CLOUD forests

The cloud forests in the mountains of Honduras are rare and unusual habitats. Jose Nuñez-Miño (right) watches them slowly disappear.

Although this will be my fifth year returning, I still remember vividly my first view of a cloud forest from the back of a 4x4 pickup truck in June 2004. The truck struggled up a steep winding road. Conditions changed rapidly from dry and dusty to wet and muddy several times during the two hour climb. Every time we drove through the many streams that pour down the mountain, multicoloured butterflies erupted into the air around us.

As we ascended, the views took my breath away, though none of what we saw matched my imagination. The mountains stretching into the far distance were certainly beautiful, but the deforestation of the lowlands was almost complete, leaving a vast swathe of devastation.

Eventually we reached Cusuco National Park located in north-west Honduras. Rainforests gave way to a tropical montane cloud forest, a rare type of evergreen forest found in equatorial regions. The forest surrounding us was made up of pure stands of pine not unlike what you might see in Scotland, although pineapple-type plants provided a clue that things are different here.

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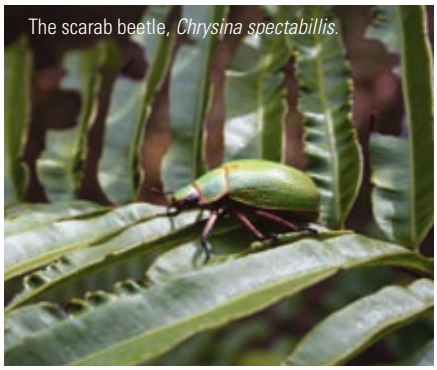
Higher still, the habitat changed back to tropical forest. I ducked into the back of the truck to avoid a whipping from the ferns lining the dirt road.

Cusuco National Park is not big. At its widest points it’s about 13km from east to west and around 8km north to south. But don’t be deceived: the extremely steep terrain is very challenging, even for the most physically capable. The terrain is one reason that the scientific community has largely neglected this type of habitat.



The scarab beetle, *Chrysina spectabillis*.

Plectrohyla exquisita.

It's this steep terrain that creates many different climate conditions in close proximity to one another. The knock-on effect is a large number of different animal species living cheek by jowl.

This will be my final year of working on my PhD, funded jointly by the Natural Environment Research Council and Operation Wallacea, a research tourism company that provides funding and volunteers to aid research. We want to understand what factors in this environment influence the abundance, distribution and diversity of the park's different animal groups. This is not only interesting scientifically but will help create a sustainable management plan and focus limited resources where they will be most effective.

The work would be almost impossible without the help of the volunteers who survey over 150 sites scattered across the park. They measure: slope and aspect of each site; number and type; diameter and height of trees; number of cut trees; level of disturbance; thickness and height of vegetation; number of tree saplings; and how much light gets through the forest canopy.

This information along with the animal surveys tells us which of these factors are the most important for each animal species. The serious analysis of the vast volume of data collected is still to come. This work will allow us to say which surveys are the most efficient and should be carried out in the future to monitor the park's state of health.

Having worked on butterflies in the park previously, my attention is now on dung beetles. These insects play a crucial role in the forests, and not just for the obvious reason of getting rid of dung. In so doing, they not only mix and aerate the soil but also scatter and bury seeds contained in the dung, which may help forest regeneration. Another benefit of burying dung is that they also bury parasites and other disease-causing agents contained within it.

So far, we have found 39 species of dung beetles in the forest; at least one is new to science. My results show that these insects are not randomly scattered across the park but have distinct preferences for some areas over others. The level of disturbance in terms of logging and other forest industries or uses, along with environmental factors such as height above sea level, definitely play a big role, but this varies from species to species.

The forest is also home to another insect group, the Jewel Scarab beetles. This charismatic group has several species found only in the park including the aptly named and spectacular *Chrysina spectabillis* (top left). This is highly valued by unscrupulous collectors because of its rarity and great beauty. I want to know where to find these beetles and estimate their numbers.

The park is located in Honduras's industrial heartland. Despite the park's legal protection, it has no park rangers to enforce it. Deforestation, caused mainly by cattle farmers and coffee growers, is increasing even in the core. This is probably the biggest threat to the cloud forests. Hunting is widespread. Some large mammals such as spider monkeys have disappeared. Numbers of other rare species, such as the bairds tapir, are dwindling fast.

Miraculously, the park is still incredibly rich in terms of animal diversity. Our surveys have revealed 270 bird species, 35 bat species and 93 species of reptiles and amphibians. Many of these animals are found nowhere else on Earth. Eleven species of reptiles and amphibians have only ever been recorded in this one park.

These habitats do more than simply offering refuge to unique species; they act as sponges, soaking up water. They steadily release it to the communities in the lowlands, Honduras's most densely populated region. The effect of losing the forest would undoubtedly be devastating. The signs around the park suggest that this is happening at a steady but increasing rate.

On some evenings when I lie down exhausted by endless trekking across steep ravines, soaked by heavy storms, bitten on every inch of exposed skin by mosquitoes and feeling the surprisingly bitter cold of the night I wonder, why am I doing this? Then I wake up to the calls of howler monkeys, the sight of orchids growing high up in the trees surrounded by orchid bees, the buzzing of hummingbirds feeding on bird of paradise flowers and a morning chorus to beat all morning choruses. It's then that the question seems utterly absurd. By understanding just a little of what is going on in this most complicated of places, we are also helping to conserve it so that its inspiring beauty may be enjoyed far into the future. ❖

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