

## Case Study

# The tropical rainforest – Ecuador

## ‘Republic of the Equator’

Ecuador is the second smallest country in the continent of South America. In the east is the tropical rainforest of the upper Amazon basin, known as the Oriente. This region contains one of the richest and most diverse rainforest ecosystems in the world. Puyo (population 25 000) is the capital of Pastaza, a province in the Oriente region. It experiences a very hot and wet equatorial climate and its tropical rainforest vegetation lies on the western edge of the Amazon basin. Despite the remoteness of this rainforest, it is under threat from logging, tourism and oil companies. Conserving the rainforest and the way of life of the tribes that live there has been one of the country’s priorities, but there are also huge oil reserves – the income from drilling for oil would allow a great deal of development in this LEDC.

### B The climate of Puyo

Puyo (2°S 78°W), Ecuador, South America  
Altitude: 950 metres

	J	F	M	A	M	J	J	A	S	O	N	D
Temperature (°C)	25	25	25	25	24	24	24	24	25	25	25	25
Rainfall (mm)	214	222	305	366	353	338	301	225	259	302	289	237
% Humidity	85	86	86	87	86	83	80	79	79	79	81	85

Average annual rainfall = 3411 millimetres  
Temperatures are average (mean) for each month  
Average daily temperature: Max: 30 °C Min: 19 °C  
Average relative humidity: 80%

### TASK 1: Study Source A

- Use Source A to describe the location of:
  - Ecuador
  - the capital Quito
  - the region of Oriente
  - the town of Puyo.
- What evidence shows the Oriente region has a large diversity of plants and animals?
- Which plant adaptations are mentioned in the extract?
- Why is the rainforest and the way of life of the tribes who live in the Oriente region under threat?
- Describe the location of the Yasuni National Park.

### A Ecuador and its rainforest

The Oriente is home to over 25 000 species of plants, 1600 bird species, 300 mammals and 460 species of amphibians – mostly frogs. Lianas (thick, dangling vines) hang from high in the canopy. Spread across the forest are the buttress roots of tropical hardwoods. Equally impressive are the forest’s giant leaves which are thick and waxy and have pointed ‘drip tips’, which help water run off during downpours. Home to poisonous snakes, toxic plants and flesh-eating fish plus caiman and jaguars, the rainforest may not seem like the most inviting habitat. But for the tribes who have always lived there, the rainforest has everything needed for survival.

*The Lonely Planet Guide to Ecuador & the Galapagos Islands*



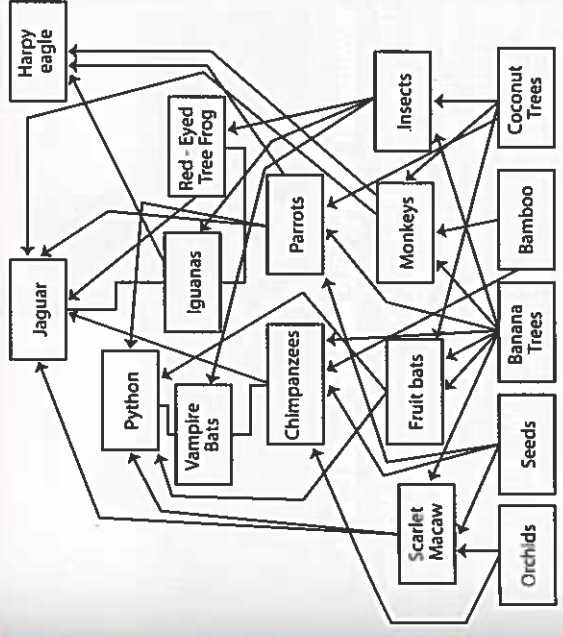
### C Does Puyo tick the boxes?

Beginnings ...	... endings
Temperatures over 20 °C for most months of the year ...	... so photosynthesis can take place all year
High rainfall in each month of the year ...	... result in the rapid recycling of nutrients.
Long hours of daylight and sunshine ...	... so there is water available for growth all year
High temperatures and high rainfall ...	... so plant growth is not limited by low temperatures.

### TASK 2: Study Sources B and C

- Draw a climate graph using the same scales as on the previous work on climate data and graphs (see page 113).
- Match the **Beginnings ...** and **...endings** in Source C.
- Explain why the climate of Puyo is better for rapid plant growth than the climate at Cambridge (see page 113).

### D The rainforest food web in Ecuador



The food web shows a fraction of the main links between plants and animals in Ecuador. Missing from here is the Andean Condor – a huge bird of prey with a wingspan of 3.2 metres. It is a member of the vulture family and feeds mostly on carrion (dead carcasses) such as deer and cattle. It is the national emblem of many South American countries. It is somewhere on page 120; can you find it?

### F Newspaper extract

## WORLD FAILS TO SAVE AMAZON FROM OIL DRILLERS

Ecuador’s parliament has voted to drill for oil in an Amazon nature reserve after failing to attract enough funds from other countries to leave the area untouched. President Correa said that he would not approve the exploitation of oil reserves under the Yasuni National Park unless rich countries contributed US\$ 3.6 billion to his poor country. The park is home to some of the most diverse fauna and flora in the world, as well as indigenous tribes. Only US\$13 million was raised so the state oil company, Petroamazonas, will now take charge of oil extraction. This has not gone down well with local people. ‘We want them to respect our territory,’ said Alicia Cauilla, who represents the Waorani people. ‘Let us live how we want.’ The President claims that the drilling will only affect a small part of the park and it would raise US\$22 billion to be used among the poor for welfare and education programmes. The problem is this, he said: ‘Do we protect 100% of the Yasuni and stay poor, or do we save 99% of it and have US\$18 billion to defeat poverty?’

Adapted from *The Times*, 5 October 2013

### E Conserving the rainforest – the Yasuni National Park



The Yasuni National Park is an international biosphere reserve, established in 1979. It covers an area of 1 million hectares in the north-east of Ecuador. It is home to the most diverse ecosystem of plants, animal and insect species in the world. The soils beneath the rainforest in the park are tropical red soils (see page 117). The park has been created to the east of the Waorani tribe’s reserve where, due to the area’s inaccessibility, hunter-gatherers have survived for centuries by living off the rainforest. Now the park and the reserve are both threatened by road-building, tourism and oil drilling.

### TASK 3: Study Source D

- From Source D identify:
  - a producer
  - a primary consumer
  - a secondary consumer
  - a tertiary consumer.
- Draw one food chain that involves a producer and all three different types of consumer.
- At what trophic level are parrots?
- Imagine parrots became extinct. Write down three consequences at the trophic level(s):
  - below that of the parrot
  - above that of the parrot.

### TASK 4: Study Source E

- Why is it such an important area for conservation?
- Why has the area managed to survive in its natural state for so long?
- The Waorani tribe are hunter-gatherers. What do you understand by that term?
- State three different activities that threaten the future of the rainforest and the Waorani tribe’s way of life.

### TASK 5: Study Source F

- What did President Correa propose as a way of saving the Yasuni National Park but also gaining some income for his country?
- The policy failed, so oil drilling will take place here. Comment on the question posed by President Correa at the end of the article.