

# The Rainforest Van

*Information, Activities,  
& Classroom Resources*



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# THE LIVING PLANET AQUARIUM'S RAINFOREST VAN TEACHER PACKET

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- Rainforest Van Program Details
- Background Information for Educators
  - Animal Adaptations
  - Animal Classification
- Science Language Students Should Use
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## THE RAINFOREST VAN PRESENTATION AND THIS PRE-VISIT INFORMATION ARE BASED ON THE UTAH STATE 3<sup>RD</sup> GRADE CORE CURRICULUM:

### SCIENCE:

Standard II - Objectives 1a, 1b, 1c, 2b

Standard – Objective 2b

### SOCIAL STUDIES:

Standard I – Objectives 1a, 1b, 1c

Standard III – Objective 1c

Standard IV – Objective 2a

Standard VI – Objectives 1a, 1b, 1d, 2a, 2b

Standard VII – Objectives 1a, 1d



## THE FOLLOWING ARE ANIMALS WE MAY BRING TO YOUR SCHOOL:

- Madagascar Hissing Cockroach
- Chilean Rose-Hair Tarantula
- Mexican Red Knee Tarantula
- Emperor Scorpion
- Green Iguana
- Common Boa Constrictor
- Rainbow Boa Constrictor
- Jungle Carpet Python
- Pac Man Frog
- African Grey Parrot
- Blue and Gold Macaw
- Scarlet Macaw
- Eclectus Parrot

## BACKGROUND INFORMATION FOR EDUCATORS

# ANIMAL ADAPTATIONS

Animals are amazing. They have adapted to survive in the harshest climates on earth. There are several means by which animals keep themselves alive and are able to reproduce.

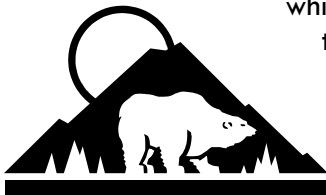


- ❖ CAMOUFLAGE. This survival technique can be used by a prey animal to hide from a predator, or can be used by a predator waiting to attack a prey animal. Camouflage allows the slow-moving sloth to exist quietly in the canopy of the rainforest without being seen by predators. Similarly, a tiger's stripes allow it to hide in the tall grasses of the African savannah, waiting for its next meal.

- ❖ DEFENSE MECHANISMS. Consider the spiny lizard of the Utah desert. This incredible reptile has developed the ability to intentionally detach its own tail. When threatened, the lizard will sometimes drop its tail, leaving a hungry predator confused by the twitching movement thought to be caused by its prey. Animals display a staggering array of defense mechanisms, ranging from the painful sting of a scorpion to the inky substance secreted by an octopus to confuse predators.



- ❖ PHYSICAL CHARACTERISTICS. A fish would be hard-pressed to breathe on land, just as a brown bear would be unable to breathe underwater. All animals are endowed with characteristics that allow them to function in the environment in which they live. Physical characteristics can be as simply understood as the wing of a bird, or as complicated as the scales on the underside of a snake. A polar bear has thick layers of fat and fur to help it survive the harsh winters of the arctic, just as camels have extra large feet, which enable them to walk on the unstable sand of the desert. Some tree frogs rely on unusually thick skin to limit moisture loss. Clown fish have a special slimy coating, allowing them to reside within an anemone that would cause certain harm to most other fish.



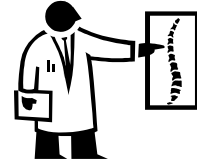
- ❖ SPECIALIZED STRUCTURES. Both hissing cockroaches and bottom-dwelling sharks make use of a highly specialized structure known as a spiracle. In cockroaches, the spiracle is used to force air from its abdomen; this results in a loud hiss used to scare away hopeful predators. Bottom dwelling sharks, such as the Nurse shark, use the spiracle as a pump in which to force water over the gills, allowing it to breathe. The bird beak is considered a specialized structure; a beak is a highly diverse structure that helps birds to survive the habitat in which they are found. For example, a parrot can use its beak to break through hard seeds and nuts. A toucan uses its serrated beak to saw through ripe fruit. A pelican uses its beak as a pouch for carrying fish and other prey.



# ANIMAL CLASSIFICATION

An animal is defined by the ability to grow, move and reproduce. There are currently over 1.5 million animals species identified by scientists. All of these animals are classified, or grouped, into distinct categories. For our purposes, we will discuss only basic animal classification.

- ❖ VERTEBRATES. Vertebrate animals are those whose body is supported and protected by a backbone. Vertebrates include fish, birds, mammals, amphibians and reptiles.



- ❖ INVERTEBRATES. Invertebrates are those animals without backbones. Invertebrates often make use of an exoskeleton, or outside skeleton for protection and support. Invertebrates include sponges, worms, mollusks, crustaceans, echinoderms, insects and arachnids.

- ❖ AMPHIBIANS. Amphibians are vertebrate animals characterized by smooth permeable skin that lacks hair or scales. Amphibians include frogs, toads, newts and salamanders; all are cold-blooded. Most amphibians undergo metamorphosis.



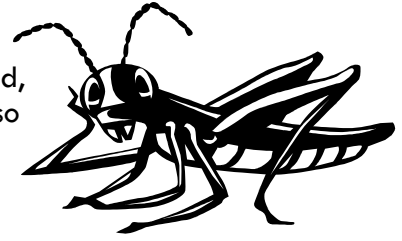
- ❖ ARACHNIDS. Arachnids are a diverse group of arthropods (jointed legs) that have 2 main body segments and 4 pairs of legs. Arachnids include spiders, scorpions, ticks and mites.

- ❖ BIRDS. Birds, easily the most accomplished of all flying vertebrates, are unmistakably identified by a hard beak, wings, and feathers. Birds are equipped with a skeleton that is light and strong, and have a highly developed respiratory system. Birds reproduce by laying eggs, and are warm-blooded.



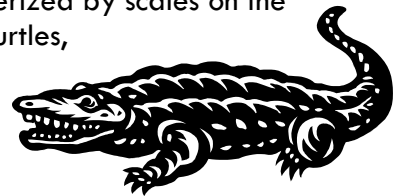
- ❖ FISH. Fish are cold-blooded aquatic animals that breathe through gills. Most fish reproduce by laying eggs, are covered with scales and have fins. All fish are vertebrates; some are considered cartilaginous and some are bony fishes.

- ❖ **INSECTS.** Insects are the most successful animals on earth, there are well over a million different species. Insects are air-breathing arthropods (jointed legs) which have exoskeletons and segmented bodies. All insects have 3 body segments (head, thorax and abdomen) and 3 sets of legs. Many insects also have wings. Insects are very important to almost every ecosystem on earth; most flowering plants depend on them for pollination, and many animals rely on insects for food.



- ❖ **MAMMALS.** Mammals are vertebrates and have several distinguishing features. A mammal is defined as a warm-blooded animal with hair. Female mammals feed their young through the use of mammary glands. All mammals give live birth with the exception of the monotremes; 3 species of egg-laying mammals that reside in Australia and New Guinea.

- ❖ **REPTILES.** Reptiles are vertebrate animals characterized by scales on the outside of the body. Reptiles include snakes, lizards, turtles, crocodilians; all are cold-blooded. Most reptiles reproduce by means of laying eggs. Some reptiles, such as boa constrictors, retain the eggs in their bodies until they hatch.



## SCIENCE LANGUAGE THIRD GRADE STUDENTS SHOULD USE



- Aquarium = An artificial pond or tank which houses aquatic plants and animals.
- Environment = Conditions which influence the growth and development of a living being.
- Interaction = Shared action or influence of one thing on another.
- Living = The state of a being which is alive; includes birth, death, functioning organs, obtaining energy and disposing of waste. Includes plants and animals.
- Moisture = The degree of dampness or wetness.
- Nonliving = The state of an entity which is not alive. Nonliving entities are not born, do not die and do not have organs. Includes rocks and minerals.
- Observe = To pay close attention to or take notice of.
- Organism = A living body composed of different functioning organs.
- Small-scale = A reproduction of a given environment (rainforest, marine, etc.) which is significantly smaller than the environment on which it is based.
- Survive = To remain alive or continue to live.
- Temperature = The measurement or degree of heat or cold.
- Terrarium = A small-scale, self-maintaining aquarium composed of soil and plants.

# ANIMAL ADAPTATIONS WORD SEARCH



Find words horizontally, vertically or diagonally.

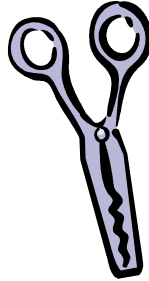
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Z	I	Y	L	B	R	U	K	S	I	H	G	E	R	E	K	F	A
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Z	O	N	P	I	C	U	L	B	I	F	S	F	A	V	W	R	J
O	N	S	E	B	T	Y	O	T	N	E	I	B	R	Y	E	T	W
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P	N	U	A	A	N	H	H	D	S	C	J	Q	M	J	D	P	Q
H	T	E	M	P	E	R	A	T	U	R	E	M	X	A	B	G	E
G	J	U	M	O	V	E	M	E	N	T	D	X	Q	K	A	M	L

1. Aquarium
2. Environment
3. Interaction
4. Living
5. Moisture
6. Nonliving
7. Organism
8. Survive
9. Observe
10. Moisture
11. Terrarium
12. Temperature
13. Growth
14. Movement
15. Millipede
16. Animal
17. Frog
18. Snake
19. Bird
20. Science

# ECOSYSTEM ACTIVITY

## Supplies you will need:

1. Brown poster board
2. Green poster board
3. Blue poster board
4. Glue
5. Paper and crayons
6. Scissors



## Instructions:

1. Label the poster boards – brown for desert, green for forest, blue for wetlands.
2. Hang the poster boards on the wall.
3. Have the students draw and cut out at least one animal and one plant from the provided list. You may want to do research as a class to gain insight as to how these animals look and the adaptations they may possess.
4. Discuss each of the ecosystems with the class. Explain what the temperature, landscape and availability of food and water are like. Have the students glue the pictures onto the ecosystem poster board in which the plant or animal they drew would most likely live.
5. Have each student explain adaptations the plant or animal they drew might have that would help it to survive in its ecosystem. You may also want to have them explain why it may not survive in the other ecosystems.

## ANIMAL AND PLANT IDEAS FOR ECOSYSTEM ACTIVITY



### DESERT

**Tortoise** ~ A reptile that is able to extract most of the moisture it needs from the vegetation it eats. The tortoise has a hard shell to protect it from predators, and thick feet to support its heavy shell and to assist in digging a burrow. The coloration of the tortoise's shell helps to provide camouflage.

**Gila Monster** ~ A slow moving reptile that is one of only two poisonous lizards in the world. The toxin in its saliva helps this slow-moving creature capture prey. The Gila monster is perfectly suited for life in the desert. It has powerful limbs for burrowing and a thick tail to store fat when food is scarce.

**Kangaroo Rat** ~ A small rodent which has super sensitive hearing and quick powerful hind legs to allow it to safely forage in open areas. It is able to eat a wide diversity of foods, and has feet conducive to burrowing, allowing it to escape the desert heat or cold.



**Antelope** ~ A large mammal that has wide, flat hooves to assist in walking on sand. It is able to survive on little food and water, and has excellent coloration to provide camouflage in the sandy desert. The antelope has long, curled eyelashes that help to keep sand out of its eyes.

**Burrowing Owl** ~ This unique owl saves energy by using the abandoned burrows of other animals. Burrowing underground rather than making a nest in a tree also allows the owl to live in all kinds of open and treeless areas.

The Burrowing owl has sharp talons to assist in the catching of prey, and very large eyes to help it see in the dark.

**Cactus and Sagebrush** ~ Both of these plants are equipped with somewhat dangerous and spiny exteriors. This aids in protection from predators. The cactus is capable of storing water, an adaptation which helps the plant survive in the heat and dryness of the open desert.



## FOREST

**Moose** ~ A large mammal that is equipped with long legs and wide hooves to assist in wading through mud and walking on snow. It survives well in the forest for many reasons; it is perfectly camouflaged to blend with trees, has flexible lips to help grasp vegetation, and develops a thick winter coat.

**Gray Wolf** ~ The largest member of the canid family, the gray wolf is outfitted with a thick fur coat to help maintain body heat during the cold winters of the forest. A large foot with a tough pad and long claws also assists this mammal with survival in snowy, cold winters.

**Squirrel** ~ The ability to find and store food allows this rodent to survive cold forest winters. Its camouflage is perfectly suited for hiding among the grasses and trees in the forest, and the ability to climb trees allows it to escape predators.



**Oak Tree** ~ This deciduous is one of many that has adapted by developing the ability to drop its leaves when the threat of cold or drought approaches. In order to photosynthesize as much as possible before cold or drought arrives, this tree is equipped with large flat leaves.



## WETLANDS

**Frog** ~ A four-legged amphibian suited to life in the wetlands due to many adaptations included webbed feet to aid in swimming, and circular adhesive pads on the ends of their digits which help them to maneuver on smooth surfaces. Frogs are great burrowers, an adaptation which helps them to dig in times of extreme heat, cold, or dryness. A long sticky tongue helps frogs catch insects – the most abundant prey in the wetlands.

**Turtle** ~ A reptile furnished with webbing between the toes to aid in swimming. Turtles also bear a flat, smooth shell. This allows it to glide easily through the water. Turtles have the biological ability to eat almost anything, plant or animal matter. This adaptation helps to ensure there will always be a steady supply of food.

**Heron or Egret** ~ A large bird which boasts extremely long and slender legs – a perfect adaptation for wading around in the waters of the wetlands. Long toes on the ends of long legs, and a long pointed further aid the bird in finding food and moving around the wetlands.



**Lily Pads** ~ This wetland plant bears leaves with a leathery, smooth surface to let water run off of them easily. Long stems help the lily pads to stay afloat on the surface of the water.

# RESOURCES FOR EDUCATORS

## ONLINE RESOURCES:

**Rainforest Action Network** - Lots of student activities!

<http://www.ran.org>

**Blue Planet Biomes** – specific information about the world’s biomes, including the tropical rainforest.

<http://www.blueplanetbiomes.org>

**World Wildlife Fund** – cool maps, the ability to find out which species live in different areas of the world, and lots of information on endangered species and biodiversity.

<http://www.worldwildlife.org>

**Dr. Blythe’s Rainforest Education Website** – pictures, a tour through the layers of the rainforest, and information on conservation issues, medicines and other rainforest products

<http://www.rainforesteducation.com>

**Focus on Forests** - Focus on Forests has been written by the World Land Trust for students 11 to 14 years old but contains information that would be useful to anyone with an interest in forest issues. For teachers there is a special section of the site with an online handbook.

<http://www.worldlandtrust.org/forestry>

## CURRICULA:

**Project Learning Tree** is an environmental education curriculum package that uses the forest as a "window" on the world to increase students' understanding of our environment; stimulate students' critical and creative thinking; develop students' ability to make informed decisions on environmental issues; and instill in students the commitment to take responsible action on behalf of the environment. Find out more about Project Learning Tree at <http://www.plt.org>

The Living Planet Aquarium’s Outreach Department and the Utah Society for Environmental Education (<http://www.usee.org>) offer workshops on this exciting program, at which you will be able to get the curriculum package. Contact us for more information.