

A detailed botanical illustration background featuring various plants. In the top left, there are pink flowers with green leaves. In the top right, there are white flowers with green leaves. In the bottom left, there is a large yellow flower with a dark red center and green leaves. In the bottom right, there is a yellow lemon with green leaves and a small white flower. The central text is framed by a white border.

# Biology Project

By: Macy John

# Biome

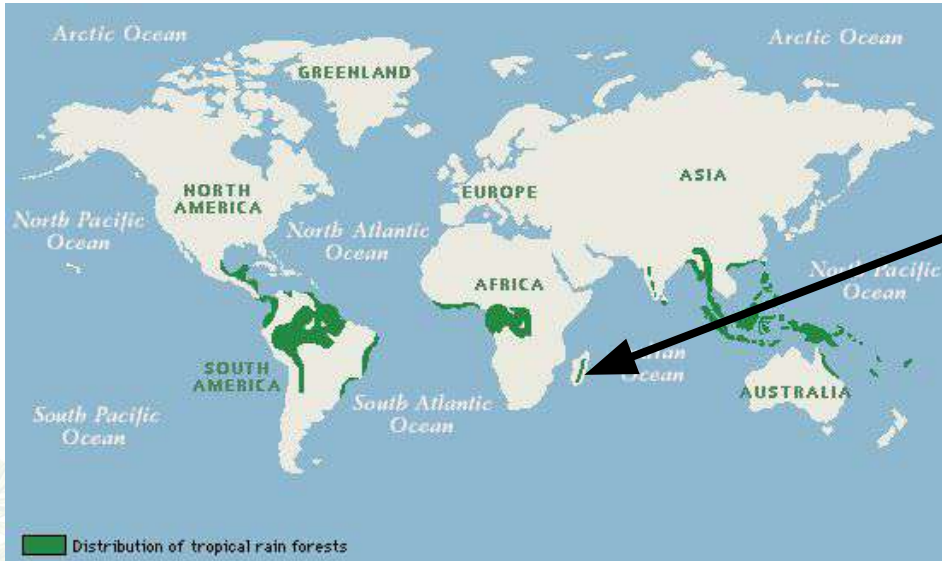
*Major Biome: Forest*

*Sub-Biome: Tropical Rainforest*





# Lemur Locations



Ring-tailed lemurs live in a small island called Madagascar.

# Water Lily Locations

The Amazon Water Lily grows on the Amazon river, which passes through the Amazon rainforest

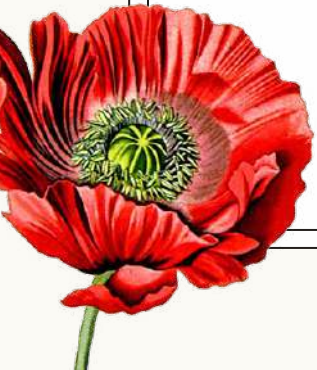




# Tropical Rainforest

- Weather is the short-term conditions that occur in the atmosphere. The weather in the rainforest is usually rainy, with thunderstorms being a common occurrence.
- Climate is the opposite, it is the long-term conditions in the atmosphere. The climate of a rainforest is typically hot, wet, and humid.

- ◎ Average Temperature: about 80°F but no less than 64°F
- ◎ Average Rainfall: more than 160 in. each year







# Abiotic Features

The major abiotic features in a rainforest are soil, temperature, humidity, and rivers. The soil is very poor due to heavy rainfall, but rivers provide many species with a habitat.





# *Deforestation*

This is a very big issue in rainforests because it affects wildlife and trees are what makes this ecosystem so unique. As population increases, so does the demand in timber which is why the decrease is an environmental concern.





A detailed botanical illustration background featuring various plants and flowers. In the top left, there are pink flowers with green leaves. In the top right, there are white flowers with green leaves. In the bottom left, there is a large yellow flower with a red center and green leaves. In the bottom right, there is a yellow fruit (lemon or orange) with green leaves and small white flowers. The central text is framed by a white border with a thin black line.

# Lemurs





# Taxonomy of Ring-Tailed Lemurs

**Kingdom:** Animalia

**Phylum:** Chordata

**Class:** Mammalia

**Order:** Primates

**Family:** Lemuridae

**Genus:** *Lemur*

**Species:** *L. catta*

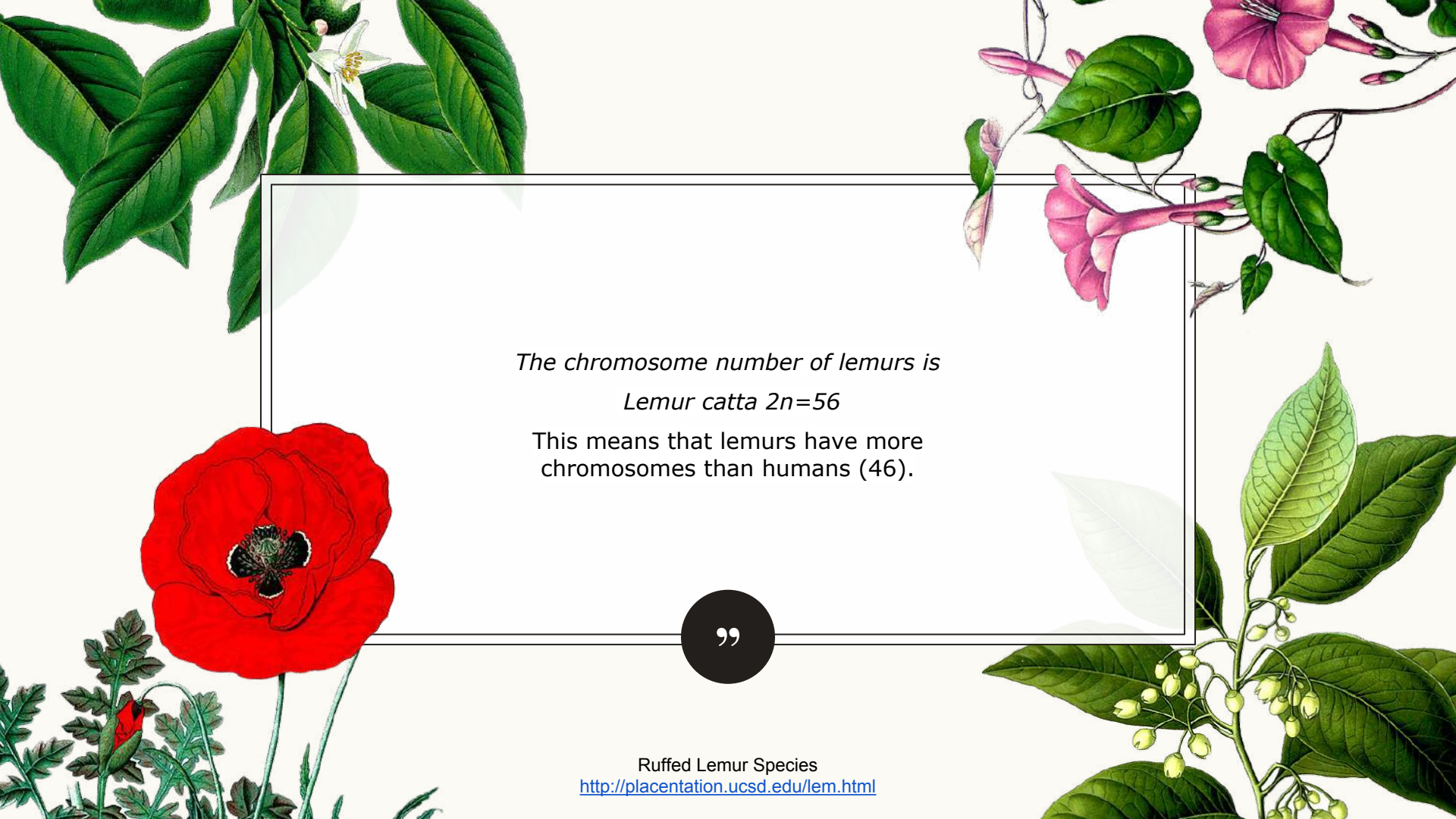
# Appearance



Ring-tailed lemurs are known for their white/gray fur and black and white rings on their tail. They also have bright, yellow eyes and weigh about 5 to 7 Lbs. Their hind legs are longer than their front and their tails are longer than their body to help with balancing.







*The chromosome number of lemurs is*

*Lemur catta*  $2n=56$

This means that lemurs have more  
chromosomes than humans (46).

”

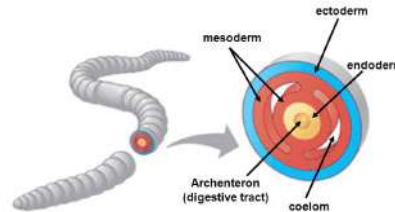
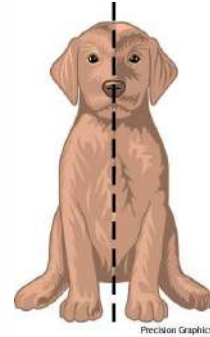
Ruffed Lemur Species

<http://placentation.ucsd.edu/lem.html>


# Body Plan

**Symmetry:** Bilateral Symmetry

**Body Cavity:** Coelomates







**Lemurs live in dry forests and shrubs located in Madagascar. They usually stay in hot areas.**

**Habitat**



# Food



- Ring-tailed lemurs are omnivores
- They eat fruits and nuts and may sometimes eat insects
- They find their food in trees and bushes (during colder months they travel longer distances to find food).



Lemur World

<http://www.lemurworld.com/lemur-feeding/>







# Interesting Facts

- Ring-tailed lemurs are mostly on the ground than any other type of lemur species
- Ring-tailed lemurs rub secretions on their tails and wave them at rivals to get them to leave
- The name “lemur” derives from the Latin word for ‘spirit’ or ‘ghost’
- In each family of ring-tailed lemurs, there is only one male





# Conservation Status

Ring-tailed lemurs are **endangered**. This is due to the destruction and clearing of trees in their habitat. Deforestation is the removal of trees in a specific habitat. Because of Madagascar's diverse animal and plant species, many people have continued to threaten the species that reside there.



A detailed botanical illustration serves as the background for the slide. It features various plant species, including a large yellow hibiscus-like flower on the left, a pink flower in the upper left, and several white flowers with pink centers on the right. Green leaves and stems are interspersed throughout the composition.

# Population


# 2,000 - 2,400

Scientific American

<https://blogs.scientificamerican.com/extinction-countdown/ring-tailed-lemur-crashe/>



# Reproduction



All lemur species are sexual. Mating season starts in the middle of April and have annual births between the months of August and September. The female usually carries a baby lemur for 24 months. The litter size is usually 1-3, though having triplets is rare.



# Humans Interfering

## Logging

Though humans arrived much later to Madagascar, trees have been cut down and cleared to allow for growing crops and using the wood to make furniture.

## Hunting

Based on discovered fossils, lemurs have been found with slashes which indicate that previously they were being hunted for food.

## Invasive Species

When humans migrated here, they brought along domestic dogs who were trained to guard crops and chase away rodents. They roamed the island and have preyed on ring-tailed lemurs.



# Adaptations

- ◉ Lemurs are nocturnal and have poor eyesight, but its long nose provides them with a strong sense of smell which overcomes that and is very useful for them at night.
- ◉ Lemurs also have long nails to help them get food from trees and cling to their mother's back when they are an infant.
- ◉ Besides the “stink fight”, lemurs use the secretions from their scent glands to mark their territory as well as communicate with other lemurs.



Tamarind  
Tree



Ring-Tailed  
Lemur



Madagascar  
Ground Boa



Harrier Hawk



Maggots



# Food Chain

# Dichotomous Key

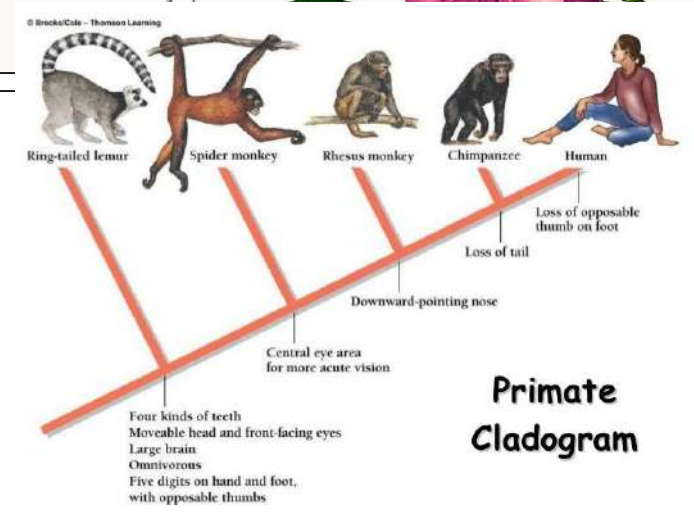


1	a. Has red/brown fur... go to 3 b. Has gray fur... go to 2
2	a. Is small in size... <b><i>Microcebus murinus</i></b> b. Is large in size... go to 5
3	a. Has a solid black tail... go to 4 b. Has a very small tail... <b><i>Microcebus berthae</i></b>
4	a. Has yellow eyes.... <b><i>Varecia rubra</i></b> b. Has brown eyes.... <b><i>Eulemur rubriventer</i></b>
5	a. Has alternating black and white rings on its tail... <b><i>Lemur catta</i></b> b. Has a greyish/brown tail... <b><i>Eulemur mongoz</i></b>

# Evolution

## Evolution:

There is a theory that Madagascar broke away from Africa before the evolution of apes. It isn't fully confirmed yet, but it is possible that lemurs, monkeys, and apes have a common ancestor. Because they haven't had to compete for food, lemurs have evolved in a very isolated location which is why there are more than 50 species of lemurs now. Fossils that have been believed to be from lemurs show that they used to weigh up to 350 pounds. Researchers have come to the conclusion that they have become smaller in size because of the fact that they could live up in trees. Their tails are not used to hang in trees (like monkeys) instead, they have other functions.



Notey

<http://www.notey.com/blogs/lemur>



A detailed botanical illustration background featuring various tropical plants. In the top left, there are pink flowers with green leaves. In the top right, there are white star-shaped flowers with green leaves. In the bottom left, there is a large yellow flower with a dark red center and green leaves. In the bottom right, there is a yellow lemon with green leaves and small white flowers. The central text is framed by a thin black border.

# Amazon Water Lily



# Taxonomy of Amazon Water Lilies

**Kingdom:** Plantae

**Phylum:** Magnoliophyta

**Class:** Magnoliopsida

**Order:** Nymphaeales

**Family:** Nymphaeaceae

**Genus:** *Victoria*

**Species:** *Victoria Amazonica*

SeaWorld Parks & Entertainment

<https://seaworld.org/Animal-Info/Animal-Bytes/Mammals/Ring-tailed-Lemur>





# Habitat

Amazon Water Lilies grow on the shallow waters of the Amazon River.



Tree of Life

[http://tolweb.org/treehouses/?treehouse\\_id=4851](http://tolweb.org/treehouses/?treehouse_id=4851)





# Appearance

The flower part of this plant is white. The flower creates large leaves that grow flat and have rims at the ends. The bottom of the leaves allows the lily to be strong and hold up to “136 kg”. However, the flower does not last very long; only 2 days at the most.



Tree of Life

[http://tolweb.org/treehouses/?treehouse\\_id=4851](http://tolweb.org/treehouses/?treehouse_id=4851)



# Chromosomes & Tropism

Victoria Amazonica has 20 chromosomes ( $2n$ ) which is less than a human's 46.

Tropism: Hydrotropism (Positive)



# Adaptations

1. The bottom of the leaves have thorns to prevent predators from eating it.
2. The rim around the edges protect it from being eaten by birds and insects
3. The flower only lives up to 2 days, after that it closes up and sinks to the bottom of the river.

”





# Humans Interfering

## **Pollution:**

Industrial expansion has caused an increase in pollution for the Amazon River. The Victoria Amazonica resides in the river and it harms the plant due to all the waste.

## **Deforestation:**

Cutting down trees results in erosion and runoff into the river.



# Interesting Facts


- It was found in 1801 in Bolivia and was first named *Euragale Amazonica*.
- Later in 1837 John Lindley, a botanist, renamed it to *Victoria Amazonica* in honor of Queen Victoria
- The Amazon Water Lily is the biggest in its family
- The lily can hold up to 30 kg.
- The flower only blooms at night





# Angiosperm or Gymnosperm?

A giant water lily is an angiosperm because it is a flowering plant. This flower is a dicot. In a dicot plant, the leaves have veins that branch out. You can also tell by the number of petals the flower has, A dicot usually has petals that come in a group of four or five.



Victoria amazonica (Giant Water Lily, Royal Water Lily)

<https://austrobotany.wordpress.com/2014/04/13/victoria-amazonica-giant-water-lily-royal-water-lily/>







# Reproduction

Giant Water Lilies reproduce sexually with a beetle as the pollinator. It does this by trapping the beetle inside its core and releasing its pollen all over it. The beetle is then released and searches for another white lily to pollinate as the process starts over again.

Giant Water  
Lily



Black Bean  
Aphid



Ladybird



Cane Toad



Hognose  
Snake

Great-Horned  
Owl



# Food Chain



# Dichotomous Key



1	a. Has a flat leaf... go to 2 b. Is very large in size... go to 3
2	a. Has blue petals and a long stem... <b><i>Nymphaea nouchali</i></b> b. Has white petals... go to 5
3	a. Has a pink flower and a rimmed edge... go to 4 b. Has bumps all over the leaf... <b><i>Euryale ferox</i></b>
4	a. Leaf does not have thorns.... <b><i>Victoria cruziana</i></b> b. Leaf has thorns on the sides and bottom.... <b><i>Victoria amazonica</i></b>
5	a. Petals are pointed out... <b><i>Nymphaea lotus</i></b> b. Petals are oval-shaped and are pointed up... <b><i>Nymphaea odorata</i></b>





# Conservation



# Predict & Conserve

I could help conserve the tropical rainforest by fundraising and donating money to the *Rainforest Alliance Organization*. They have been saving rainforests for 30 years and allow easy access on their website to give money to.





# What Can People Do?

People that live in the area can stop deforestation and, instead, plant trees. They can also find different ways to do things that won't hurt the rainforest. Also people can stop being dependent on items that come from the rainforest.

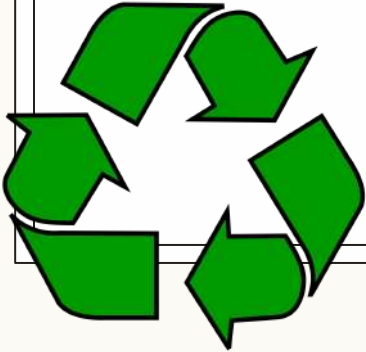






# What Can You & I Do?

We can inform people about the damage being done to the rainforest and learn to RECYCLE every chance we can get. We can find ways to stop pollution and spread the word to others.





# Climate Change

## ❖ Ring-Tailed Lemurs

- Climate change is causing the lemurs in Madagascar to move somewhere else. This is very important because lemurs are only from Madagascar and no other part of the world.

## ❖ Amazon Water Lily



- For some species, they can move to different locations. However, plants like the Amazon Water Lily can not be moved. Higher temperatures will affect this plant's survival.

BBC Earth

<http://www.bbc.com/earth/story/20150226-what-hope-is-there-for-madagascars-threatened-lemurs>

WWF Global

[http://www.panda.org/what\\_we\\_do/where\\_we\\_work/amazon/amazon\\_threats/climate\\_change\\_amazon/amazon\\_climate\\_change\\_impacts/](http://www.panda.org/what_we_do/where_we_work/amazon/amazon_threats/climate_change_amazon/amazon_climate_change_impacts/)





# U.S. Government

## **Reservations:**


The government could build parks in Madagascar to help save the lemur population.

## **Laws:**

Congress could pass a law about deforestation in Madagascar because lemurs are losing their habitats

## **Hunters:**

Hunters are trying to hunt the lemurs before they become extinct by paying locals to guide them on these expeditions. The government could make hunting these creatures illegal.







## Sources:

<https://mr-js-zoo.wikispaces.com/file/view/Ring-Tailed+Lemur.pptx>

[https://www.nrcs.usda.gov/Internet/FSE\\_PLANTMATERIALS/publications/flpmctn12686.pdf](https://www.nrcs.usda.gov/Internet/FSE_PLANTMATERIALS/publications/flpmctn12686.pdf)

<http://www.rainforest-alliance.org/>

<http://www.care2.com/causes/5-ways-you-can-save-tropical-rainforests.html>

<http://kids.mongabay.com/elementary/601.html>

<http://www.rainforestfoundation.org/10-things-you-can-do-save-the-rainforest/>

