

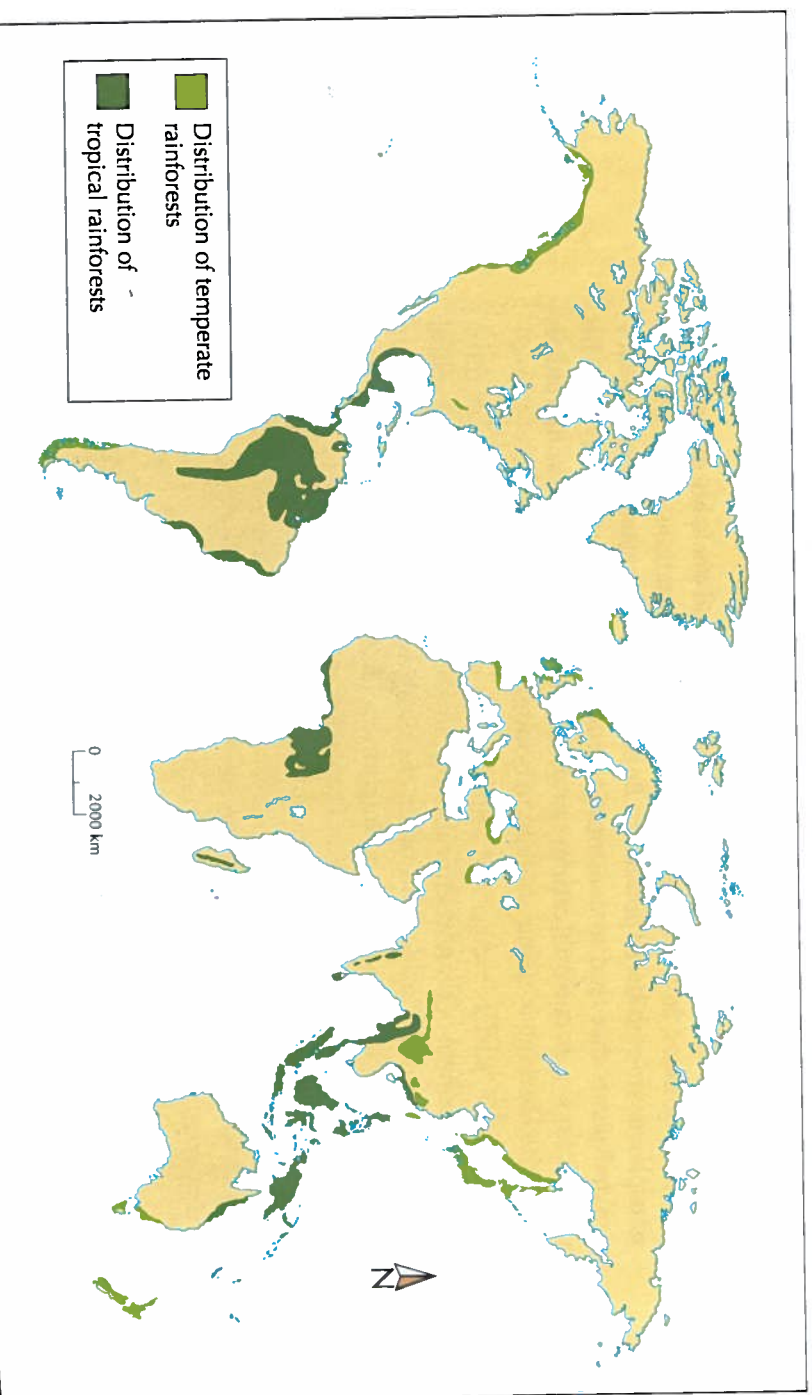
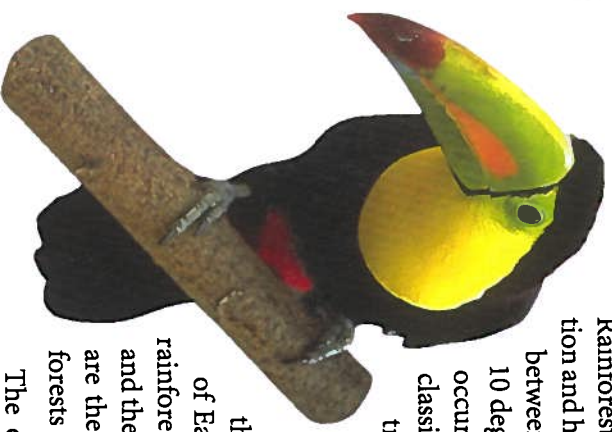


## Interrupting the Cycles: Can the Rainforests Be Saved?

Rainforests are very complex ecosystems. They are characterized by lush vegetation and high amounts of rainfall throughout the year. Tropical rainforests receive between 2 and 9 metres of rainfall per year. They are generally found between 10 degrees north and 10 degrees south of the Equator. Temperate rainforests occur in middle latitudes and receive 2 to 3 metres of rainfall per year. To be classified as a rainforest, a forest must have a closed canopy in which the tree-tops, or crowns, touch one another, creating a shaded interior.

Rainforests are Earth's most biologically diverse ecosystems. In 1950, it was estimated that temperate and tropical rainforests comprised 14 percent of Earth's surface. Currently, they account for less than 6 percent of Earth's land surface but contain more than 50 percent of Earth's animal and plant species. Some experts estimate that remaining rainforests could be consumed by human activity, such as logging, agriculture, and the expansion of urban areas, in less than 40 years. The questions are, what are the consequences of deforestation and, more importantly, can the rainforests be saved?

The destruction of the rainforest affects both the environment and the economy.



Earth's tropical and temperate rainforests. What type of rainforest is found in Canada?



## Impact on the Environment Erosion and Siltin

Rainforest destruction promotes rapid erosion and siltin of rivers and streams. *Siltin* is the filling up or raising of the bed of a body of water by deposits of silt, a material consisting of disintegrated rock particles. On the west coast of Canada, the clear-cutting of forests in some areas is siltin the headwaters of many rivers and streams, thus interfering with the ability of wild salmon to spawn.

## Deforestation and the Global Carbon Cycle

The destruction of the world's rainforests has a huge impact on Earth's environment. Deforestation increases the amount of carbon dioxide (CO<sub>2</sub>) in Earth's atmosphere. It has been estimated that from 1850 to 1990, worldwide deforestation released 122 billion metric tonnes of carbon into the atmosphere, with the current rate being 1.6 billion metric tonnes per year. In comparison, the burning of fossil fuels such as coal, oil, and gas releases about 6 billion metric tonnes of carbon dioxide into the atmosphere per year. Therefore, deforestation makes a significant contribution to the increasing amounts of carbon dioxide in Earth's atmosphere. Releasing CO<sub>2</sub> into the atmosphere enhances the greenhouse effect—the process whereby the planet's surface is warmed by solar radiation trapped by an increased concentration of greenhouse gases such as carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and ozone (O<sub>3</sub>) in the atmosphere—and could contribute to an increase in global temperatures.

## Deforestation and the Water Cycle

Deforestation also affects the local climate of an area by reducing the evaporative cooling that is produced by soil and plant life. This is most pronounced in tropical rainforests. As trees and plants are cleared away, the moist canopy of rainforests quickly diminishes. Evaporation and evapotranspiration from trees and plants return large quantities of water to the local atmosphere, promoting the formation of clouds and precipitation. Less evaporation means less cloud cover, meaning that more of the Sun's energy is able to warm the surface and the air above, leading to an increase in temperatures. Rainforests take thousands of years to form and develop. They play a vital role in regulating Earth's climate patterns. Over a very short time in Earth's history, human destruction of rainforests has contributed to changes in global climate patterns that may be difficult to rectify.

**GEO-FACT**  
The Amazon rainforest has been described as the "lungs of our planet" because it continuously recycles carbon dioxide. More than 20 percent of Earth's oxygen is produced in the Amazon rainforest.



Deforestation of a temperate rainforest in Clayoquot Sound, British Columbia. Compare the old-growth forest in the foreground of the photograph with the logged, clear-cut forest in the background.

