

Adaptation of vegetation to tropical climate

Revision points:

- Tropical rainforests have a high biodiversity which is a response to climate
- There are five distinct layers in a tropical forest: emergent trees, canopy, under canopy, shrub layer, herb layer.
- Tropical rainforests are evergreen, and consist of deciduous trees which shed their leaves at different times.
- The plants compete with one another for heat, light, moisture and nutrients.
- Tropical soils are called latosols; they are largely infertile, and most nutrients are found at the top.

Journal extract from Amazon expedition

Expedition log, Day 12 – Amazon Rainforest, Brazil, South America.

This part of our research expedition is really interesting. We set off from Manaus over a week ago and since then have been trekking deep into the forest. The forest is so dense in places it's practically impossible to get through so our guide took us up river by canoe for the final part of our journey.

Yesterday afternoon we set up camp in a forest clearing to study the local vegetation.

From the clearing we can see the five distinct layers typical of a tropical forest. Once inside the forest the vegetation is so dense that it's difficult to see anything at all. The forest floor is really dark as hardly any sunlight reaches it. The plants on the forest floor and in the shrub layer are competing for what little light there is, and seedlings quickly grow very tall to reach the best light conditions in the canopy. This is why the trunks are so straight and thin in relation to their height.

On the ground there are ferns and the giant buttress roots of the taller trees above. The leaves that fall onto forest floor don't stay there very long because the climate in a rainforest means that the nutrients are recycled really quickly. The leaves are unlike anything I have seen back home and probably belong to one of the hardwood trees like mahogany. They are typical "leaf" shapes except for the very long tip at the end which are called 'drip tips'. These let the water drip easily off the ends when there's heavy rainfall every afternoon.

We estimated the height of some of the trees. There seems to be a discontinuous layer of trees at around 20 metres above the ground, and then a more continuous layer above at around 35 metres which is called the canopy layer. In the canopy the trees here have very rounded crowns and I imagine from above it looks like a sea of green. The forest is evergreen so the trees lose their leaves, but at different times of year so the forest never looks bare like wooded areas do in Britain. Above the canopy layer at around 50

metres above the ground we can just see a couple of trees. These are called emergent trees. The emergent trees have vine like plants called lianas on their trunks which twist up towards the light around their thin, smooth bark.

Tomorrow we're going to take a closer look at this clearing to see if we can find any evidence of human activity. I think the clearing is slowly regenerating and so it's most probable that this area has been subjected to shifting cultivation, which is when a community clear and cultivate a small area of forest. Once the soil loses its fertility and crops can no longer be grown, the community will move on to another area. It's incredible to think that "shifting cultivation" still exists as a way of life in the 21st century.

If it is shifting cultivation it probably hasn't done any lasting damage to the ecosystem. Any commercial activity would have probably involved clearing a much larger area.