

# 5.2 What is a rainforest ecosystem like?

Rainforests are unique **ecosystems** consisting of four different layers — the emergent, canopy and understorey layers and the forest floor. Each layer can be identified by its distinct characteristics. Rainforests are actually a community of plants and animals working together to survive, linked in a food web.

**Emergents**  
These are the tallest trees, ranging in height from 30 to 50 metres. They are so named because they rise up or emerge out of the forest canopy. Huge crowns of leaves and abundant animal life thrive on plenty of available sunlight.

**Canopy**  
This describes the array of treetops that form a barrier between the sunlight and the underlying layers. Their height can vary from 20 to 45 metres. This layer contains a distinct **microclimate** and supports a variety of plants and animals. The taller trees host special vines called lianas that intertwine the branches. Other plants called epiphytes use the tree trunks and branches as anchors in order to capture water and sunlight.

**Understorey**  
This layer contains a mixture of smaller trees and ferns that receive only about five per cent of the sun's energy. Many animals move around in the darkness and humidity, using the vines as highways.

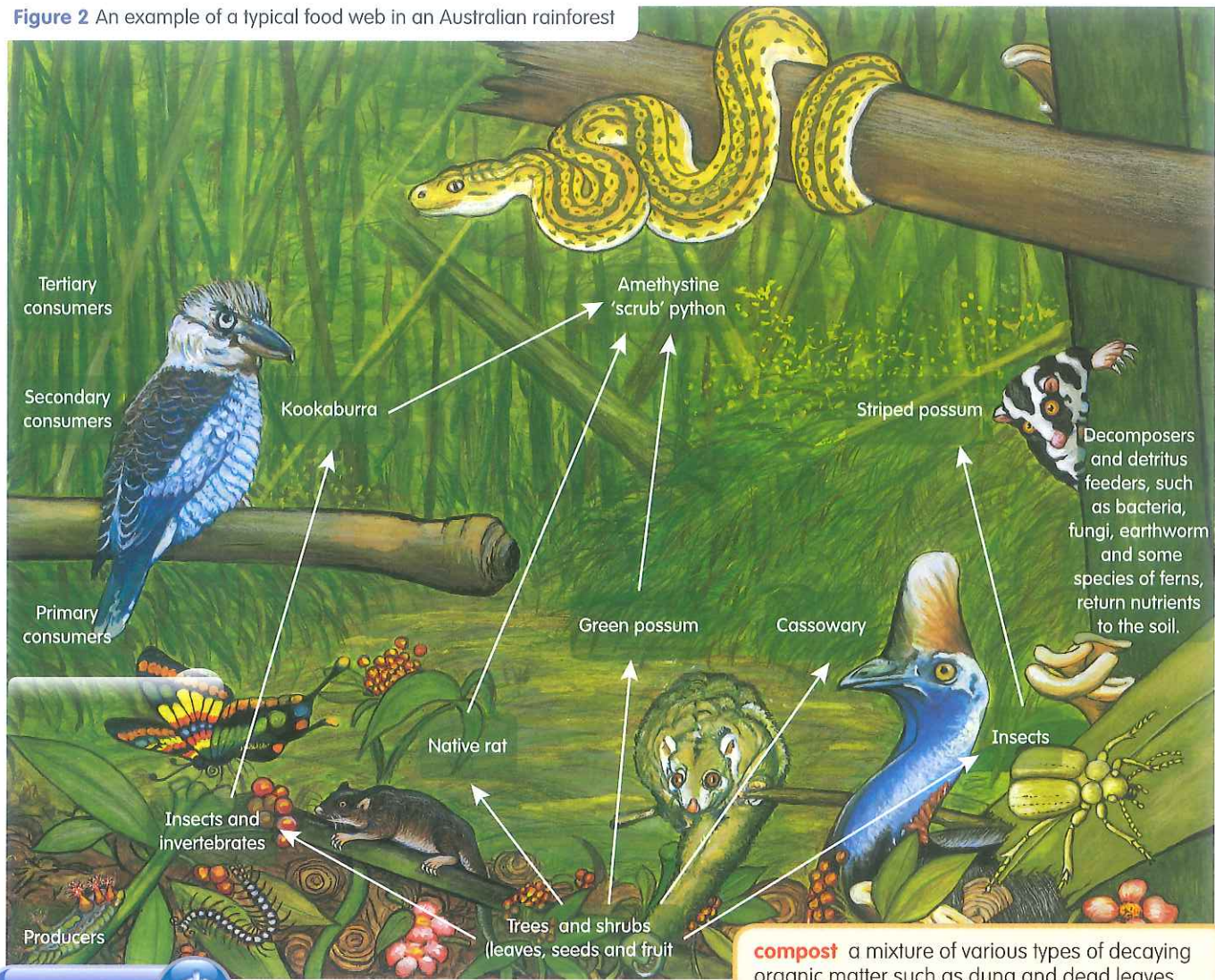
**Forest floor**  
This bottom layer is dominated by a thick carpet of leaves, fallen trees and huge buttress roots that support the giant trees above. Rainforest soils give the impression of being fertile because they support an enormous number of trees and plants. However, this impression is wrong, as the soil in rainforests is generally poor. Leaves and other matter are recycled by the many organisms to create a living **compost**. The roots of trees must 'snatch' these nutrients from the soil before heavy rains wash them away and they are lost through a process called leaching.

Larger animals also roam through this layer in search of food.

Figure 1 Layers in a tropical rainforest



Figure 2 An example of a typical food web in an Australian rainforest



## Activities

- REMEMBER**
- 1 How many layers are there in a rainforest **environment**?
  - 2 What are the tallest trees in the rainforest called?

- EXPLAIN**
- 3 Describe how conditions in the canopy layer differ from those on the forest floor.
  - 4 Draw up and complete a table like the one below that summarises the features of a rainforest **environment**.

Layer	Height	Amount of light	Features
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- DISCOVER**
- 5 Many rainforest animals live their whole life in the trees. Using the internet to help you, give some examples of these animals and conduct research into the habits of one animal.
  - 6 Use the **Treehouse** weblink in your eBookPLUS (click on the picture, then select the *Jewels of the Earth* activity) to explore the layers of the rainforest and the plants and animals that inhabit them.

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**compost** a mixture of various types of decaying organic matter such as dung and dead leaves  
**ecosystem** an interconnected community of plants and animals in a particular environment  
**microclimate** specific atmospheric conditions within a small area

- THINK**
- 7 In a rainforest, the soil below the trees is often poor and shallow, and the trees create their own nutrients. In one sentence describe how this happens, and draw a labelled sketch to illustrate the process.
  - 8 What **change** might you expect in the success of plant growth if the rainforest trees are removed and crops are planted instead? Why?
  - 9 Imagine you are a raindrop. Recreate your journey through a rainforest, passing through each of the forest layers. Read or act out your descriptions to the rest of the class.
  - 10 Use the **Revelation: Rainforests** interactivity (int-0956) in your eBookPLUS to identify key characteristics of a tropical rainforest.

**SKILLBUILDER**  
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