

Katie Wilkinson Scholarship Report

An analysis of the effects of elevation on the forest composition and structure in the Rio Jurua, Amazonas.

by Louise Riley



The Rio Jurua one of Brazils' large white water rivers. The river begins its journey in the Andes of Peru and snakes its way through the amazon basin, eventually merging with the rio solimoes; one of the main tributaries of the amazon river. The sediments washed down from the andes bring a rich annual supply of nutrients to the varzea (white water flooded) forests of the region, and the forests of the upper Rio Jurua are thought to contain the greatest species richness found anywhere on the planet. The productivity of the varzea forests is notable higher than the neighbouring terre firme forests, which are not seasonally innundated with the floodwaters. The soils of terre firme forests are much poorer in nutrients, and are consequently less able to support as much biodiversity as can be found in varzea forests. In addition they receive huge amounts of rainfall each year, flushing away nutrients from the soil, rendering them even less productive.



My research in the Rio Jurua was concerned with quantifying these differences between terre firme and varzea forests, beginning at the level which underpins everything else; the trees. As the forest is the basis for almost all other forms of life in the amazon, in understanding the forest structure and composition you are able to understand better the patterns of species richness and distribution of the other creatures inhabiting the forest. The forest inventory data will be used by PhD students to help them make sense of the data they have been collecting on the use of non-timber forest products, hunting frequencies and mammal distributions, and on frugivorous birds in order to build up a clear picture of the state of the forests in this region of the Rio Jurua. This will eventually lead to the creation of a management plan for the reserves, aiming to conserve maximum biodiversity whilst improving the standard of living for the people inhabiting the reserve.



Storks on an oxbow lake



Canoe and butterflies.

Collecting the data was a highly enjoyable but often tiring task. We left the communities each morning around 7 or 8am, usually spending well over an hour just getting to the plots either by foot or in a motorised dugout canoe, often both. Some

plots took over 2 hours to reach. Our team usually consisted of four people; the project leader, a tree identifier, an assistant who knew the location of his particular transect, and myself. Once we reached the transect we chose three 0.1hectare plots along the transect and collected our data within these plots. We collected data on five different variables in each site:

- 1: the diameter of each tree so as to be able to calculate the basal area,
- 2: the local name for each tree within the plot
- 3: the diameter of any woody vines present
- 4: the number of saplings present
- 5: canopy photographs so as to analyse the canopy percentage cover.



Fino and Nataniel after a day in the forest



Finding the diameter.

Being in the forest all day surrounded by the sounds of the insects, birds and monkeys was incredible. Although you didn't see birds and animals all the time, almost every day you saw something new, from tree frogs, and butterflys that were the most amazing colours to troops of monkeys travelling through the canopy. It was also very interesting learning about all the different trees-there were so many different names and we were only identifying them to genus level! Its often the case that every other tree in amazonian forests is a different species, with around 350 species per hectare. Since I've long been interested in tropical rainforests, it was a great opportunity to make sense of and experience things which I had previously only read about.

Although not directly related to my research, one of the most interesting aspects of my experience in the Rio Jurua was meeting the local people and being able to experience what it is like to live in such a remote, isolated and beautiful setting. It was completely different from anything I had ever experienced before. I think I always had quite romantic ideas about how life must be for people leading such traditional lives; peaceful, friendly, surrounded by nature, close community and family ties and being able to live off the land in a relatively sustainable way etc.... all of which were pretty much true, in some ways it is a paradise there. But I hadn't anticipated the realities of living your life in such isolation. Many of the communities we visited were literally days away from healthcare, and many communitites had their own horror stories of people losing a leg or dying from snake bites, or of being chased by jaguars or anacondas; most children had stories of brothers and sisters who had died young. It brought home to me the reality of living your life intertwined so intimately with

nature, subjected to the same laws and drive for survival as everything else depending on the forest.



Fishing



toasting manioc flour in the casa de farinha

Reality is certainly harsh for people living in the reserve. People survive by hunting wild game and fishing, along with small-scale slash and burn agriculture to produce their staple of manioc flour (farinha). As the soils are quite poor there is not much of a culture of vegetable growing and their diet consists almost entirely of farinha with some form of protein. Family life is very segregated, with men doing almost all the hunting, fishing and building, whilst the women do practically everything else; looking after the children, washing clothes, cooking, cleaning.... The list goes on! Nearly everybody was incredibly muscly from all the physical work, including some of the children. I don't know that I have ever encountered such warm, welcoming and easy going people as I did this summer. In every community we visited it was the same story and I was always really sad to leave once we had collected the data.



A young hunter.

Back here in norwich I'm busy trying to make sense of all tha data we collected, and although I havn't yet finished analysing all the data, patterns are already beginning to emerge. There is a clear difference between the structure of terre firme and varzea

forests in the region, with the average number of trees and their diameter being greater in the varzea forests just as we expected. At the moment I am trying to convert all the local tree names into their latin genera so that we can analyse the genus distributions within each forest type for the patterns there, quite time consuming!

The time I spent in the Rio Jurua were probably the most challenging, yet incredible 10 weeks I have ever had. The experience has taught me so much and I feel I'm still processing its lessons, and will continue to do so for a long time. I can't express how grateful I am to the Katie Wilkinson fund for making this experience possible. Thank you!

