



Primary Conservation Module

Fota Wildlife Park 2009

Rainforests of the World



Conservation - Learning - Fun

A blurred photograph of a toucan bird, showing its large, colorful beak in shades of orange, red, and yellow. The bird's body is mostly green and brown, and the background is dark and out of focus.

Welcome to
the earth's
greatest
biological
Reserve

Why are Rainforests important?

Rainforests are important to the global ecosystem for the following reasons:

- Provide a home to many plants and animals
- Help to stabilise the world's climate
- Protect against flood, drought and erosion
- Support native tribal people



The Living Supermarket!

Many of the foods we eat today come from the world's rainforests.

- Everyday spices we use to cook with such as ginger, allspice, pepper, cinnamon, coconut, vanilla, turmeric and paprika all have their origins in the rainforest.
- Did you know that chocolate comes from the rainforests? Chocolate is made from cocoa. Cocoa pods grow on trees. Inside their pod there are 30-60 seeds. To make the chocolate the seeds are ripened, dried, polished and roasted. They are then shelled and are broken down into a paste.



Did you know that 1 in 5 birds living in the world are found in the Amazon



Where are the World's rainforests located?

Near the Equator, the climate is warm and moist all year round, creating ideal conditions for plant growth. Tropical rain forests are found in a band around the equator. The equator circles the earth midway between the North and South Poles. High temperatures in the rain forest cause high evaporation* that results in frequent rain. There are only two seasons: the wet and the dry season. There are tropical rainforests across South America, Central America, Africa, Southeast Asia and Australia (and nearby islands).

***Evaporation:** The process by which any substance is converted from a liquid state into, and carried off in, vapor .



The World's Forest Systems



Forests cover an estimated 30 per cent of the Earth's land surface and are among the most diverse habitats on the globe. The largest rainforest in the world is the Amazon. Forests provide an ideal environment for plant germination as well as a source of food and shelter to a wide range of animals. Different types of forests are found around the world, all of whom play a vital role in the world's water and carbon cycles and in preventing soil loss through erosion. Sadly, many of the world's forest systems are facing destruction as a result of human activity. Timber logging, road construction and urban sprawl are among several of the factors which have led to the disappearance of one of our most essential resources. Limited time remains before extinction of these wildlife havens become a reality.

Preservation* of this unique resource must become a priority in the 21st Century in order to guarantee the survival of a wealth of diversity. With your help this can happen.

Preservation: the activity of protecting something from loss or danger.



Wonders of the World's Rainforests



Forests of different kinds are to be found all over the world. Among those on Earth considered to be of great value are the world's tropical rainforests.

Rainforests are very dense, warm, wet forests. They are havens for millions of plants and animals.

Rainforests are extremely important in the ecology of the Earth. The plants of the rainforest help to generate much of the Earth's oxygen. These plants are also very important to people in other ways; many are used in new drugs that help to fight numerous disease and illness.

Strata of the Rainforest

Similar to forests in Ireland, different animals and plants are found living throughout the rainforest.

Scientists divide the rainforest into a number of different layers or strata based on the living environment.

Starting at the top, the strata are:

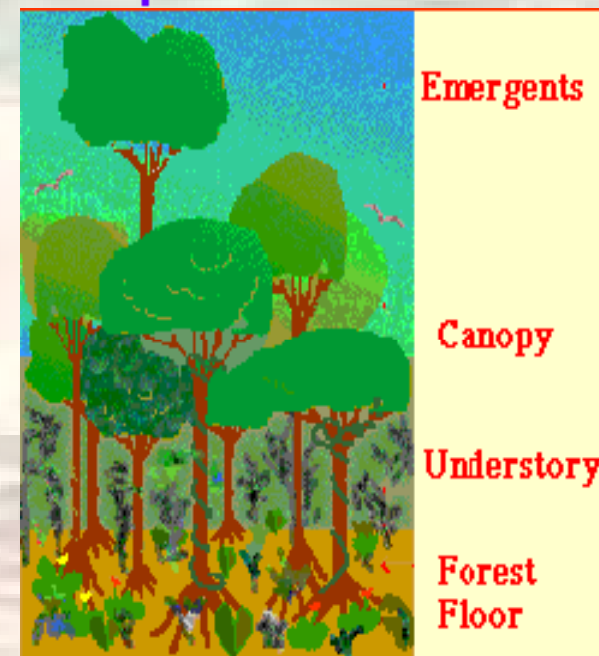
EMERGENTS: Giant trees that are much higher than the average canopy height. It houses many birds and insects.

•**CANOPY:** The upper parts of the trees. This leafy environment is full of life in and includes insects, birds, reptiles, mammals, and more among its inhabitants.

•**UNDERSTORY:** A dark, cool environment under the leafy shade of the trees but above the ground.

•**FOREST FLOOR:** Teeming with animal life, especially insects. The largest animals in the rainforest generally live here.

Tropical Rainforest Strata





Animals of the Rainforests

An incredible number of animals live in the world's rainforests. Millions of insects, reptiles, amphibians, birds, and mammals call them home. Insects are the most numerous animals in rainforests. Tropical rainforests have a greater diversity of plants and animals than temperate rainforests or any other biome. To-date scientists have only discovered one out of every 20 possible species which are thought to exist in these forests, suggesting that millions are awaiting discovery.

Insects make up the largest single group of animals found living in the Rainforest. They include brightly coloured butterflies, camouflaged stick insects and each layer of the rainforest is home to a multitude of invertebrates of variable shapes and sizes. In temperate rainforests, most of the animals are ground dwellers and there are fewer animals living in the forest canopy.

Did you Know? Tropical deforestation wipes out an estimated 17,000 species of plants and animals per year, that equates to 48 species every day or 2 per hour.



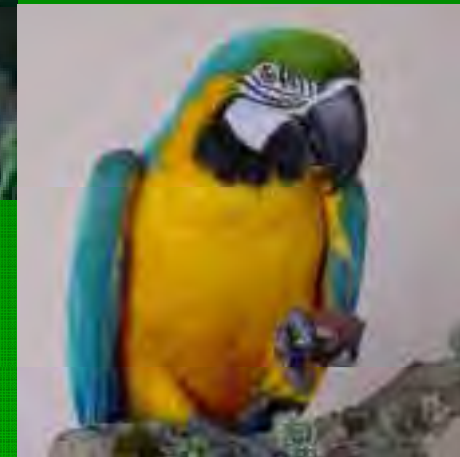
Emergent Layer Residents



Harpy Eagle



Blue Headed Parrots



Macaws



Love Birds



Brown Peacock Butterfly



Blue Doctor Butterfly

Canopy Layer Residents



Sloth



Marmoset



Woolly Monkey



Macaw



Golden Lion
Tamarin



Toucan

Understory Residents



Boa



Fruit Bats



Green Tree Boa



Margay



Leaf cutter Ants



Tree Frog



Coatimundi

Forest Floor Residents



Caiman



Scorpion



Anaconda



Giant Millipede



Tapir



Anteater



Army Ants



A **Bromeliad** is a tropical plant belonging to the pineapple family. Some grow on the branches and barks of rainforest trees and are known as **epiphytes**. Their ability to get food and water is unique! The plant's large leaves are a perfect means of capturing rainwater!



Rainforest Climate

Rainfall

It is almost always raining in a rainforest. Rainforests get over 80 inches (2 m) of rain each year. This is about 1 1/2 inches (3.8 cm) of rain each week.

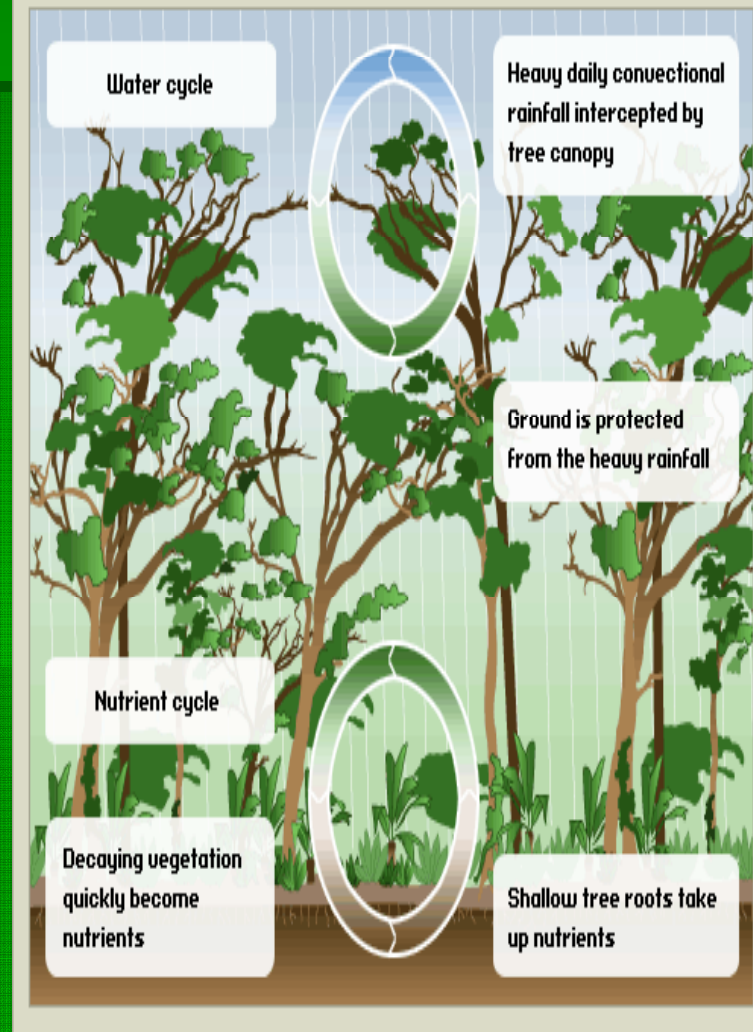
The rain is more evenly distributed throughout the year in a tropical rainforest (even though there is a little seasonality). In a temperate rainforest, there are wet and dry seasons. During the "dry" season, coastal fog supplies abundant moisture to the forest.

Temperature

The temperature in a rainforest never freezes and never gets very hot. The range of temperature in a tropical rainforest is usually between 75° F and 80° F (24-27° C). Temperate rainforests rarely freeze or get over 80° F (27° C).

The rain forest is about the same temperature year round and it never drops below 64° Fahrenheit. Rain forests are so hot due to their proximity to the equator. The closer to the equator you are, the more solar radiation there is. The more solar radiation there is, the hotter it is! Rain forest are never found in climates which have temperatures 32° Fahrenheit and below because the plant life is not adapted to frost. All the plants in a rainforest would die out if the rain forest temperature were to become cooler.

Water cycle and nutrient cycle in the rainforest





THE AMAZON

Earth's Greatest Biological Treasure

- As the largest tract of tropical rainforest in the Americas, the Amazonian rainforests have unparalleled biodiversity*. **One in ten known species in the world live in the Amazon Rainforest.** This gives rise to the Amazon being recognised as having the largest collection of living plant and animal species in the world.
- The region is home to about 2.5 million insect species, tens of thousands of plants, and some 2000 birds and mammals.
To date, at least 40,000 plant species, 3,000 fish, 1,294 birds, 427 mammals, 428 amphibians, and 378 reptiles have been scientifically classified in the region.
- **One in five of all the birds in the world live in the rainforests of the Amazon.**
- Scientists have described between 96,660 and 128,843 invertebrate* species in Brazil alone.[]



Invertebrates: Animals which lack a backbone

***Biodiversity is the number and variety of organisms found within a specified geographic region**



Rainforest Destruction Causes & Effects



Rainforest Destruction

This once forested Madagascar landscape lies in ruins, unfit for man or beast. Similar scenes have appeared in dozens of other countries as Rainforest destruction exposes fragile soil to erosion.



Going.....

Going.....

*.....SOON TO
BE GONE?*





Problems associated with human activity in the World's Rainforests

Roads divide up parts of the rainforest and can cut off connections between different ecological systems. For example, a road can stop monkeys such as the Golden Lion Tamarin from travelling to gather food and, in turn, distribute seeds to re-sow plants in the forest.

Land clearance for farming, transportation and mining can lead to **deforestation**. Hardwood trees take many years to grow and can be difficult to replace.

Farming is estimated to be responsible for 25 percent of the Amazon forest being cleared.

Fertile soils that make farming possible are quickly washed away when the forest is cleared for farming, mining or transportation.

Loss of animal habitat occurs when trees are cut down and animals that live in them have to find somewhere else to live. Hence, deforestation can result in endangering animals and plant life, or even causing them to become extinct.

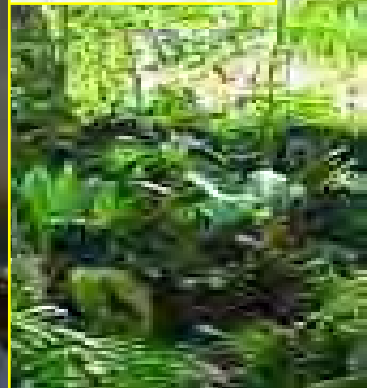
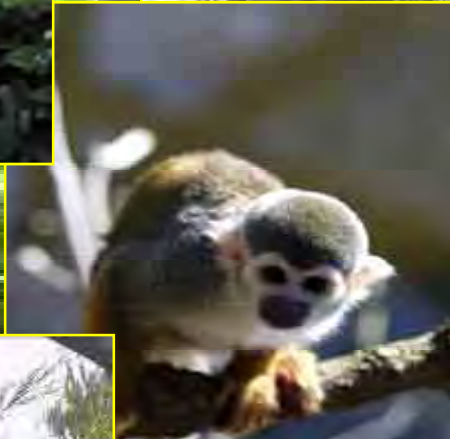
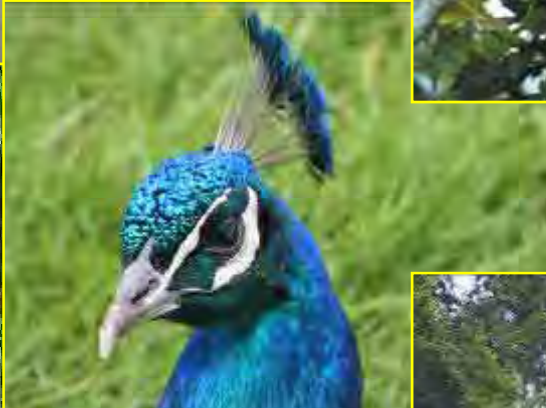
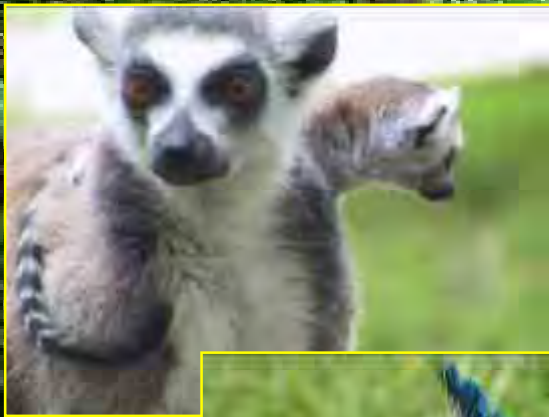
Profits from large-scale farming and associated produce sales often go back to large companies and don't benefit rainforest communities.

What is deforestation?

Deforestation refers to the cutting, clearing and removal of forestry.

What are the causes of deforestation?

- I. Logging
- II. Mining
- III. Oil and gas extraction
- IV. Cattle ranching
- V. Agriculture



Many animals
are left
homeless!

What are the consequences of deforestation?



- Extinction rates will increase
- Habitats may become fragmented
- Desertification – increase in dry, hot, arid conditions
- Climate change as a result of increased carbon dioxide released into the atmosphere
- Soil erosion





Rainforest Facts

- ❑ We are losing Earth's greatest biological treasures just as we are beginning to appreciate their true value. Rainforests once covered 14% of the earth's land surface; now they cover a mere 6% and experts estimate that the last remaining rainforests could disappear in less than 40 years
- ❑ 1.5 acres of rainforest are lost every second with tragic consequences for both developing and industrial countries
- ❑ Experts estimate that we are losing 137 plant, animal and insect species every single day due to rainforest deforestation. That equates to 50,000 species a year. As the rainforest species disappear, so do many possible cures for life-threatening diseases. Currently, 121 prescription drugs sold worldwide come from plant-derived sources. While 25% of Western pharmaceuticals are derived from rainforest ingredients, less than 1% of these tropical trees and plants have been tested by scientists.
- ❑ There were an estimated ten million Indians living in the Amazonian Rainforest five centuries ago. Today, there are less than 200,000 remaining.

An aerial photograph showing a large, cleared area in the foreground, likely a field or pasture, with a dense forest in the background. The cleared area is a mix of green and brown, suggesting recent clearing or regrowth. The forest in the background is a dense, dark green canopy. The text "Deforestation & Climate Change" is overlaid on the cleared area in a dark green box with white text.

Deforestation & Climate Change

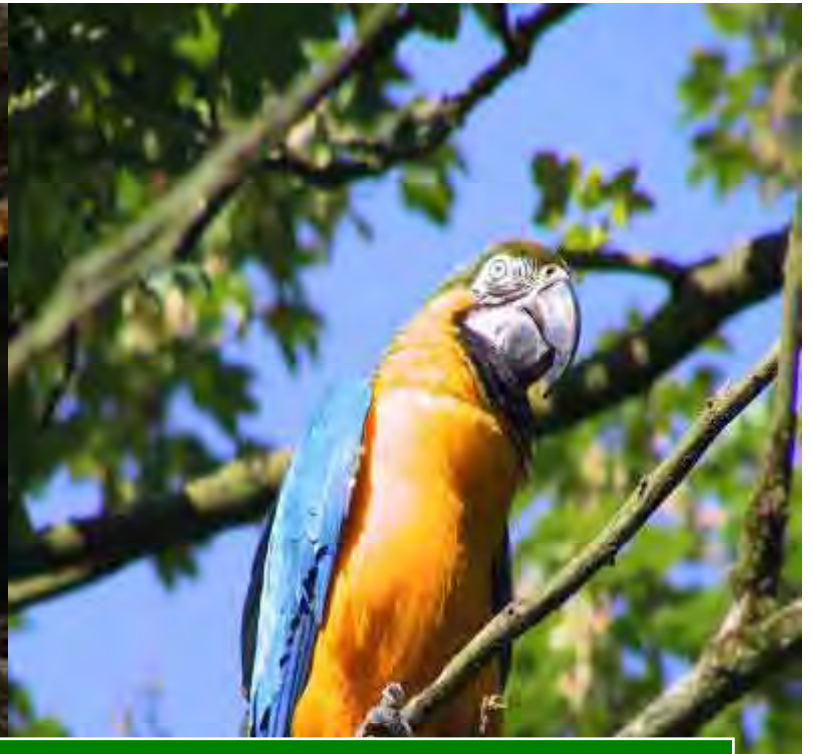


The lungs of the Earth

Often described as the Earth's lungs, only in reverse, the tropical rainforests, take in vast quantities of **carbon dioxide** and through the process of **photosynthesis**, convert it into clean, breathable **air**. In fact, the tropical rainforests are the single **greatest terrestrial source of air** that we breathe.

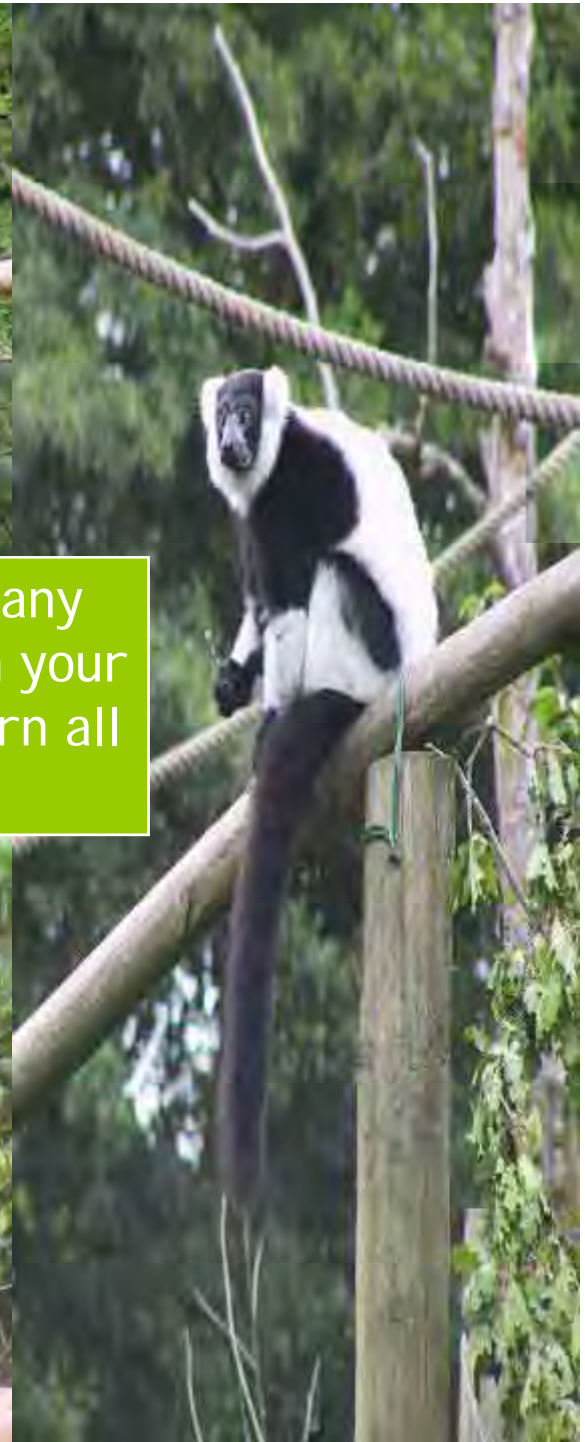
Rainforests help to control the world's climate by **absorbing and storing** vast quantities of carbon dioxide in their roots, leaves and stems. When trees are cut down, overtime stored **carbon is re-released** back into the atmosphere. This leads to an increase in the earth's temperature, a process known as **climate change**.

Climate change is any long-term significant change in the "average weather" of a region or the earth as a whole.

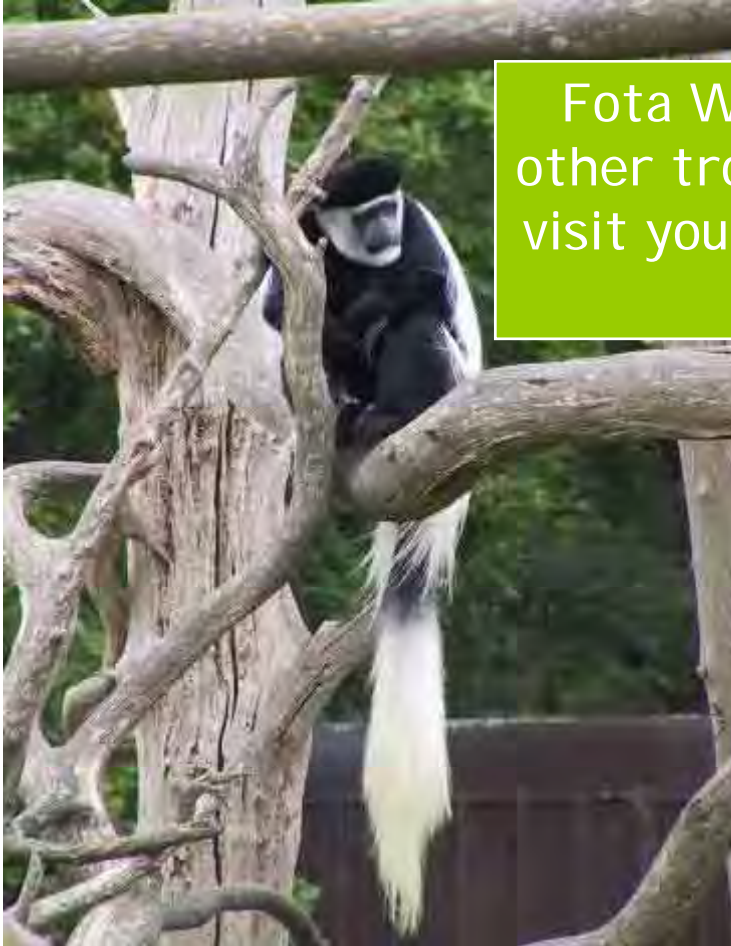


Let's meet some of the Tropical Forest Species in Fota Wildlife Park





Fota Wildlife Park is home to many other tropical forest species – on your visit you will get to meet and learn all about us!





Message from the animals in Fota Wildlife
Park

“ We have enjoyed meeting you
and we hope that you will help
save **our homes** in the world’s
Tropical **forests**”.



The End



*What have you learnt
about the rainforests?
Would you like to try our
tropical trooper quiz?*



Tropical Trooper quiz

1. Rainforests cover what percentage of the Earth's total surface?

- A. 2%
- B. 7%
- C. 10%

2. Which of the following products are provided by rainforests?

- A. Chocolate
- B. Coffee
- C. Medicines
- D. All of the above

3. Rainforests are only found in warm regions close to the equator.

- A. True
- B. False

4. The largest rainforest left on earth is found in?

- A. Sth. America
- B. Africa

5. How many layers are there in a rainforest?

- A. Two
- B. Three
- C. Four

6. What are epiphytes?

- A. Plants that can grow on the trunk, branches or leaves
- B. Plants that grow on the ground

7. Macaws live in which rainforest layer?

- A. Emergent
- B. Canopy

8. Which of the following tropical forest animals are found in Fota Wildlife Park?

- A. Spider Monkeys
- B. Harpy eagle
- C. Poison Arrow Frogs

9. What percentage of the Earth's wildlife is found in rainforests?

- A. 50%
- B. 80%
- C. 90%

10. Rainforests help to absorb carbon dioxide from the atmosphere.

- A. True
- B. False



10. A	6. A	7. A	8. A	9. A	10. A
1. B	2. D	3. A	4. A	5. C	How well did you do?

The End



Can you find the following Rainforest animals hiding in the wordsearch?

hoatzin
toucan
parrot
harpy

capybara
gorilla
jaguar
sloth

butterfly
piranha
boto
manatee

anaconda
caiman
boa
frog



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





**STOP MONKEYING AROUND
AND HELP TO SAVE THE
WORLD'S TROPICAL FORESTS!**