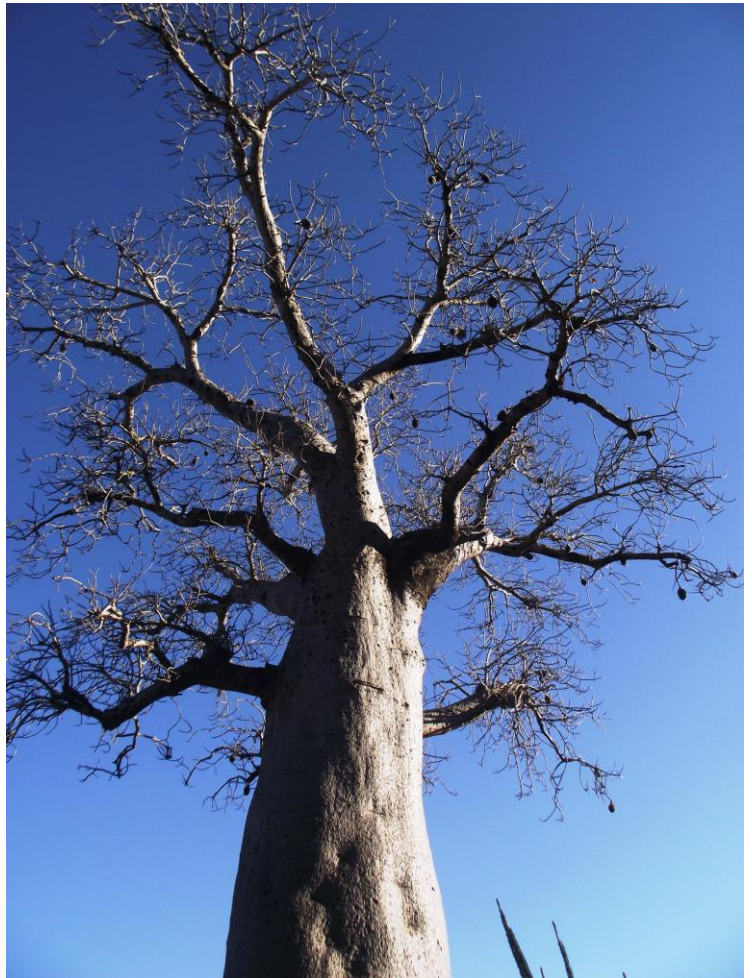


An Operation Wallacea Expedition to Madagascar

My Operation Wallacea expedition to Honduras in Summer 2011 really confirmed for me that I wanted to remain in Biological Sciences for a career following the end of my degree. However, I was not aware at that point how much it had pointed me back in the direction of Ecology and Ecological Management as opposed to the much more molecular focus of my, then, Genetics honours programme. Through third year I came to realise this fact, building on my CV with regular volunteering sessions with the Scottish Wildlife Trust, and so it was no surprise that when the opportunity of another Operation Wallacea expedition came up that I snapped up the offer very quickly.

Having had experience with Opwall, and being a year further on in my studies, I knew that I wanted to gain a lot more from this expedition. Honduras was fantastic with a great all round introduction to ecological monitoring techniques and conservation. However I knew that this year I wanted a much more focussed programme that involved much more hands on research as opposed to what felt like constant training. The Madagascar expedition offered by Opwall seemed perfect for this with a single four week programme with the same team, limited by time for completing all necessary research. Fortunately I was correct with my deduction!

Seven months after confirming my place on the expedition, I jetted off to Madagascar (with a distinctly inadequate knowledge of French, not to mention Malagasy!) still not quite sure what to expect as the details of the individual projects we were working on had been kept relatively quiet. The project site was in the south of Madagascar at Mahavelo in the Mandrare Valley near Ifotaka. This area was semi-arid being far West enough that the site was in the rain shadow of the central spine of mountains which run the length of Madagascar. To get here required an internal flight from the capital city, Antananarivo, to the city of Fort Dauphin before a very rough 'bus' ride to Ifotaka, then an 8km hike to the base camp itself. Despite having had experience with Opwall before, I was still unsure what to expect from the camp that would become home for the next month. The camp was quite basic with bucket showers, long drop toilets and drinking water that had to be brought from Ifotaka. Luckily I was prepared, but it was certainly a shock for the few of the research assistants that had never even camped before!



One of the large, and now rare, Baobab trees

After all the travelling it was brilliant to actually get involved with the ecological research at the base camp. The plan for the research was to have three days of orientation with lectures on field technique,

spiny thicket ecology, the Malagasy people and the threats and issues facing conservation of this area. Following the orientation days we would enter a group rota around all the different projects: bird surveys, vegetation surveys, invasive species surveys for the WWF, a double rotation of work in the herpetofauna projects and then finishing with lemur range point centre quarter (PCQ) analysis and then lemur behavioural studies. Activities ranged throughout the day with some nocturnal transects as well.

I started with the bird projects for which we spent three days doing early morning and late afternoon transects and recording bird sightings and calls along 300m line transects. These were done in spiny thicket and gallery forest from both disturbed and undisturbed areas. The study was to see whether the



Crested Coua

type, number and ecological niche of species changed in these two different habitat types and whether disturbance was altering populations as well. This was backed up by the vegetation data. Doing the bird transects was a lot of fun because you had to be so quiet – a seemingly strange comment, but it meant that you got up close to a lot of animals that were usually quite illusive. We got very up close to three of the four lemur species found in the area (ringtails, the white-footed sportive lemur and the very bouncy Verreaux’s Sifaka) and also saw radiator tortoises and chameleons quite regularly. The bird life was also pretty spectacular

with some beautiful smaller birds like the Crested Coua but also regular sightings of kestrels and the large harrier hawks and yellow banded kites that were in the area.

The vegetation surveys, whilst not being the most fun (or pain free), formed the basis of all the research that was going on as they provided the framework data upon which many of the comparative studies were based. Vegetation data was going to be used in Bayesian clustering analysis to see if the different habitat types and differences in disturbance resolved clearly as individual types. For this we matched transects to those used in the bird, lemur and herpetofauna teams and looked at the vegetation profile. This included basics such as canopy and ground cover but also collected data on species type, age of vegetation, relative vegetative density and observations of flowers, leaves, seeds or fruit. Another really important aspect of the vegetation surveys were the invasive species counts for the WWF. The data collected was to show the quality of the surveyed area to see whether it could be incorporated into an extension of the protected area. The three invasives were two species of cactus (*Raketa*) and the prevalent commercial crop, Sisal. All



The iconic Ring-tailed Lemur

three of these species spread really well in disturbed areas but luckily very little had made it into the virgin spiny thicket which probably means WWF will incorporate the NW side of Mahavelo into its protected area. Given the rich ore deposits in the area this is a very good thing.

A fantastic aspect of this trip was how much we learned about the culture of the Malagasy people that lived in the Mandrare valley. It is interesting to note that a lot of their beliefs actually help to save the spiny thicket as to them the idea of 'fady' (cultural taboos) is very strong and passed



Hedgehog Tenrec

down through generations. There are many taboos applied to different areas of the forest and many species. For example no-one of that area would dare harm a lemur as they believe lemurs to have originated from run-away children. Although 'fady' varies across the region it means that lemurs, tortoises and large areas of virgin forest will never be under direct threat. However the spread of Christianity has weakened some of these beliefs and the money of large corporations 'entices' some fady to be ignored. Preserving the ancient customs of the local people may actually be as important for conservation of wildlife as any direct surveying and monitoring.

We were able to fully experience this culture very early on with a visit to a local visit with a large celebration, tribal dancing and a 'spiritual healing' from the village elder; the ombiassy. It is the role of the ombiassy to guide and lead the villages and seek advice and healing power from the various spirits of nature – the 'coquolamps'. It is these spirits that often make areas of the forest fady and tamarind trees are supposed to house these spirits.

Following vegetation I moved straight into six days of herpetofauna surveys. This was undoubtedly the most physically draining aspect of the research as it involved working through the 37°C heat of midday, conducting nocturnal surveys



A female Madagascar Giant Chameleon – *Furcifer verrucosus*

until gone 10pm and digging pitfall traps. Despite the work you got some very rewarding results seeing

the iguanids, geckos, skinks, snakes and chameleons that I was expecting to see in Madagascar. However it wasn't just the reptiles we caught. The pitfall traps were fantastic for catching scorpions, millipedes, mice and the long-eared and hedgehog tenrecs. Like the bird surveys, the majority of transects were to establish an idea of species diversity as opposed to abundance. This took into account data from the pitfall traps and matched day and night transects of the same area within the same 24 hour period. Another aspect of the herpetofauna research was a behavioural study of two similar iguanid species. This study was to see how the two species interacted as well as to get a full profile of their day. This involved lots of watching these lizards scampering across rocks and scoring their behaviour.



Verreaux's Sifaka waking up in the latex containing Fehañe tree

The final rotation of the research programme was six days working with lemurs. The primary focus was on the behaviour of the Verreaux's Sifaka. Working with these lemurs was fantastic as the dazzlingly white colour meant you could see the groups scattered through the forest from a long distance. Coming to Madagascar I had hoped to see a few lemurs but I was amazed at how many we saw and just how close we could get to them. Through the lemur rotation we collected data on the behaviour of two similarly sized groups, one from disturbed forest and one from undisturbed. Essentially each group was being followed all day for a continuous five week period (beginning before we arrived to camp) and the behaviour of the group was noted each day and every day would also see focal monitoring on any one individual. We were even fortunate enough to witness our undisturbed forest group grow in number towards the end of the rotation as we had the successful birth of a baby Sifaka – very Attenborough! The majority of the hard work in the lemur rotation came from conducting point centre quarter (PCQ) analysis. This is a method of using vegetation data to fully profile the forest habitat of the lemurs. It uses central trees which have had an observed behaviour (resting, sleeping, eating) taking place in them and then you measure out to the closest tree in the four quadrants of NE, SE, SW and NW in order to build up an idea of the prevalent species and the vegetation density. Work with primates suggested trees would have to have a diameter of 10cm or more to be a 'behavioural tree', however this data would suggest that the Verreaux's Sifaka can use trees with diameters as small as 4-5cm. One of the researchers was consequently going to write a paper on how the PCQ method should be adapted for work with these lemurs.

We were also lucky enough that, just for interest's sake, we would occasionally set up Sherman traps to catch the world's smallest primate – the grey mouse lemur. We saw a few whilst we were there and it was incredible to see them as close up as we did.



A Grey Mouse lemur in a Sherman Trap – the bar is about 1cm long

The final few days of the research programme involved some targeted completion of some of the data sets, most notably further vegetation and iguanid behaviour studies. However we were also able to help with some direct

conservation including cutting and removing the toxic *Raketa* cactus species (the other, whilst still invasive, can be used for fodder for cattle grazing) from a small area of the river near Mahavelo and helping a local village community complete their school which means that children no longer have to cross the Mandrare River to go to Ifotaka for school (in the wet season the river can be over 1km wide).

More than anything this incredible expedition has helped me decide what I want to do following the end of my university career. One of the most useful resources on the trip was to speak to the researchers and consultants that were in my shoes 5-10 years ago who were able to give hugely valuable advice on where jobs can be found and the different ways to apply a biology degree into conservation and land use. As well as this advice, the month has built on my skills in collecting ecological data, has allowed application of lecture based theory and put me in a leadership role that has developed my skills in managing a team and working to deadlines outside the controlled environment of a laboratory. This development of my skills has made a huge difference to my CV and it really helps that my volunteering and interests back here in Edinburgh have allowed me to consolidate and further enrich my skill base. I really must extend a huge thank you to the Rennie Bequest for helping me to develop my skills through this project, and through my project last year to Honduras. Without this financial support I really would have struggled to do these amazing projects.

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