A Walk through the Rainforest

Objective:

1. Students will demonstrate an understanding of reptiles and amphibians in the rainforest.

2. Students will identify characteristics of reptiles and amphibians.

3. Students will demonstrate a general knowledge of the tropical rainforest environment.

Grades: 3 - 5

Key Vocabulary:

- **Predator**
- **Camouflage**
- **Carnivore**

Related Literature:

The Life Cycle of a Snake
Nature Watch

In the Rainforest
Dina Anastasio

Learning about Reptiles
Debbie Routh

Performance Objectives:

Grade 3: Strand 3: Concept 2 – PO 2
Grade 4: Strand 4: Concept 3 – PO 1-4
Grade 5: Strand 3: Concept 1 – PO 1-3

NGSS: 3 – LS 2. D; 4 – LS 1. A; 5 – LS 2. A
SS: 3. W. 2; 4. W. 2: 5. W. 2

Background Information:

The word rainforest means an area of the world covered with lush vegetation that receives between over 100 inches of rain each year. Tropical rainforests have a warm climate, high humidity, significant rainfall, and a variety of animal and plant life. One well-known tropical rainforest area is the Amazon River Basin. The Amazon River flows through one of the largest rainforests on Earth. On either side of the river, the forest temperature averages 80 degrees, with almost 160 inches of rain each year. The Amazon River provides a life-sustaining freshwater environment for countless fish, amphibians, reptiles, insects, and mammals. In addition, the plants in the region produce oxygen for the planet along with creating a vital ecosystem for living organisms.

Life in the tropical rainforest can be a challenge due to a large number of living creatures that constantly search for food and shelter. Varied species must adapt to life in the rainforest to survive. Over time, animals and plants have modified their behavioral patterns to survive in this unique ecosystem. For example, the Jackson's chameleon uses its color, which can change rapidly, to blend in with its surroundings for protection. This cold-blooded reptile prefers to live in the branches of trees and plants. Once its body is warmed by the sunlight, the chameleon begins its daily search for food. The opposable toes on each foot offer the chameleon tremendous gripping power as it creeps along the branches.

The Jackson's chameleon is easily recognized by its three-horned head, which resembles a prehistoric creature. While this reptile moves slowly among the branches, its lightening-quick tongue makes it a good predator. The chameleon has 360-degree vision, meaning that it can see in every direction at once, which makes it easy to spot insects to eat. Survival for the Jackson's chameleon is dependant upon its ability to begin an independent life for itself once it is born. Jackson's chameleons give birth to live offspring, who begin the hunt for food shortly after birth. Parents do not stay around to help care for their young. Less than two inches at birth, these chameleons can grow to between 10-15 inches long as adults. Whether young or adult, chameleons have adapted to life in the rainforest through their use of camouflage and efficient hunting.

The density of trees and plants in a rainforest offers housing for numerous species. Of the various living creatures in the rainforest, reptiles and amphibians have adapted to life in the trees and in the dense plant carpet of the forest floor. Rainforest trees include three distinct layers: the understory layer, the canopy layer and the emergent layer. Each layer is determined by the height of the plant life. The understory layer is closest to the forest floor and receives only about 2-15% of the sunlight. The green tree python is one reptile that moves about the trees and the forest floor. With a fairly slim body, the green python can grow to six feet in length and weigh almost five pounds as an adult. Pythons can be recognized by their large head and angular snout. As his name suggests, the green tree python

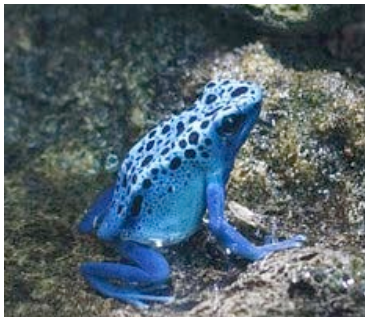
lives mainly in the branches, but he can sometimes be seen on the forest floor. The green python enjoys looping a coil of its body around a branch and resting its head in the middle of the coils.

The bright green color is similar to the leafy foliage on the trees in the rainforest,

which makes excllent camouflage for the reptile. Eating small rodents, small mammals, and other snakes, the green tree python may ambush his prey from a tree branch above. These snakes can live up to 20 years, and will reproduce many times in their lifetime. The green tree python lays about 6 to 30 eggs in holes in trees or in plants. Once hatched, the baby pythons are on their own to live independent lives in the forest. Young pythons are often hunted by large birds of prey and must continue to find shelter among the dense trees.

The air is cooler under the leafy layers and perfect for orchids and ginger plants to grow. Small birds, insects and some amphibians find their home in the understory layer. Plants make suitable housing for insects and small amphibians. Scientists believe that rainforests are alive with thousands of different plant species. Many of these plants have been found to contain qualities that are helpful in the manufacturing of medicines for humans.

A perfect example of an understory creature that lives among the plants is the poison dart frog. These beauties look like shinny jewels, but they secrete toxins from their skin that can be deadly to other animals. Their beautiful bright colors act as a warning to predators to stay away. Dart frogs are small but mighty creatures about one and a half inches long. They communicate with vocal sounds and can be identified by their calls. Dart frogs prefer to eat ants, termites and other small

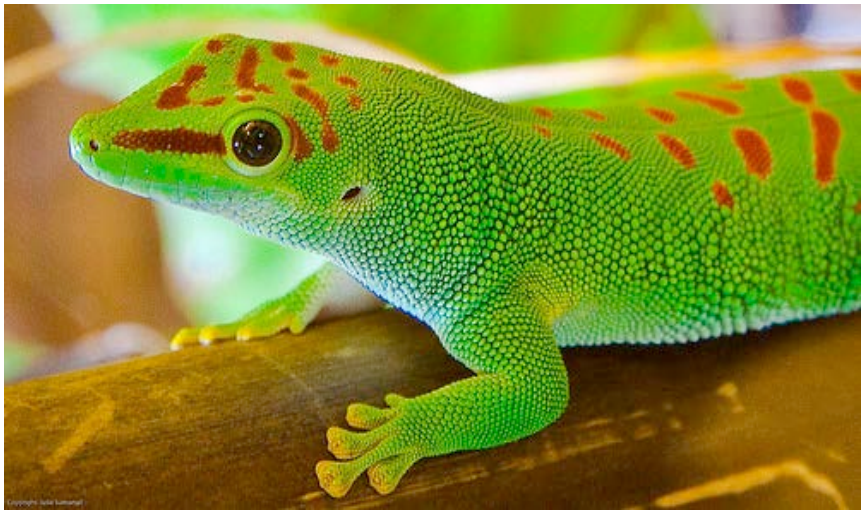


insects. Most species of dart frogs lay their eggs in a gelatinous mass. The eggs hatch into tadpoles that climb on the back of the parent frog, that then carries them to a pool of water where they begin the journey to adulthood through metamorphosis. As young dart frogs, they live

independently among the many frog species in the rainforest.

The canopy layer of the forest extends approximately 90 feet above the ground. Trees in this layer are covered with vines and other plants, which is a popular place for large parrots, Morpho butterflies, and squirrel monkeys. The emergent layer is the uppermost part of the rainforest. The tallest trees can reach heights of 200 feet above the forest floor. This layer receives the most sunlight and acts as an umbrella for the layers below. Harpy eagles and howler monkeys are common residents of the emergent layer.

As populations of species continue to flourish in the rainforest, scientists continue to discover more species that can coexist in the environment. Among the most interesting are giant day geckos. With a bright green body and a red stripe down its back, the giant day gecko can also be recognized by the red dots along each side of its back. These geckos eat various insects and other invertebrates. They also like sweet fruit nectar and pollen. Territorial by nature, males can be aggressive when protecting their habitat. Giant day geckos lay pairs of eggs that hatch in about 80 days.

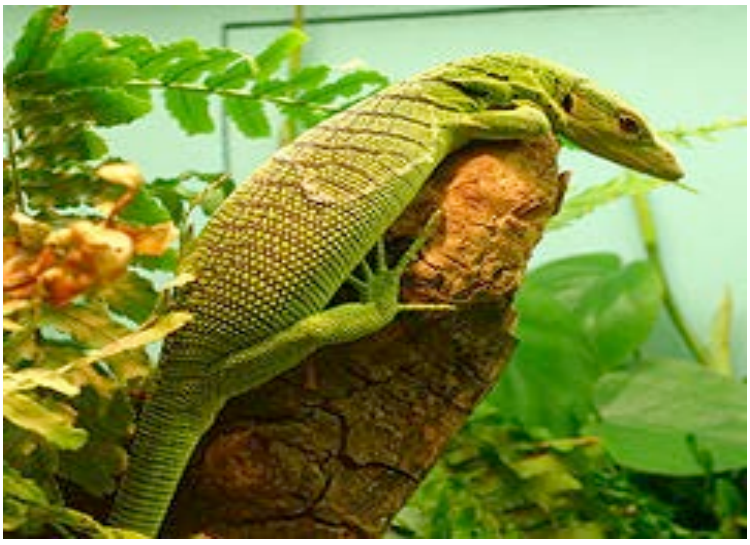


A neighbor of the giant day gecko is the leaf-tailed gecko. Notice how the tail is flattened and almost looks like a tree leaf. These lizards can grow up to 12 inches long, and are usually beige in color with dominant eyes that appear almost pink.

This gecko can flatten out on a tree branch to camouflage itself perfectly. Known as a carnivore, the leaf-tailed gecko dines on insects and other invertebrates.

The leaf-tailed gecko also sports some interesting feet. This adaptation allows the gecko to move along smooth surfaces. The splayed toes have pads at the end that are covered with tiny bristles used to help the gecko grip branches as it moves.

The emerald tree monitor is another reptile named for its color. Known for its varied shades of green and turquoise, the emerald tree monitor can camouflage itself well in the leaves of a rainforest tree. Considered arboreal, which means that this lizard lives mainly in trees, it uses its tail to assist in holding on and its scaly feet to help himself move around. The monitor eats beetles, stick bugs, katydids, spiders, and other similar insects, often tearing off the heads of its prey in order to kill it.



The emerald tree monitor can lay up to three clutches of eggs a year. Each clutch may have five eggs that hatch in about 190 days. Once hatched, the baby monitors eat small insects such as termites.

The mata mata turtle is a reptile that generally lives in the fresh water of tropical areas. Known for its triangular head, the mata mata is a slow-moving turtle recognized by its nose horn. The turtle's body is rough and bumpy, which may

help to camouflage it from predators. These turtles like to live on the bottom of a pond or slow moving river in muddy areas. Mata mata turtles eat mainly fish but will often eat small mammals, birds and insects that cross their path. They eat by sucking the prey into their mouth and snapping it shut. Water is then expelled and the food is swallowed whole. Because of its mouth structure, the mata mata cannot chew its food. The mata mata lays about 12 to 28 eggs that have brittle shells and are deposited in a nest dug by the female. Once hatched, the baby turtles live an independent life.

When you think about species in the tropical rainforest, various amphibians come to mind. Discoveries indicate that there are more than 1000 species of frogs in the Amazon Basin. Most frogs live in or near water; however, many tropical rainforest frogs live in trees and plants. Rainforest frogs can maintain necessary moisture on their skin due to the high levels of constant humidity, or water in the air, and rainfall. These frogs can survive well in trees. Some species of frogs have adapted to the environment by leaving streams for the leafy trees, in order to escape predators.

One amphibian that has chosen the shelter of trees is the White's tree frog. These quiet, gentle frogs are very adaptable and can find a home in various environments. The White's tree frog is considered nocturnal and is an excellent climber. Their distinctive call can sound high pitched if in danger, but these frogs are generally quiet and still when resting on a branch.

The tomato frog is an amphibian known to live on the rainforest floor. These frogs burrow in the forest floor to make their home and hide from predators. Tomato frogs have a distinctive color, rightly named, and can puff up with air when threatened. The sticky mucus secreted from their skin is a deterrent to predators. The toxin in the mucus can cause an allergic reaction along with gumming up the mouth and eyes of the predator. Tomato frogs can live up to six years, and eat insects and small invertebrates.

A flourishing ecosystem of living organisms, the tropical rainforest is critical to life on Earth. From its plant life to animals, humans rely on the rainforests for oxygen, freshwater, medicines, food products and a balance in our natural world.

Sources: Smithsonian National Zoo; Animaldiversity.com; The Nature Conservancy; The Rainforest Alliance; San Diego Zoo.
Photos in public domain.

Procedures and Pre-Activities:

1. State the learning objective.

2. Read related literature.

3. Discuss the rainforest as compared to other types of forests. Refer to classroom text materials for clarification.

4. Discuss how climate, regional temperature and humidity impact the environment. Ask students to give examples of local animals and their habitats. Generate questions about their examples and compare to rainforest habitats.

5. Present background information and related pictures. Continue discussion of key points in the presentation.

Activity: "What do you know?" is an activity that allows students to demonstrate what they have learned about reptiles and amphibians. Students conclude the similarities and differences between reptiles and amphibians.

Activity: Take along or in-class: "Species Identification Card" can be taken on the field trip where students may select a reptile or amphibian to identify. In the classroom, students may use technology to research a reptile or amphibian to complete the card.

Activity: "My Reptile Story" this activity allows students to use knowledge and be creative in writing a story about a reptile.

Reflection and Assessments: Students are assessed on various levels depending on the activity. Participation, grade standards and percentages may be applied.

What do you know?

What makes an amphibian?

What makes a reptile?

How are they similar?

How are they different?

What is your conclusion?

_____

_____

Species Identification Card

Common Name: _____

Scientific Name: _____

Natural Habitat: _____

Facts about the species: _____

_____

_____

Notes:_____

Species Identification Card (Example)

Common Name: White's Tree Frog

Scientific Name: Litoria caerulea

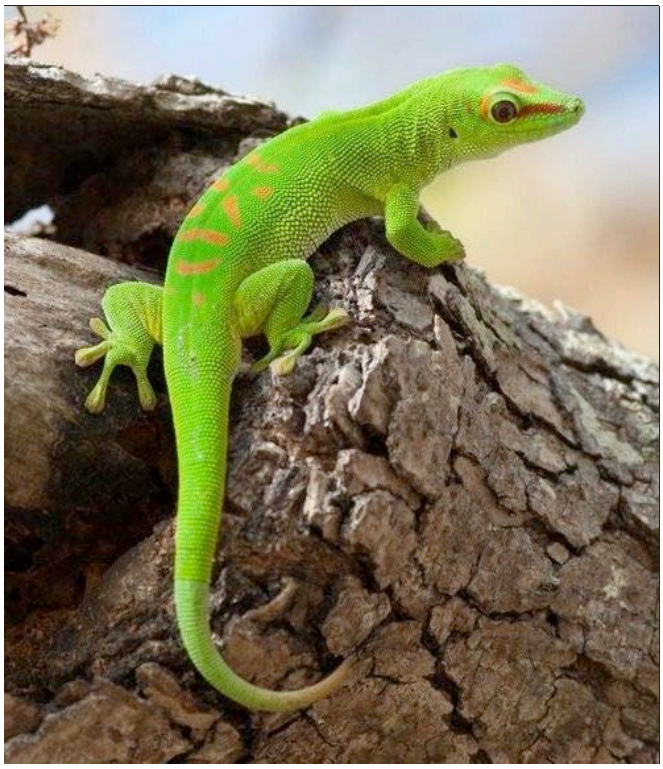
Natural Habitat: Rainforest areas

Facts about the species: This frog can adapt well, but prefers the trees for its habitat. They are a quiet, gentle amphibian that do not like to jump. The head is large with a short mouth. The legs are short and thick with long, webbed toes.

Notes: The color can range from green to turquoise with some yellow. They have white markings on the body. They eat mostly insects.

My Reptile Story

Write a story about this reptile's life in a tropical rainforest.



Be sure to include what you have learned about reptiles. Think about where they live: tree branches, leaves, on the ground. Think about what they eat and how they protect themselves. Consider how they communicate with other reptiles, and how their habitat may be different. Make your story interesting to others.