

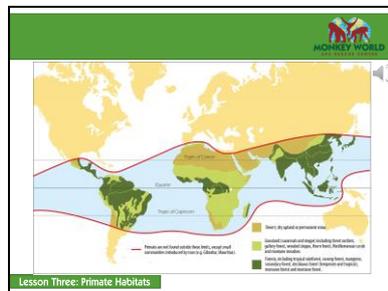
## Home Education Lesson 3: Primate Habitats slides and notes

Slide 1



In our third lesson, we are going to find out about the different habitats that primates live in around the world. We are going to be talking only about **non-human primates** as humans have adapted to live in even some of the most inhospitable habitats on earth!

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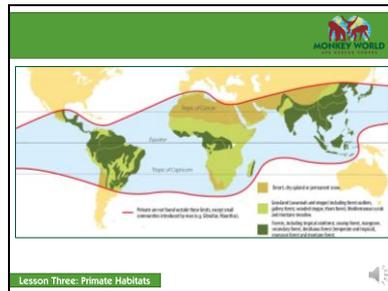


Primates generally live in hot, tropical climates across the world. They mostly live in the jungles of Central & South America, Africa, and Southeast Asia. However there are a few unique species that live in **temperate** areas, where there are warm summers, but winters can become very cold – even snowy!

Most primates are found living near the **equator**. The equator is an imaginary line that is drawn through the middle of the Earth, and divides in into the northern and southern hemispheres. It lies exactly between the North and South Poles. The countries that lie on and around the equator, are home to some of the hottest places on earth. These regions generally only experience two seasons – wet and dry – and the temperature remains warmer throughout.

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Non-human primates are not found outside the red line on the map, other than where they have been introduced by people: the macaques that live in Gibraltar, for example. Within this area, there are many different habitats. Primates have evolved and adapted to live in a wide range of habitats, and are found in forests, grasslands and deserts. Every different habitat will have variety in the animals, plants, food and water sources, and predators that will affect the way primates move, eat and sleep.

*What would make a good habitat for a primate? Can you brainstorm some ideas? Plenty of food and water, lots of trees, warm, not too many predators (including people!)*...

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There are different types of tropical forests, including dry forests, montane forests, and tropical rainforests. They are found around the equator, in areas where the temperature and rainfall is high throughout the year. Tropical rainforests are the most bio-diverse places on earth, as they are home to over half of all the species in the world – that's over 5,000,000,000 species!

Rainforests are always warm (between 20°C and 30°C) and wet, with over 200cm of rainfall per year! They are home to some of the oldest, and tallest trees in the world; some grow to over 30m high. The branches and leaves of the tallest

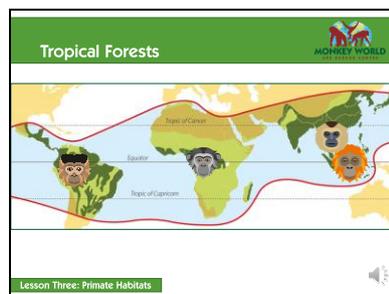
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trees form a roof-like canopy over the forest. The combination of the canopy, hot temperature and high rainfall creates a dark, humid environment throughout the rainforest.

**Activity Idea:** Investigate the differences between different types of tropical forests, and the animal species that inhabit them. Can you identify any special adaptations needed to live in that habitat?

**Activity Idea:** Some of the tallest trees in the rainforest have reached heights of over 30m? How tall is that compared to a double decker bus? Or Big Ben? Get your maths hat on and put the size of these trees in context by comparing them to tall objects that your children recognise.

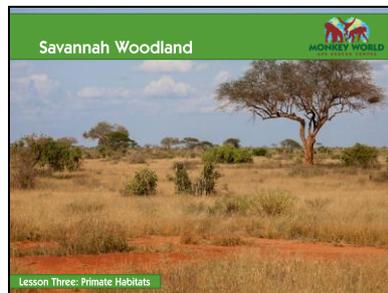
Slide 5



Some of the primates that inhabit tropical forests include capuchins, who are found in rainforests throughout northern and central South America, in countries such as Brazil, Peru and Argentina. Remember – there are only monkeys in South America, and no apes or prosimians! Chimpanzees live in the tropical and sub-tropical forests of West, Central and Eastern Africa. And in Asian tropical forests you'll find gibbons and orang-utans; orang-utans are only found on Borneo and Sumatra, but species of gibbons are distributed through lots of countries, including Indonesia, Vietnam, and China. Of course, these are not all the species of primates found in these habitats – just an example!

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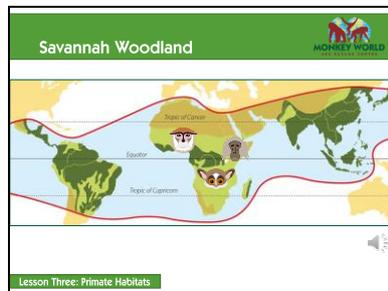
Some primates live in drier habitats with less tree coverage, from the savannah to the sub-desert. Savannah woodland is very hot and has long dry seasons with very little rain. This means that there are less luscious plants than in a tropical forest habitat, but the plants here are also adapted to live in these conditions and require less water to survive. The trees do not grow much taller than 15m, and there are a lot more low-lying plants like grasses and shrubs. The primates that live in savannah woodland are mostly found in Africa.

Can you remember the differences between Old World Monkeys and New World Monkeys? Old World Monkeys are found in Africa and Asia, and have adaptations including hard-rump pads and cheek pouches for storing their food. Have a look at the picture of the savannah habitat – why might these adaptations be important here? *There aren't as many trees to sit in... they might need to run away from a predator (imagine a lion or cheetah is camouflaged somewhere in this*

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*photo!)... there might be other primates or animals also trying to eat from the same tree/bush.*

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Savannah woodland habitats are mostly populated by African monkeys and prosimians, including patas monkeys (like Mica who lives at Monkey World), baboons, and galagos (bushbabies). As there are less trees in this habitat, the native primates also display more terrestrial adaptations such as shorter digits on their hands and feet that are better for walking on the ground, and shorter tails; as they spend more time on the ground, long balancing tails aren't as necessary. Some of these primates, like Hamadryas baboons even live on the edge of the desert where the land reaches up to 2600m above sea level.

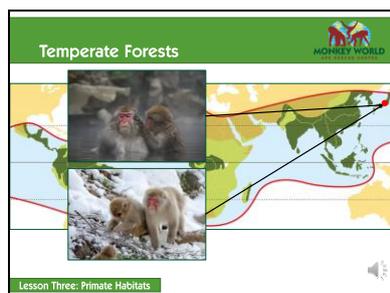
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Temperate forests are found in both the Northern and Southern Hemispheres, are home mostly to deciduous trees, and have warm summers and cold winters. For example, the forest that surrounds Monkey World in Dorset, is a temperate forest! There aren't many primates who live in these habitats, as they get much colder during the winter and, as we know, primates generally prefer hot climates. However, Japanese macaques (also known as snow monkeys) inhabit forests throughout Japan, which range from sub-tropical lowlands to the mountainous regions of Honshu. The macaques have had to adapt to the significantly different seasons – in the winter temperatures can plummet to 15°C with a metre of snow, but they can rise again to around 23°C in the summer!

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Japanese macaques have actually learned to keep themselves warm in the winter by bathing in the naturally-heated volcanic springs in the mountains! Of course, spots in the hot springs are highly-coveted, and those higher in the hierarchy will get more time in the warm water. Japanese macaques have thicker hair than other species of macaque, and those that live in the north of Japan have thicker hair than their counterparts who live in the south.

**Activity idea:** Investigate other primate species who live in temperate forests and how they are adapted to the change in seasons.

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Habitats such as rainforests include smaller habitats, called microhabitats. For example in a rainforest where there are lots of trees that grow to a variety of heights, you will find different species of animals living on different levels of this vertical microhabitat. We can roughly divide the microhabitat into four layers or levels.

- The ground level is the shrub layer, where it is hard for light to travel through the canopy of leaves to the floor, so this layer is dark and is a great home for plants such as fungi and scattered herbs.
- The next level up is the understorey, where the leaves of the shorter trees interweave and form a lower canopy. Shade loving trees and ferns grow well here.
- The middle storey is home to trees that reach heights of around 36m. The branches and trunks of the trees are closely packed together, trapping the light, and forming an interconnected highway for arboreal animals. At

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the top of the trees is the open canopy, where the tallest trees emerge above the others forming an open canopy of leaves, that allows some light down to the lower levels. These trees can resist high winds and temperatures.

If all of the primates that inhabited this rainforest lived at the same level in the trees, they would have to compete for food and space, which would make it harder for the species to survive. Instead, primates exploit the different niches in their habitats. In our diagram we have a gibbon, orang-utan, and macaque. The macaque is more terrestrial and so lives at the shrub layer, eating the foods that grow at ground level. Orang-utans are much larger, and need to rely on thick, sturdy branches to hold their weight (adult male orang-utans can weigh over 80kg!), which are found between the understory and middle storey. They will eat a variety of fruit and plant matter that grows here. Gibbons are smaller, lighter and adapted to swing underneath branches. They can inhabit the same trees as the orang-utans and macaques, but eat only the leaves and fruit that grows where others cannot reach it.

**Activity idea:** *If this microhabitat is home to macaques, orang-utans and gibbons, where in the world must it be? You might even be able to work out which country and which species of macaque and gibbon they could be!*

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Let's have another look at some arboreal adaptations and how they are used in the context of these habitats.

- Binocular vision gives primates a clear, accurate picture of the world around them. It allows them to judge depth and distance when climbing or swinging through the trees. Imagine a gibbon, swinging through the canopy of a rainforest – the tallest trees are over 36m high, so it's vital that the gibbon doesn't misjudge the distance to the next branch and fall to the floor.
- Long gripping fingers and a reduced (shorter) opposable thumb make it much easier for tropical forest-dwelling spider monkeys and gibbons to hook onto branches and swing underneath them.
- Prehensile tails help New World Monkeys stay secure in tropical trees, and give them a bigger range of movement to forage for food. Woolly monkeys, for example, can hang by their tails and reach the food underneath

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the branch they're sat on, whereas a squirrel monkey (no prehensile tail) can only reach what is next to them or above them.

- Orang-utans have mobile hips, so their gripping feet can hold onto branches above their heads.
- Long, balancing non-prehensile tails help primates to balance; ring-tailed lemurs occupy the dry tropical forests of Madagascar, where they run along the tops of branches, and leap between trees. Their long tail helps them to keep their weight centred, and not topple off!
- Gripping hands and feet allow primates to grasp branches as they climb trees in any forest habitat. If you've ever climbed a tree, you might have wished your feet could grasp too!

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Now let's remind ourselves about terrestrial adaptations:

- Terrestrial primates have shorter digits (fingers and toes) as they don't need to hook their hands around branches like tree-dwelling primates.
- Some arboreal primates have longer arms than legs, and so walk on their knuckles on the ground (like chimpanzees). Terrestrial primates, like macaques have limbs that are equal length, which allow them to walk comfortably on the ground and on top of branches.
- Spending more time on the ground leaves primates more

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vulnerable to predators – if a foraging group of stump-tailed macaques suspect a leopard is nearby, they can store the food in their cheek pouches and run to safety.

- Hard-rump pads might not be the most beautiful adaptation, but they make sitting on the ground much more comfortable! If you've ever sat on a hard floor for a long time, you probably started to get uncomfortable and shift around.

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Sadly, primates' natural habitats are not safe from human interference.

The increase in the human population over time, has led to a demand for more housing, agriculture, infrastructure and industry. To make way for human expansion, rainforests around the world are being destroyed. Humans use a range of methods to clear the trees from a section of forest: they might cut the trees down, bulldoze the area, or even set fire to it. In 2019 the Amazon rainforest saw more fires than in the last decade and, although forest fires occur naturally from events like lightning strikes, most of the 70,000+ fires were caused by humans clearing land by burning the vegetation. Many animals are killed in the process of clearing the forest. Those who survive the machinery and fires are left to survive, but they must compete with other species for decreasing space and food.

<https://www.nationalgeographic.com/environment/2019/08/amazon->

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[fires-cause-deforestation-graphic-map/](#)

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One of the most controversial reasons that huge areas of the rainforest are being destroyed is for the production of palm oil. Palm oil is a versatile vegetable oil, made from the fruit of the oil palm tree. The oil is widely used as an ingredient in food, household and hygiene products, as well as biofuel around the world. Oil palm trees produce more oil using less land than other oils, so it is very efficient method of vegetable oil production. Despite this, more and more palm oil plantations have been developed since the 1970s, predominantly in Malaysia and Indonesia, where around 50% of the deforestation there has happened to make way for the palm oil industry. On the island of Borneo alone, over 16,000 square miles of rich, biodiverse rainforest has been torn down for these plantations. The palm oil plantations provide much needed income and stability for local workers, but they have had a devastating impact on the unique species that live in these habitats. One of the primate species that is most affected is orang-utans. Both Bornean and Sumatran orang-

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Orang-utans are classified as critically endangered by the International Union for Conservation of Nature (IUCN), and their wild populations continue to decline. New palm oil plantations continue to appear in the middle of their habitat and territory, replacing the trees they would visit to find food.

Understandably, orang-utans will eat the fruit of the oil palm that is now in their habitat, but are treated as pests and are often shot when they enter a plantation. Orang-utans are only found on Borneo and Sumatra. Since 1999 over 100,000 Bornean orang-utans have been killed, predominantly as a result of deforestation. Many conservation charities and organisations are working together to tackle this issue but if it continues at the same rate, it is very likely that orang-utans will become extinct in the wild in a matter of decades.

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Wild primates are also hunted and poached from their natural habitats to be sold into the pet trade, entertainment industry, or to be eaten as bush meat. So many of the apes at Monkey World were torn from their families and native countries to be used and abused as photographer's props, circus performers, and neglected pets. When an infant primate is taken from the wild, it is almost certain that their mother and other family members will have been killed by poachers. The babies will potentially be smuggled into a different country, and sold into an inappropriate and

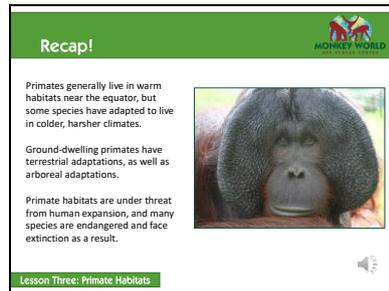
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cruel life without others of their own kind. Some lucky individuals are rescued by Monkey World and other organisations, but sadly these trades continue.

Take Pung-yo for example. Pung-yo is a golden-cheeked gibbon who was born in Vietnam, but was poached from his forest home when he was barely a year old. He and hundreds of other animals were smuggled into Taiwan via boat, before the smuggled animals were discovered and confiscated. The picture shows Pung-yo and other baby gibbons who were also crammed into the same small, dirty cage. Pung-yo moved to his new home at Monkey World in 2001; he lives with his mate Peanut and together they have had three children: Tien, Tia-Nang, and Teo. Golden-cheeked gibbons are just one of the primate species listed as endangered. Most of the species that live at Monkey World are listed as either endangered or critically endangered, as their wild populations are declining rapidly, due to humans destroying their habitats, and removing them from the forest.

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**Recap!**

Primates generally live in warm habitats near the equator, but some species have adapted to live in colder, harsher climates.

Ground-dwelling primates have terrestrial adaptations, as well as arboreal adaptations.

Primate habitats are under threat from human expansion, and many species are endangered and face extinction as a result.

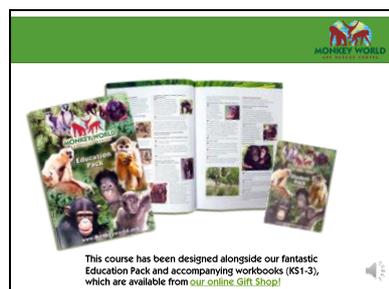
Lesson Three: Primate Habitats

Non-human primates are mostly found in warm habitats near the equator, such as tropical rainforests and savannah woodlands. However some more hardy primates live in temperate forests where summers are warm, but winters become freezing cold. Non-human primates are found in Central & South America, Africa, and Asia. Any primates found outside of these regions, have been introduced there by people.

All primates exhibit some adaptations for an **arboreal lifestyle** such as gripping hands and feet, but primates who spend more of their time of the ground exhibit **terrestrial adaptations**, such as hard rump pads and cheek pouches.

Many species of primate are listed as endangered or critically endangered, as their numbers in the wild continue to decline due to poaching and habitat loss.

### Slide 17



This course has been designed alongside our fantastic Education Pack and accompanying workbooks (KS1-3), which are available from our [online Gift Shop!](#)

These lessons have been designed alongside our Education Pack which is full of comprehensive information on primate classification, habitats, family groups, diets and more. It is perfect for learning more about primates at home! It is available from our online Gift Shop, along with curriculum-linked workbooks available in Keystages 1, 2 and 3!