

ADVENTURES IN THE AMAZON

The Amazon flows
from Peru into Brazil.

Key words

rainforest
forestry
sustainability
conservation

Laura Plant describes the time she spent in the Amazon rainforest in northern Peru on a project researching the impacts of forestry on the plants and animals that live there.

Timber has many uses – in building, paper-making and as an energy resource. But demand for wood is increasingly rapidly. How can we ensure that this resource is available for long into the future? This is the principle of sustainable use, and it is vital in conserving forests and their plant and animal communities for future generations.

Forest management

In tropical regions, large areas of rainforests have been untouched for centuries. This means that many rare and unique plants and animals have become specialized to live only in these habitats, making rainforests highly biodiverse. This biodiversity is threatened when rainforests are cut down to supply wood. For example, mahogany has become very rare due to over-harvesting.

The practice of Sustainable Forest Management (SFM) aims to harvest wood from forests in ways that cause minimal damage to the surrounding area and allows sufficient time for the trees to regrow before they are harvested again. This involves: only harvesting on average one tree per hectare, a long rotation time (around 20 years) before re-

harvesting, the cutting of lianas that are attached to multiple trees to prevent other trees being pulled down, only cutting down trees that are bigger than a certain size, and the creation of conservation and regeneration areas. A company that does all these things can be certified by the Forest Stewardship Council (FSC).



Cut timber is marked with the logo of the Forest Stewardship Council to show that it has been harvested responsibly.

However, any type of logging disturbance could have a lasting negative impact on a forest. The sustainable forestry company GreenGold Forestry (GGF) wanted to find out how big this impact is in their concession in the Peruvian Amazon and they asked me to help them find out.

Assessing the impact

Our project had two aspects. Firstly, we wanted to know how the felling of a single large tree would affect the growth of the surrounding trees and vegetation. Would the large space that has been created in the canopy allow more light into the usually shaded undergrowth and cause faster growth? Or would damage caused by tractors and logging machinery to the area slow the growth of the surrounding vegetation? To assess this we decided to establish permanent 20 m x 20 m plots in the rainforest containing a tree of commercial interest. Half of the plots will have the tree harvested, the other half will be kept as controls with no harvesting and all will be monitored over the next 5 years. All the trees in the plots were tagged with metal discs and their size and species recorded so they can be re-measured in years to come.

Our second aspect was to look at the how animals are affected by the disturbance to their habitat. How long does it take for them to return to the logged area or do they never return at all?

Finding mammals in the rainforest is no easy task and sightings are usually rare; however, where there are mammals, there is mammal dung and where there is dung, there will be dung beetles. This meant that we could use the diversity of dung beetles as a measure of the diversity of mammals in the area.

We needed bait for this and the obvious bait is dung. Luckily, we found a small zoo in Iquitos where, after much laughter, the zoo-keeper allowed us to remove dung from the cages of a variety of jungle mammals including monkeys, pumas and jaguars.



Collecting jaguar dung at the zoo

Carrying out the project

Armed with thick wellies, mosquito repellent and machetes to cut a path through the dense rainforest, we set off. A four-day boat ride up the Amazon river took us to the area of rainforest owned by the logging company where we camped for the next three weeks.

Days were spent carrying equipment, setting up plots and collecting data. The near 100% humidity makes it so warm that even the 'shower' - a plastic tub to pour water over yourself while perched on a plank of wood across a stream, felt like luxury! The wildlife was truly incredible. We saw many

species of hummingbirds and monkeys, as well as a herd of stampeding huangana (wild boar). The plants were formidable, with their dense canopy effectively blocking out the sky from our view, and their aggressive or prickly defence systems making them a danger to anyone who tripped and grabbed them for support.

Potential results

Since rainforest trees grow slowly, our research will need a few more years of data collection before growth rates can be obtained and a comparison made between our logged and unlogged plots. Results from similar studies have shown that an intermediate amount of disturbance can increase growth rate and diversity of vegetation. This is thought to be due to the following reasons:

1. When there is little disturbance, one or two well-adapted tree species tend to dominate the area and the canopy is so thick that little light gets through to allow regeneration on the forest floor.
2. When there is too much disturbance (as in clear-felling), few trees are able to grow at all and important seed-dispersing animals have been lost from the area. After the land has been abandoned, a few colonizer species will be able to start the process of secondary succession.
3. At an intermediate level of disturbance, caused naturally by heavy storms, a lot of different niches are opened up that a wide diversity of species can occupy. For example, light gaps in the canopy or the exposure of new soil.



Logs can be stored in the river to prevent insect damage.

Sustainable logging practices attempt to have an intermediate disturbance effect on the forest, avoiding irreversible damage to the forest and perhaps actually increasing biodiversity.

This project was an amazing opportunity for me to see how data is collected in the field and the challenges faced by scientists as they try to understand how a complicated system like a rainforest works. I hope that more research in this area will show people how vulnerable the rainforest is to human influence and how important it is that we harvest resources from this beautiful ecosystem in a sustainable way.

Laura Plant is a graduate student at the University of Cambridge studying for an MPhil in Environmental Policy.

You can see some of Laura's pictures on the back page.

FOREST FIELDWORK

LAURA PLANT SPENT THREE WEEKS IN THE AMAZON RAINFOREST OF PERU. HER PHOTOS REVEAL SOME OF THE DIFFICULTIES OF WORKING IN THIS ENVIRONMENT.

The Amazon rainforest covers a large fraction of the landmass of South America.

Laura working in the rainforest



Barun Patro

Buttress roots make measuring trees difficult.



A dung beetle trap with bait - in one trap we caught a tarantula!



A forestry worker with a baby huangana or white-lipped peccary



You wouldn't want to hug this tree!



Birds such as the scarlet macaw are important seed dispersers in the rainforest.

