Fourth Grade
Ecuadorian Rainforest

National Standards for Grade Four Lessons

Language Arts Writing
Standard 4 Level 2 Grade 3-5
2. 3. 4. Gathers and uses information for research purposes (encyclopedias, dictionaries, electronic media).
Uses multiple representations of information (maps, charts, diagrams, tables) to find information for research topics.
7. Uses strategies to compile information into written reports or summaries.

Reading
Standard 7 Level 2 Grade 3-5
Uses reading skills and strategies to understand a variety of informational texts.
5. Summarizes and paraphrases information in texts.
6. Uses prior knowledge and experience to understand and respond to new information.

Listening and Speaking
Standard 8 Level 2 Grade 3-5
Contributes to group discussions.
Asks questions in class
Responds to questions and comments.
Listens to classmates and adults.
7. Makes basic oral presentations to class.
10. Organizes ideas for oral presentations.

Reading
Standard 6 Level 2 Grade 3-5
Uses reading skills and strategies to understand and interpret a variety of literacy texts.
9. Makes connections between characters or simple events in a literary work and people or events in his or her own life.

Thinking and Reasoning
Standard 3 Level 2 Grade 3-5
4. Makes comparisons between countries in terms of relatively concrete characteristics (size, population, products).

Standard 1 Level 2 Grade 3-5
Uses facts from books, articles and databases to support an argument.

7. Recognizes when a comparison is not fair because important characteristics are not the same.

Standard 5 Level 2 Grade 3-5
Identifies issues and problems in the school or community that one might help solve.

Mathematics
Standard 1 Level 2 Grade 3-5
Uses a variety of strategies to understand problem situations.
Represents problems situations in a variety of forms.

Standard 3 Level 2 Grade 3-5
7. Solves real world problems involving number operations.

Standard 4 Level 2 Grade 3-5
Understands the basic measures perimeter, area, volume circumference.
Selects and uses appropriate tools for given measurement situations.
4. Understands relationships between measures.
Uses specific strategies to estimate quantities and measurements.

Standard 9 Level 2 Grade 3-5
2. Understands that mathematical ideas and concepts can be represented concretely, graphically, and symbolically.

Life Science
Standard 6 Level 2 Grade 3-5
Knows the organization of simple food chains and food webs.
Knows the transfer of energy.
Knows that changes in the environment can have different effects on different organisms.
Knows that all organisms (including humans) cause changes in their environments and these changes can be beneficial or detrimental.

Standard 1 Level 2 Grade 3-5
Understands atmospheric processes and the water cycle.

Standard 4 Level 2 Grade 3-5
5. Knows that the characteristics of an organism can be described in terms of a combination of traits; some traits are inherited and others result from interactions with the environment.

Standard 5 Level 2 Grade 3-5
Knows that living organisms have distinct structures and body systems that serve specific functions in growth, survival, and reproduction. (Body structures for walking, flying, or swimming).

Standard 7 Level 2 Grade 3-5
3. Understand the concept of extinction and its importance in biological evolution.
Knows ways in which living things can be classified.

Standard 9 Level 2 Grade 3-5
Understands the sources and properties of energy.

Standard 11 Level 2 Grade 3-5
Knows that good scientific explanations are based on evidence (observations) and scientific knowledge.
Knows that scientists make the results of their investigations public.

Standard 13 Level 2 Grade 3-5
Knows that people of all ages, backgrounds, and groups have made contributions to science and technology throughout history.

Standard 12 Level 2 Grade 3-5
Plans and conducts simple investigations.
4. Uses appropriate tools and simple equipment.

Fourth Grade
Ecuadorian Rainforest

Lesson 1: What would Halloween be like without the Ecuadorian rainforest?

Concept
Rainforests are home to an extraordinary number of plant types, including some of our favorite foods. Students will understand that food comes from far away places and, as a result, has hidden costs associated with its production. Students will understand the relationship between farming practices and the environment that surrounds farms. Students will research sustainable practices of cocoa farming that help protect the quality of environments while producing essential ingredients for food products. Students will understand the work of conservation research teams who work to assure quality of life for humans and other species.

Essential Question:
What would Halloween be like without the Ecuadorian rainforest?

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 Ecuador 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 these units, available in English, Spanish and Portuguese. The story is available to download and print or can be viewed onscreen.

Romel's Rainforest Home

- **From the Bean to the Bar: Chocolate Slideshow** - Where does chocolate come from? Take a journey that that follows the production of a chocolate bar from the bean to your supermarket. The slideshow can be downloaded for viewing in the classroom, printed out and read as a story, or viewed online with the students.

- **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.

  – Bromeliad
  – Ocelot
  – Great Curassow
  – Capuchin Monkey
  – Three-Toed Sloth

- **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

- **Terrarium Instructions –** Download directions for making a terrarium in your classroom.

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- **Teacher summary/Chachi Community Profile** – The Rainforest Alliance Learning Site provides a downloadable overview of Chachi cocoa farmers in Ecuador with useful information to introduce you to the lesson topic.

- **Conservación y Desarrollo (Conservation and Development)** – Check out this online resource for more information about how the Rainforest Alliance's partner group in Ecuador, *Conservación y Desarrollo*, is helping the Chachi protect their precious ecosystems: http://www.rainforestalliance.org/programs/aar/ecuador.html

- **Profiles in Sustainability** – Visit http://www.rainforestalliance.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.

- **Certificate of Accomplishment** – Print out colorful rainforest certificates for your students to commemorate their completion of these units.

Informational Introduction for the Teacher

This lesson guides students in an exploration of sustainable agricultural practices directly related to the lives of people living in the rainforest. The connection is made through chocolate and cocoa farming. By engaging students in a study of the origins of chocolate, we will introduce the impact of increased need/want for chocolate on the environment where it is grown and species that surround those farms. The unit focuses specifically on the Chachi people, who protect their forest from destruction by sustainably harvesting cocoa. The Chachi participate with the Rainforest Alliance in developing sustainable farming techniques that conserve the rainforest while providing the local people with a means for earning an income.

Informational Introduction for the Students

Go into almost any backpack in your school and you will find empty chocolate wrappers or chocolate treats waiting to be eaten. Chocolate is a favorite candy of American children and children all over the world. Halloween is a holiday that increases the sale of chocolate. Where does all this chocolate come from? Who produces the ingredients for this treat? As the desire for more chocolate increases, farming of chocolate increases. What effect does chocolate farming have on the landscape, the people and the different animals that live around those farms? What happens when trees are cut down in an area that is rich in biodiversity and replaced with farms that grow only cacao plants? How might these changes affect our lives so far away?

Step 1 - CONNECT (The Concept to Prior Knowledge)

Challenge

Students are given a number of typical Halloween treats and work in groups to determine which foods came from the rainforest (chocolate) and which foods came from temperate regions (apples, popcorn). Students examine ingredient lists on candy wrappers and brainstorm the origin of these food items. After creating two groups, students imagine what Halloween would be like without chocolate.

Materials

- Chocolate candies
- Temperate regional sweets (honey, popcorn, fruit)
- Paper, pencils

Procedure

1. Teachers will need to gather enough chocolate candies and temperate regional sweet food (honey, popcorn, fruit) to divide among students.

2. Divide the class into small groups (3 – 4) and have them make columns on large sheets of paper headed by each candy item.

3. Reading the ingredients, have students list the ingredients under each candy type.

4. Have students make guesses about where these items originate.

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

Challenge
Students will discover the wide range of places that supply ingredients for simple candies.

Materials
- Internet access
- Charts from Step 1
- Ecuador slideshow (http://www.rainforest-alliance.org/programs/education/teachers/curriculum/ecuador/slideshow/ecuador-slideshow.pdf)
- From the Bean to the Bar: Chocolate Slideshow (http://www.rainforest-alliance.org/programs/education/teachers/curriculum/ecuador/slideshow/cocoa_slideshow.pdf), to take a delicious journey that follows the production of a chocolate bar from the rainforest to your supermarket.
- Sweets from Step 1

Procedure
1. To learn more about food origins, have students do an Internet search on the ingredients of one chocolate and one non-chocolate candy.

2. Using the large charts with their 'guesses', students list the origin of the food ingredients next to the guesses made on their charts.

3. To learn more about chocolate food origins, students view a slideshow about Ecuador and how chocolate is grown and follow the production line from the bean to the chocolate bar.

4. Students note which foods come from tropical rainforest areas and revisit their original treats, reconsider their group choices, and identify which ones would not exist if rainforests disappeared.

Step 3A - PRACTICE (Math and Learning Centers)

Challenge
Students will compare and contrast the origins of the ingredients in their candy choices and calculate the expense of its travel to their desks. They will choose a candy that traveled the least number of miles and one that traveled the most number of miles.

Materials
- Paper, pencils
- Art supplies

Procedure
1. Students create maps on large sheets of paper illustrating the origins of their treats marking whether they are local or exotic in origin and highlighting the distance between their home and the farms.

2. Students calculate the total miles it took for their Halloween treats to get from the farms where they were grown to their bags.

3. Students multiply the number of miles by .38 to calculate a rough cost for this travel in dollars. Mark this expense on the maps.

4. Students compare and contrast the miles and the expense of each item.

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

Challenge
Students create a bag of treats from local areas and compare it to the typical Halloween treats they receive.

Materials
- Paper, pencils
- Treats from local and tropical areas

Procedure
1. Students create a bag of treats that are designated as 'local' in origin.

2. Students write a paragraph that describes the impact of the different treats on the environment. Students should refer to the distance and resulting expense to transport local treats and compare these distance/cost amounts to the chocolate candies.

3. Students write a short story that relates the "life" of a chocolate candy tracing its origins and production. Because chocolate usually doesn't grow in temperate zones, ask the children to comment on chocolate that is grown sustainably and chocolate that may damage the long-term health of a tropical place of origin.

4. Students create a new "origins" label for candy that states/relates the real cost of a candy that comes from a tropical location. Reference to sustainable production versus non-sustainable production should appear on the labels.

Step 4 - PRESENT (Edit Work/Students Orally Present Projects)

Challenge
Students invite other students and teachers to "trick or treat" in their classroom. Students explain the difference between the treats highlighting the different plants growing in tropical rainforests and temperate areas.

Materials
- Labels from Step 3B

Procedure
1. Students attach new labels to candy that comes from distant places so that visiting students can read the story of its production.

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 shows understanding of the multiple ingredients and multiple origins of ingredients that are contained in candy.			
2. Student researches and identifies the origins of ingredients by temperate or tropical classifications.			
3. Student measures on maps the distance ingredients must travel to be processed into candy.			
4. Student creates a map that indicates the distances ingredients travel from their source through production and dissemination in markets.			
5. Student creates labels that delineate the production costs of candy, indicating the hidden costs and making them explicit.			
6. Student gives a two-minute oral presentation on the differences in cost between locally grown foods and foods that travel long distances.			

Fourth Grade
Ecuadorian Rainforest

Lesson 2: Why does the cacao tree need a tropical rainforest to grow?

Concept
Cacao plants have specific requirements to survive. Plants thrive naturally in different biomes. Growing conditions and requirements can be affected by human activity.

Essential Question
Why does the cacao tree need a tropical rainforests to grow?

Additional Resources

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Romel's Rainforest Home

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  - Bromeliad
  - Ocelot
  - Great Curassow
  - Capuchin Monkey
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- **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.

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- **Terrarium Instructions –** Download directions for making a terrarium in your classroom.

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- **Conservación y Desarrollo (Conservation and Development)** – Check out this online resource for more information about how the Rainforest Alliance's partner group in Ecuador, *Conservación y Desarrollo*, is helping the Chachi protect their precious ecosystems: http://www.rainforestalliance.org/programs/aar/ecuador.html

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Informational Introduction for Teachers

Biomes are large areas that have the same general climate conditions (extremes of temperature and amount of rainfall), plant life and animal life. Within biomes there are smaller bioregions that may have special characteristics, such as mountains, rivers, lakes, canyons and other physical features that can influence plant and animal life. Knowing these differences, one begins to understand the importance of keeping all biomes intact so that biodiversity is maintained.

Step 1 - CONNECT (The Concept to Prior Knowledge)

Challenge

Where does chocolate come from?
Students describe the story of a chocolate bar, including harvesting, processing, packaging and shipping.

Materials
- Research tools (Internet access, etc.)

Procedure
1. Students are introduced to a concept map before writing their stories.
   Concept Mapping: As a whole class, with the teacher recording on the board, students learn to brainstorm answers to the question: Where does a chocolate bar come from?

   Put the words "chocolate bar" in the center of a piece of paper and begin to record all the different responses to the question.

   Prompts might include:
   a. origin of ingredients
   b. production/manufacturing sites
   c. different sources of transportation
   d. stores where it was bought
   e. packaging and its origins, etc.

   This will create a sense of the full cost of the chocolate bar.

2. Have each student write a short story from the perspective of the chocolate bar.

   Resources might include:

   From the Bean to the Bar: Chocolate Slideshow
   http://www.rainforest-alliance.org/programs/education/teachers/curriculum/ecuador/slideshow/cocoa_slideshow.pdf
   This presentation, available from the Resource Index, takes you on a delicious journey that follows the production of a chocolate bar from the bean to your supermarket.

   The Sweet Science of Chocolate
   www.exploratorium.edu/chocolate
   This Web site provides background information on the origins of chocolate, describes how to process cocoa beans and make chocolate bars and discusses the possible health benefits of eating chocolate.

   Hershey's factory tour
   http://www.hersheys.com/tour/pic_text/intro.htm
   This Web site takes you through the path that Hershey's chocolate takes from the forest to the factory.

   About Cacao trees, pods and seeds
   http://www.chocolate.org/choctree.html
   http://home.howstuffworks.com/chocolate1.htm
   These sites give an overview of what the cacao tree looks like and what part of the tree chocolate is derived from.

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

Challenge
What do cacao trees need to survive?
Students will research cacao trees, focusing on the conditions necessary for growing the crop.

Materials
- Story: **Romel's Rainforest Home**, a Rainforest Alliance story
- Paper, pencils

Procedure
1. Read aloud: **Romel's Rainforest Home,** a Rainforest Alliance original story about a Chachi boy who lives in the northwest corner of Ecuador. Discuss the different living conditions of the rainforest that Romel and his family experience.

2. Have students talk about the conditions that exist in Romel's country that are necessary for the growth of the cacao tree.

3. Have students write a short biome story that describes the conditions of the rainforest from the cacao tree's perspective. What does the world look like from the perspective of the cacao tree? What does the tree experience each day?

Step 3A - PRACTICE (Math and Learning Centers)

Challenge
Why can't we grow our own chocolate?
Students compare the environmental conditions in their local region to the conditions in which cacao trees grow naturally. Students create charts and maps to organize their findings and highlight the environmental differences between temperate forests and tropical rainforests.

Materials
- Large chart paper
- Magic markers

Procedure
1. Teachers create a large chart for the front of the classroom that will include the aspects of different biomes. A biome is a group of ecosystems that have similar climate and plant species. Select two or three examples of different biomes to be filled in as examples for students. These might include arctic areas, desert, temperate zones and tropic zones.

   The chart should include:
   a. Climate
   b. Plant life
   c. Animal life
   d. Space for student observations

2. Discuss the differences in biomes around the world and how those biomes provide just the right conditions for certain kinds of plants and animals to survive. The chart should give an overview of the earth's biomes.

3. Create a chart that can be filled in by students that describes their biome and more specifically, their bioregion. A bioregion is an area whose limits are naturally defined by features such as mountain ranges or ecosystems. This chart will be filled in by individual students and edited in small groups to further describe the place where they live. Chart should include: climate, plant life, animal life and student observations.

4. Using the description from **Romel's Rainforest Home**, fill in a chart that contains what you know about the rainforest.

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

Challenge
Students will compare and contrast the growing conditions of a temperate tree and the cacao tree.

Materials
- Art supplies (construction paper, glue, markers, etc.)

Procedure
1. Half of the students in the classroom should create 3D models of cacao trees, including chocolate pods, the surrounding forest and evidence of human and other animal activity. Labels of the growing conditions (climate, rain amounts, sun, pollinators, etc.) should be placed around the tree.
2. The other half of the classroom should create a 3D model of a local tree including the seed pods, surrounding plant life, evidence of animal and human activity as well as the growing conditions.

Step 4 - PRESENT (Edit Work/Students Orally Present Projects)

Challenge
Students present their models to their peers, explaining how their tree depends on the conditions created by the tropical rainforest or temperate forest biome. After, students combine their models to create a larger tropical rainforest or temperate forest.

Materials
- 3D cacao tree models from Step 3B

Procedure
1. Students will display their models and write a short description of the differences among the temperate and tropical trees. This should include an observation about why each of the trees might thrive or fail in the other biome.

LESSON 2 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 understands the origin of ingredients, production sites, different sources of transportation, store sites, packaging and raw materials, and can develop a concept map to represent these paths.			
2. Student shifts perspectives and writes a fictional/nonfiction story of the chocolate bar production including all aspects from the concept map.			
3. Student researches and identifies all aspects necessary for the healthy production of cocoa beans and compiles these in a research paper.			
4. Student researches and charts the rainfall and temperature of rainforest conditions in Ecuador.			
5. Student works well with a team and creates a biome map of their local region and compare it to the Ecuadorian rainforest.			
6. Student creates a 3D model that is labeled with the necessary growing conditions for cocoa, including aspects of soil, temperature, rainfall, pollination, ripening schedule and sunlight.			
7. Student effectively explains his/her model to peers.			

Fourth Grade
Ecuadorian Rainforest

Lesson 3: How is a frog able to swim in the trees?

Concept
Many plants and animals have developed unique systems of interdependence. These systems are essential for their survival.

Essential Question
How is a frog able to swim in the trees?

Additional Resources

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Step 1 - CONNECT (The Concept to Prior Knowledge)

Challenge
Students examine the different aspects of their day-to-day survival. For example: How do they adapt to temperature changes? What do they eat? What do they drink? How do they travel from place to place?

Materials
- Ecuador Slideshow: Available at on the Resource Index

Procedure
1. Each student draws a picture or lists the things that he/she most needs for survival in their particular region of the country. This can include physical conditions like food and types of shelter. It might also include emotional things like friends and safety. It should take into account the regional climate, rainfall, seasons, etc.

2. Students watch the Ecuador Slideshow from the Rainforest Alliance to get a feel for the bioregional characteristics of the tropical rainforest.

3. Have students revise the list of their daily survival activities as if they were going to go to the rainforest to live. Would their needs be the same in the rainforest as in their current home?

4. Additional References:
The Secrets of the Tropical Rainforest: Hot and Humid and Teeming with Life by Jean Hamilton

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

Challenge
Students investigate and analyze the different ways that plants and animals are interdependent in different bioregions.

Materials
- Book: **Plants and Planteaters**, by Michael Chinery, or another book about bromeliads
- ***The Poison-Arrow Frog and the Bromeliad***: Available at http://www.rainforest-alliance.org/programs/education/kids/hands-on-projects/frog.html

Procedure
1. Students select a plant or animal from their local bioregion and do a chart that lists all the things that animal or plant depend on in the environment (bees, water, soil, wind, etc).

2. Students learn about bromeliads and discuss the concept of interdependence and survival needs for the bromeliad in the tropical biome and particular bioregion of the plant's location.

3. Teachers bring in different examples of bromeliads (purchased at a local nursery) or photographs of bromeliads if plants not available. Students examine examples of bromeliads from a nursery. Students discuss the similarities and differences between the bromeliad and the plant species selected for observation from their own bioregion.

4. Read aloud: **Plants and Planteaters**, by Michael Chinery (or another book on bromeliads and tree frogs).

Step 3A - PRACTICE

Challenge
Students decide what is necessary to their survival and what could be removed from their systems of survival without causing any harm.

Materials
- Paper, pencils

Procedure

1. To better understand their level of dependence on certain systems in their home, students "take apart" their homes and identify the major systems it involves.

2. Students analyze where the energy comes from that is used to power these systems (hot water, air conditioning, heat, refrigeration, lighting, etc.).

3. Students discuss which 'survival' systems they might do without and the reasons why.

4. Connect the concept to species survival. Refer to the example of the bromeliad and tree frog in Step 2. Ask students to consider if any part of the bromeliad/tree frog system can be removed without harming one of the organisms.

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

Challenge

Students consider the phrase: "Chachi people consider the rainforest a living being."

Materials

- Ecuador Slideshow, Species profiles and story: Available on the Resource Index
- Internet access to the Ecuador Adopt-A-Rainforest page or printout: http://www.rainforest-alliance.org/programs/aar/ecuador.html

Procedure

1. Students research the Rainforest Alliance resources related to the Ecuador rainforest. Students discuss the different ways groups of people might think about land and its resources and consider different approaches to land use.

2. Students write an essay that explores the way they think about the place where they live. Students should address the way they think about aspects of the land. For example: What places do they consider 'useable'? Which places would they consider special? What are consumable resources in the place where you live? What aspects of the land would you consider off limits to development?

Step 4 - PRESENT (Edit Work/Students Orally Present Projects)

Challenge

Students consider the effects of removing certain plants or animals from their bioregion on their survival or quality of life.

Materials

- Profiles in Sustainability: Available at http://www.rainforest-alliance.org/profiles

Procedure

1. Students write a story that traces the effect of removing bees from their landscape. Or what would happen if all the trees were removed?

2. From Romel's point of view, students think about and discuss what might happen in the rainforest if the tall trees were removed? What if the land was cleared near a river?

3. Discuss with the class the idea of sustainable management of land, in which wood and other forest products can be harvested in a way that keeps the entire forest intact.

4. Have students consider managing the land so that essential characteristics are left intact while others are used for resources.

5. For more information and case studies of companies which are involved in sustainable land management, visit the Profiles in Sustainability page.

LESSON 3 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 identifies the conditions necessary for their survival in their local habitat and revises their list according to living within a rainforest habitat.			
2. Student researches the life conditions of a bromeliad and identifies the similarities and differences of this tropical plant to two plants from their local area.			
3. Student identifies the aspects of their living environment that are necessary as compared to those that are unnecessary but desirable.			
4. Student writes an essay providing an explanation for the concept of the environment as a living being.			
5. Student writes a story tracing the removal of bees from their landscape and resulting changes to the land.			

Fourth Grade
Ecuadorian Rainforest

Lesson 4: How can we keep our forests intact and have our chocolate too?

Concept
By using different methods of growing and harvesting rainforest foods, we can sustain its biodiversity.

Essential Question
How can we keep our forests intact and have our chocolate too?

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 Ecuador 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 these units, available in English, Spanish and Portuguese. The story is available to download and print or can be viewed onscreen.

Romel's Rainforest Home

- **From the Bean to the Bar: Chocolate Slideshow** - Where does chocolate come from? Take a journey that that follows the production of a chocolate bar from the bean to your supermarket. The slideshow can be downloaded for viewing in the classroom, printed out and read as a story, or viewed online with the students.

- **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.

  - Bromeliad
  - Ocelot
  - Great Curassow
  - Capuchin Monkey
  - Three-Toed Sloth

- **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

- **Terrarium Instructions –** Download directions for making a terrarium in your classroom.

- **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.

- **Teacher summary/Chachi Community Profile** – The Rainforest Alliance Learning Site provides a downloadable overview of Chachi cocoa farmers in Ecuador with useful information to introduce you to the lesson topic.

- **Conservación y Desarrollo (Conservation and Development)** – Check out this online resource for more information about how the Rainforest Alliance's partner group in Ecuador, *Conservación y Desarrollo*, is helping the Chachi protect their precious ecosystems: http://www.rainforestalliance.org/programs/aar/ecuador.html

- **Profiles in Sustainability** – Visit http://www.rainforestalliance.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.

- **Certificate of Accomplishment** – Print out colorful rainforest certificates for your students to commemorate their completion of these units.

Step 1 - CONNECT (The Concept to Prior Knowledge)

Challenge
Students consider the different perspectives on the use of resources that are available from different bioregions.

Materials
- Magazine/newspaper articles about local development projects

Procedure
1. Students consider the different uses of a tree. Brainstorm the different ways that a tree might represent value among students and among different interest groups like loggers, farmers, bee keepers and fruit farmers.

2. Teachers prepare students by identifying a local development project that students can relate to. Provide magazine/newspaper articles and/or have local decision-makers communicate the issue with students.

3. Teachers will design a simulation that will have students address the different interests of community members in a particular piece of land. A challenge from the local community is selected by students or by the teacher as a focus for discussion. It might be the future of an empty lot or a farmer's field that is for sale. Stakeholders are interested in using some of the local land for their own purposes. Students are to decide on a solution to which stakeholder(s) are entitled to use the local piece of land. Explain that a stakeholder is a person or group that has a direct interest or stake in a matter.

4. Help students identify the different interest groups and create a personal profile of a representative from each group of stakeholders. Include a representative from the plant and animals present in the bioregion.

5. Students take the roles of different stakeholders and have a debate about their right to use this land for their own purpose.

6. A panel of students who listen to debate and sit in decision-making roles consider the testimony and decide on a land use plan.

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

Challenge
Students consider land use decisions from another perspective, that of rainforest inhabitants.

Materials
- Story: **Romel's Rainforest Home**

Procedure
1. Students read **Romel's Rainforest Home**, a Rainforest Alliance story.

2. Students compare and contrast their communities and land use issues with Romel's community. Students identify the problems Romel presents and think about all the stakeholders involved.

3. Students research Ecuador's geography and focus on the different uses of the Ecuadorian rainforest.

   Resources for Discussion:

   Chachi Cocoa Farmers of Ecuador:
   http://www.rainforest-alliance.org/programs/aar/ecuador.html

   Profiles in Sustainability:
   http://www.rainforest-alliance.org/programs/profiles/index.html

4. Students enact a role playing sequence similar to that in Step 1 with a focus on the rainforest of Romel's family. Include a chocolate producer and consumer in the process.

Step 3A - PRACTICE (Math and Learning Centers)

Challenge
Students integrate their knowledge of chocolate production with the effects on the biodiversity and ecological integrity of the rainforest.

Materials
- Research tool (Internet, etc.)
- Paper, pencils

Procedure
1. Students research chocolate demand and land use issues and trends in tropical rainforests of Ecuador.

2. Students create word problems to teach others about how much chocolate people consume and how it affects tropical rainforests.

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

Challenge
Students shift their perspective from taking care of their own bioregion to taking care of the rainforest.

Materials
- Paper
- Art supplies

Procedure
1. Students create scenarios that ensure that the Chachi people (and Romel's family) can continue harvesting from the rainforest, cacao trees are made available for chocolate exports and the forest is conserved.

2. Challenge students to create comic strips stories to explain their scenarios.

Step 4 - PRESENT (Edit Work/Students Orally Present Projects)

Challenge
Students use their knowledge to take action to help conserve the rainforest.

Materials
- Comic strips from step 3B

Procedure
1. Students send their comic strips with letters to the Rainforest Alliance to share their knowledge about Ecuador's rainforest and their concern for the people of Ecuador. The comic strips might include suggestions about how different chocolate producers/manufacturers can ensure we can keep our forests intact and have our chocolate too.

LESSON 4 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 researches, identifies and creates roles for the different stakeholders in a local land-use debate accurately and objectively.			
2. Student researches and creates roles for a land-use debate within the Ecuadorian rainforest that includes cocoa farmers.			
3. Student participates in a role-play that includes a land-use debate between sustainable practice in cocoa farming and plantation/full-sun farmers and other stakeholders.			
4. Student surveys his/her peers and parents for an estimate of chocolate consumption and understands its impact on tropical rainforests.			
5. Student researches the ratio of raw cocoa beans to processed chocolate candy. Student calculates the number of cacao plants necessary to produce chocolate in different amounts for two different populations of American consumers.			
6. Student writes letter to chocolate candy producers that gives facts about the impact of chocolate production on the Ecuadorian rainforest and asks them to use sustainable practices.			