



Puerto Rican Parrot Paradise

Summary:

Through a visualization activity, a creative, factual report, and a collaborative critical thinking discussion, students will learn about Puerto Rican parrots, their lives and their habitats (such as El Yunque). They will understand the population fluctuation that these parrots endure due to natural and human causes.

Note: this lesson should take place later on in the year, after Rainforest ecosystems have been studied, and after lessons on predation and animals' competition for resources have been introduced.

Background Information:

The Puerto Rican parrot is the only native parrot in Puerto Rico. It is one of the rarest birds in the world. This island is the only place on earth where the beautiful, emerald green Puerto Rican parrots live in the wild. The Taino Indians, who lived on Puerto Rico before European settlers arrived there, called these parrots "Iguaca" because of the noisy, bugle-like squawks they make when they are taking off and flying.

The Puerto Rican parrot is about 11 inches in length and weighs about 10 ounces. Its tail is a short and squared-off, which is different from the long, pointed tail of a parakeet. The overall color of the Puerto Rican parrot is green. The wing tips are blue and usually are visible only when the bird is in flight. It has a white ring around the eyes and a red blaze above its beak.

This parrot eats mainly wild fruits, especially those of the Sierra palm, and in October, when other fruits are scarce, the Tabonuco fruit becomes an important part of its diet. The Parrots help to disperse the seeds of these fruits, leaving them

Grade Level: 3/4 grade

Goal:

Students learn about Puerto Rican parrots and their rainforest environment, and begin to develop social consciousness and responsibility for their future existence.

Key Concepts:

Habitat, habitat destruction (historical perspective), Endangered Species, Rainforest (its animals and its characteristics), layers of the rainforest, bird behavior, animal restoration projects

Objectives:

Upon completion of this lesson, students will:

- 1) Detail and explain some behaviors of a Puerto Rican Parrot.
- 2) Describe a P.R. parrot and explain how it fits into its habitat.
- 3) Note the role habitat destruction, competition, natural disasters, and predators have played in the preservation of a P.R. Parrot's species over many years.
- 4) Reflect on and appreciate a scientist's role to assist the parrot in its reproduction and survival skills.

Teaching Location:

Classroom & in an open area inside or outside

Lesson Time:

Three sessions of 1 hr. each: Intro, visualization, and start windsocks on Day 1, finishing windsocks, discuss. pop. on Day 2, writing letters and concl. on Day 3.

Subject Areas for Infusion:

Environ. Ed., Science, Lang. Arts, Art, Drama, Social Studies, Math

behind in their droppings as they move about the forest. This way, the seeds are spread out and are given the chance to grow in parts of the forest where there may be less competition for water, light and nutrients. The Puerto Rican parrot helps the forest regenerate naturally.

Puerto Rican Parrots start to breed when they are three to five years old, and they mate for life. The couple stays together for most of the year, except when the female is incubating the eggs, and then the male goes in search of food to support her. Nesting takes place between February and June, which is the driest part of the year. This is when the Sierra palm is fruiting, and there is a good food supply for the breeding birds and their chicks. Nests are made in holes and cracks in Palo Colorado trees, which the Iguaca clean out before the two to four eggs are laid. About 13 weeks later, the chicks are fledged and leave the nest cavity to spread their wings and fly around their rainforest home.

Standards:

Science:

- F.4.1
- F.4.3
- F.8.2
- F.8.7
- F.8.8
- F.8.10
- H.4.2

Environ. Ed.

- A.4.4
- B.4.6
- B.8.3
- B.8.5
- C.4.1
- C.4.3
- D.4.4
- D.4.5

Materials:

- Images of the Puerto Rican parrot
- 3 big sheets of green construction paper per student
- Smaller construction paper scraps
- Scissors, glue, tape, stapler
- Markers, paint, or crayons
- String (to hang windsocks)
- (Optional) Book *El Yunque: Exploring the rainforest of Puerto Rico*, by Lisa Johnson Vargas

Set-Up:

1. Gather all art materials in an area of the room for easy access.
2. Make an enlarged copy of the Visualization script for easy, fluid reading outdoors.
3. Gather or print some photos of P.R. parrots and El Yunque forest to share with the class. Place them in the front of the room. It might be nice to have available a map of Puerto Rico and/or El Yunque forest.

Procedure:

Introduction

Tell the students that today they are going to learn about a beautiful, rare, endangered creature that is very much at home in its tropical rain forest habitat. It's a bird that helps spread rainforest tree seeds and recycles other

Vocabulary

Endangered species: a species whose population is so small that it's in danger of becoming extinct.

Iguaca: the Taino Indians' name for the P.R. Parrot

in captivity: animals kept or sheltered from the wild

aviary: a large building where many birds are kept and raised

nest cavity: a sheltered opening in a tree or stump where a bird can prepare to lay her eggs

poaching: to hunt unlawfully, often by trespassing on protected property

birds' nests. It mates for life, meaning it never leaves its one chosen partner. The Puerto Rican parrot has a lot of unique traits, but there aren't many birds left. They are now an endangered species.

Ask the students what they already know about parrots. Mention a few other facts that are particular to the Puerto Rican parrot (from the lesson background) that the students may find interesting. You may choose to write them on the board, and use them in a later activity.

Now introduce/explain that El Yunque is the local name for The Caribbean National Forest in Puerto Rico. It is a tropical rain forest home to the Puerto Rican parrot. This kind of forest is found in warm climates in the tropics close to the equator (there are many in Venezuela as well). El Yunque is the only Tropical Rain Forest in the United States National Forest System, so it is very preserved and important to that country.

Activity 1: Visualization of a Parrot Paradise

1. Gather the students in a large open area, preferably outside. Ask them to find a place on the ground where they can lie down and close their eyes (No sleeping!) Ask them to keep their ears and imaginations open as you slowly read the following description of El Yunque rainforest to the students. This will give them a clear vision of the habitat to which the Puerto Rican Parrot is adapted. This rainforest is a parrot paradise home. (Note: This text is adapted from a description of El Yunque found at www.elboricua.com)

Listen: A rain forest is a quiet place. The ground is wet and muddy and is shaded by tall trees. The trees have huge trunks with small plants growing on them. There are vines hanging from their branches. There are small insects flying amidst the rain, fog, or mist. On the trees you see colorful birds, and butterflies. Many other animals hide in the branches and even under leaves on the ground. Listen. See the waterfalls and pools. Everywhere you look, is green. Orchids and bromeliads perch on the trunks and branches of the trees. Woody vines hang from and wrap around tree trunks and limbs.

Splash! More than 100 billion gallons of rainwater fall here every year. It rains about 4 times a day. The roots of rain forest trees do not go down very deep, so they can take up only water and food found near the top of the soil. The thick parts on the tree trunks are called buttresses keep the large trees from falling over.

Look up! The top layer of a tropical rain forests is called the **canopy**. The canopy is the tops of the trees which are the branches and leaves. Many rain forest animals live in the canopy. Below the canopy is the layer called the **understory**. This layer is made up mostly of tree trunks, young trees and air plants. Look down! The bottom layer of the forest is called the **forest floor**. The forest floor has few plants growing because the soil is very thin. Smell

the fresh soil. It is made up mostly of dead plant parts, fallen tree trunks covered in with moss, ferns, and fungi.

El Yunque is home to many species of animals. Frogs and spiders hide under leaves. Tickle, tickle! Ants, spiders, beetles, and even termites live under tree bark or in the soil. Snakes slither along the ground or wind around tree branches. Rodents and other small animals abound. Here you can find snails with shells as big as your fist.

At night the forest comes alive. Millions of insects fill the air. Moths suck nectar from flowers, bats fly out of their nesting place to feed. Ko-KEE! Millions of coquí frogs climb tree branches to feed on the insects. Duck! Bats and owls fly from their nests.

All around you tall majestic tabonuco trees drape the lower forest while giant tree ferns fan in the wind. Zooom-Za---Zoom. Hey, what are *you* doing here, lumberjack. Please get your chainsaw away. El Yunque Tropical Rain Forest is in danger of being destroyed. Too many trees have been cut. Civilization is getting too close to the forest. When the forest disappears the animals that live there will also disappear, including the incredible Puerto Rican parrot.

2. Ask the students to take one final snapshot and open their eyes. Go around the group and ask students to recall one salient detail from their mental snapshot. What kinds of things would a Puerto Rican parrot encounter in its rainforest habitat?
3. Tell students that at El Yunque there 50 species of birds, 11 species of bats, 8 species of lizards, and 13 species of tree frogs. El Yunque is a small rain forest and there are no large primates such as gorillas or monkeys, nor wild pigs or alligators. It's a place of great biodiversity, and all of these creatures and plants depend on each other for their survival.

Activity 2: Iguaca Windsock of Fascinating Facts

1. Set-up windsock art supplies as each table. Students may work in groups or individually. Ask students to take a green piece of rectangular construction paper and staple/tape into a tube shape. Pass around pictures of a Puerto Rican parrot, and read the description several times from the lesson background. Ask them to draw or cut out paper features such as eyes, beak, and feathers to affix to the face/upper body tube that resembles the P.R. Parrot.
2. Using the same green construction paper, ask the students to cut about ten strips that are about 3-4 cm wide. (It's okay if they aren't perfect. We're representing nature after all!) They should be as long as longest side of the paper. On the bottoms of some of them, the students may add blue or yellow colors, just as the back feathers of the parrot show.
3. Writing first in pencil and going over it in thin, black felt marker, the students should put one sentence on each strip that gives information

- about the parrot and/or its habitat. These are fact strips that summarize information each child found most interesting. (Note: you may choose to supply the students with fact sheets to read, such as the lesson background information, for easier recall.)
4. Staple, glue, or tape each strip to the bottom of the tube to represent wing/tail feathers. It should look like a windsock.
 5. Punch holes in the top and tie string. They can be hung from the windows or ceilings of the classroom.

Activity 3: Parrot Population Ups and Downs: Critical Thinking about Recovery Efforts

1. Read the following fact aloud to the class: When the Spanish settlers colonized Puerto Rico, shortly after Christopher Columbus came around, people believed there were more than one million Puerto Rican Parrots living on the island. In 1968, the total world population of Puerto Rican Parrots was recorded at 24. What had happened?
2. Ask the students to talk with their neighbor about this mystery. What are some possible reasons why such a huge population of birds was drastically reduced to such a small size? What kinds of activities might kill birds or prevent them from having more babies? What role do you think other animals, the environment, and humans played in this situation?
3. After a few minutes, ask groups to share some theories with the class. Then read the following information:

In 1836, the German naturalist (a scientist of nature), C. Moritz, reported “great” flocks of Puerto Rican Parrots on the Island, but by the end of that century, large areas of their rainforest home had been chopped down to make way for crops, and the numbers of birds fell drastically. *(If necessary, review information on rainforest destruction, and why it happens. It might be appropriate at some point in the lesson to remind students that rainforests are important for the environment by taking large amounts of carbon dioxide out of the air and giving us fresher cleaner air.)* Between 1899 and 1932, three major hurricanes hit Puerto Rico, and the remaining parrot populations lost even more of their habitat. By the 1930s, the Iguaca population was estimated at 2,000. Ten years later, only one population of no more than 200 Puerto Rican Parrots remained, in the Sierra de Loquillo Mountains in eastern Puerto Rico. *(Show it on a map.)*

Read and explain these reasons why the size of this population continued to reduce to 1968's all time low. As necessary, illustrate these facts by offering analogies to student's life—such as competition on the playground):

- Habitat destruction (*Ask why destroying something's land prevents it from living and having babies*)
 - Poaching (*Why do humans poach and how does that affect the population?*)
 - Competition for nest cavities from other species (*How does competition among animals prevent the parrot from having babies?*)
4. Now, as a class, brainstorm ways that scientists and rainforest visitors can help increase the population. Keep in mind that means safety, more food, more space, less predators, and more chances/places to reproduce. Make a giant brainstorm web on the board that offers ideas for addressing each of those needs. (For example, it may come up to train birds to watch out for certain predators (which is currently being done in aviaries by flying artificial hawks over parrot territory so they can recognize sounds and shadows)).
5. Now read the following as a conclusion:
- In 1968, a recovery program was started for this species, coordinated by the US Fish and Wildlife Service and the Puerto Rico Department of Natural and Environmental Resources. This program includes:
- A captive breeding program, where Puerto Rican Parrots are raised in captivity for re-introduction to areas where they used to live, or to re-stock the existing wild population if there is a natural disaster, such as a hurricane.
 - Construction of artificial nest cavities for the parrot
 - Nest monitoring, to make sure predators don't kill the birds at the nest, and to check that the eggs and chicks are healthy.
- Today, the wild population of Puerto Rican Parrots stands at around 60 parrots with over 100 in aviaries (bird homes and research centers) in Puerto Rico.
6. Engage the students in a letter-writing project that refines their composition skills, reviews the letter-writing structure and format, and helps students feel socially connected to the P.R. Parrot's population. Contact a local chapter (or the Puerto Rican chapter) or the US Fish and Wildlife Service, the USDA/Forest Service, the Puerto Rican Commonwealth Department of Natural and Environmental Resources, and/or the US Geological Survey / National Wildlife Health Center. Have the students write a few sentences about what they learned about Puerto Rican Parrots, why they think they are important animals to nature, and why they think the scientists and forestry-workers' jobs are so important. Write a few sentences thanking them for the time and efforts to keep this vital but endangered parrot population alive.

Conclusion

1. (Optional) Read the book *El Yunque: Exploring the rainforest of Puerto Rico*, by Lisa Johnson Vargas (Editorial Cordillera, Inc.). This is a descriptive narrative of the rain forest, which includes a lot of similar information from the visualization activity.
2. Have each person share their windsock and select an interesting fact they included (try not to repeat!)
3. Students could write in their journals their feelings about what's currently happening to Puerto Rican parrots.
4. Students could explore the internet for images, sounds, and new facts about the P.R. Parrots. (There is a lot out there!)
5. If time avails, groups of students could work on "Save the Puerto Rican Parrot" posters to raise awareness in the school. Contact information should be included.

Assessment:

- Note each student's level of participation during the visualization activity. Note accuracy of contributions to the post-visualization discussion.
- Observe and record note about group interactions and discussions during the windsock activity. Note how well each student recalled information to write on the feather strips.
- Consider students' verbal suggestions during the parrot population discussion. Reward particularly insightful thinking.
- Grade student's thank you letters based on proper format, grammar, spelling, quantity and accuracy of facts, and other aspects of the Six Traits of Writing.
- An optional homework assessment could be that the students write a paragraph of the diary of a Puerto Rican parrot. The students would write from a parrot's perspective about its habitat, friend, enemies, emotions, etc.

Adaptations:

This activity could be adapted for older grade levels by increasing the sophistication of vocabulary terms. There could be an increased emphasis on habitat niches. For gifted and talented students, for older students, or as an extension activity, the teacher could ask students to design and work out math problems that deal with population fluctuation changes among the P.R. parrots. In their problems they could note the scientific and ecological reasons for which birds were added to or subtracted from the original population size. For students with special needs, instead of writing a letter, they could draw a thank you picture, or record some words of thanks on a cassette tape. For students who may have a difficult time sitting still during the visualization portion, instead of lying quietly, the teacher could read the story aloud and periodically stop so the students could act out the scene.

References:

El Yunque Rain Forest Puerto Rico. Caribbean National Forest of the US Forest Service, November 23, 2005
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