

COVER
NOT FINAL

FORESTS



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With
**FOLD-OUT
PANORAMA PAGES**
of
**SIX GREAT
FORESTS**

COLD FORESTS: The Great Northern 'Boreal' Forest

NORTHERN CANADA IN DECEMBER. A winter wonderland of snow-covered spruce trees and leafless silver birches. The snow has been lying for months. The air is freezing cold. Some nights the temperature drops as low as -54°C . Everything is still. Dormant. Waiting..

This is the Boreal Forest, named after *Borea*, the Greek god of the north wind. This, the biggest forest on Planet Earth stretches around the lower edge of the arctic circle (50-60 degrees North through Canada and Alaska on the American continent, starting again in Europe and carrying on across Northern Asia until it reaches the Pacific Ocean.

Much of the forest grows on top of frozen soil called **permafrost**. The trees have shallow roots. The coniferous trees are shaped to shed snow whose weight might, otherwise break their branches. Their needle leaves are filled with natural antifreeze and are waxy on the outside to keep their water in. Few animals can digest them. When winter arrives, the animals have to move away to the warmer south or wait it out in the shelter of tree roots, caves or beneath the snow. Everything is waiting for Spring and the great snow melt.

Insects fill the air and birds like warblers migrate in to take advantage of the abundance of food and raise their young.

With the Spring warmth, the forest changes character. Leaves grow back on the birches and willows.

Undergrowth plants shoot up between the trees.

Many of these produce the sweet fruit like **bilberries** and **cloudberries** that we humans and animals like bears love to eat.

With one and a half million lakes in the Canadian boreal forest as well as numerous rivers, the easiest way for people to travel through the region has always been by water. Indigenous people like the **Cree** traditionally paddled canoes made out of birch tree bark. Though these are still used today, many boats now are many of plastic or aluminium- and many are powered by outboard motors.

Summer here is a brief 130 days and even as September arrives the forest is closing down again ready for the next big freeze.

Life in the tree tops

MANY TROPICAL FOREST ANIMALS live their entire lives in the tree top canopy. Here they find food, shelter and (often but not always) safety from predators. Some animals are so well adapted to life up here that they rarely if ever come down to the ground.

STRAWBERRY POISON DART FROG

(*Dendrobates pumilio*)
Location: Central America
Size: 7 centimetres long

This frog's tadpoles develop in the pools of water trapped in bromeliad plants. The female lays the eggs on leaves on the forest floor, leaves them to be guarded by the male until they hatch then carries them on her back one at a time to the rainforest canopy.



THORNBUG (*Umbonia crassicornis*)

Location: Central America
Size: 1 centimetres long

This tree hopper mimics being a thorn to hide from predators.



THREE-TOED SLOTH (*Bradypus variegatus*)

Location: South America
Size: 55 centimetres long

Sloths grip onto branches with their hooked claws, moving slowly and so needing little energy to survive. Sloths feed on leaves and come down to ground around once a week to go to the toilet.



CLOUDED LEOPARD (*Neofelis nebulosa*)

Location: Southeast Asia
Size: 120-200 centimetres From head to tail

Clouded leopards can swivel their feet, allowing them to descend trees headfirst as their chattering and squirrels in the tree tops.



RAINBOW LORIKEET

(*Trichoglossus moluccanus*)
Location: Australia
Size: 30 centimetres

These colourful parrots have brush-like tongues that let them to lap up sugary nectar from flowers.



HELICONIUS BUTTERFLIES (XX)

Location: South & Central America and the Caribbean
Size: XX centimetres

Some species are poisonous. Over types have evolved to look like them which helps them avoid being eaten.



BLACK AND RED TREE-CLIMBING CRAB

(*Malagasya antanilensis*)
Location: Madagascar
Size: 3 centimetres

These crabs eat leaves and scavenge from dead animal carcasses



FLYING LIZARD (*Draco Volans*)

Location: Southeast Asia
Size: 20 centimetres

Draco Volans have specially modified ribs with skin stretched across that allow them to glide between rainforest trees. They feed on ants and other insects.



AYE-AYE (*Daubentonia madagascariensis*)

Location: Madagascar
Size: 100 centimetres

Nocturnal aye-ayes use their long, bony middle fingers to pull grubs out of holes in trees.



TERMITE NEST (Family: Rhinotermitidae)

Location: South America
Size: 0.3 centimetres

The tree termites that built this nest stay underneath, protected from too much heat, sun or rain as they eat through the wood beneath.

