of their own neighborhoods to what they have learned about the rainforest.

Materials (per class)

- Paper and pencils
- Access to daily weather report (i.e., newspaper or Internet)
- Large chart for Bio Profile of the schoolyard
- Rainforest Alliance species profiles and slideshow

Procedure

1. Students participate in a BioBlitz of their neighborhood or schoolyard by observing and recording every plant and animal within a designated area. The area should be observed by all separately so they can combine their findings and designate objects as rare or common, depending on how many students observe that particular species.
2. The BioBlitz (an activity coined by author Lynne Cherry) should be done three consecutive times over the course of a week. It can be done out of the windows of a school classroom as long as the area is the same as the area observed directly (on the ground). At least one session should be out of doors.
3. Every object observed should be recorded – insects, weeds, birds, squirrels, etc. The weather (temperature, wind, humidity) should be recorded as well.
4. All of the information is transferred to a large chart that is prominently displayed in the classroom as the "Bio Profile for the Schoolyard."
5. Reviewing Web sites for the rainforest and reading reference books and resources from the Rainforest Alliance Learning Site, students prepare a chart of the rainforest to hang next to their own BioBlitz that records the plants and animals they would observe if they did a similar BioBlitz in the rainforest.
6. Students compare and contrast the two charts, choosing the one that has the most diversity and complexity.
7. Have students guess at reasons that allow this diversity to exist in a small area.
8. Discuss the layers of the rainforest and how each story is filled with a different interdependent world. Discuss the temperature and rainfall and how they impact the range of species that live in the rainforest.

Step 2 - LITERATURE/DISCUSS (Give Expert Information Book; Ask Questions)

Challenge

Students will understand and be able to identify the relationship among different species in geographical locations.

Materials (per class)

- Large world map
- Smaller map of Brazil
- Book: **The Great Kapok Tree** by Lynne Cherry

Procedure

1. Take one or two of the animals that were mentioned in the local BioBlitz. Discuss the shelter, food sources, water, safety/protection, the way they move and their range of movement, animals they get along with, animals that prey on them, etc.
2. Discuss with children what would happen to a squirrel (or other local animal) if one source of food was taken away or if the source of materials for their shelter disappeared.
3. Using a large map, locate the Brazilian rainforest. Move from a large global map to show where the children live to a smaller map of Brazil. Show the equator and how that influences the weather. As one moves closer to the equator, the sun has a greater effect on rainfall and temperature.
4. Visualize with children how it would feel and sound to walk in the rainforest.
5. Read Lynne Cherry's book, **The Great Kapok Tree**. Discuss the inhabitants that are mentioned in the book.
6. Talk with students about how the different animals depend on one another to survive. Take three different animals, preferably including the tapir and the toucan, and list all the things children noticed about them. List all of the things that each animal needs to survive; food, shelter, safety/protection, animals or plants they depend on, where they live in the rainforest (forest floor, canopy, etc.), water, the way they move.
7. Pose the questions: What would happen if the water disappeared? How important is the kapok tree to these animals? Who and what do they depend on for survival?

Step 3A – PRACTICE (Math and Learning Centers)

Challenge

Students will understand that annual ranges of temperature and exposure to the sun are factors in the complexity of a biological system.

Materials

- Lined or graph paper
- Pencils
- Access to Weather Channel Web site

Procedure

1. Students record data about the annual temperatures and rainfall in their geographical area from the Weather Channel Web site. Temperatures from December, February, April, June, August and October should be recorded.
2. Students record data about the annual temperatures and rainfall from Brazil's Amazon rainforest for the same months.
3. Using the two graphs, students will analyze the differences in rainfall and temperature and draw conclusions about growing seasons and lifecycles of different animals and plants in the two locations.
4. Discuss what would happen if the temperature levels for the two places were reversed.

Step 3B - CREATE (Performance Tasks Related to Standard Indicators)

Challenge

Students will realize the importance of keeping all aspects of a temperate and rainforest ecological system intact for the health and safety of the animals and plants.

Materials

- Book: **The Great Kapok Tree** by Lynne Cherry
- Rainforest Alliance species profiles
- Drawing paper
- Drawing/coloring utensils

Procedure

1. Using **The Great Kapok Tree** by Lynne Cherry as a model and resources including the species profiles provided on the Rainforest Alliance Web site at <http://www.rainforest-alliance.org/resources/forest-facts/species-profiles/index.html>, students will research one of the species (plant or animal) mentioned in Lynne Cherry's book.
2. Students will draw a picture that begins with their species in the middle of the page.
3. Students fill out the page with all of the plants and animals that are important to that animal for shelter, food, water, safety, friendship, survival and health.
4. Children will display pictures in a gallery and make observations about how other pictures are the same or different than their own. Which animals are repeated in different pictures, which only appear once, etc.

Step 4 – PRESENT

The pictures and the student observations are collected and bound into a book.

LESSON 1 ASSESSMENT RESULTS:

Teacher observations of tasks with rubrics as listed below, as well as collected work samples.

Assessment Guidelines	3 = P (Proficient)	2 = S (Satisfactory)	1 = NW (Needs Work)
1. Student describes the diversity in their schoolyard/neighborhood by developing a catalogue of plants and animals within their schoolyard/ neighborhood in their Bio Profile.			
2. Student locates Brazil and the location of their school on a globe.			
3. Student creates a chart that compares and contrasts the plant and animal populations within their neighborhood with that of the Brazilian Rainforest.			
4. Student discusses how the location of each area (their schoolyard and the rainforest) affects the weather, temperature, light, etc.			
5. Student creates a chart that compares the temperature and rainfall in their own geographical area with that of the Brazilian rainforest over a six-month period and notes its influence on species.			
6. Student researches and develops a profile of one animal or plant in the Brazilian rainforest detailing in a drawing the elements necessary for the survival of that species.			