# Mission Manu 2015 Expedition Report

tin ante la t. 10

## Acknowledgements

Throughout the months of planning, and during the completion of this expedition, we have received a large amount of support for which the team is extremely grateful.

Our expedition would not have been possible without the financial help we received, nor the invaluable knowledge of experts and previous expedition members. For this, we would to express our sincere thanks to the following individuals and organisations:

Ana Lucia Castillo, Daniel Tasayco, Andrew Whitworth, Jaime Villacampa, Jenni Rojas, Laura Braunholtz, Ben Toulson, Chris Lowe, Christopher Price Grants and Institutional support. Falmouth and Exeter Student Union, Manu Learning Centre, University of Exeter Scientific Expedition Fund, Les Halpin Expedition Fund, Royal Geographical Society, Gilchrist Trust.







## Introduction

G lobally amphibian and reptile, or herptile, populations are in severe decline as a result of numerous pressures, including climate change, habitat loss and disease [1]. Additionally, many threatened habitats that represent potential hotspots for herptile biodiversity remain unexplored by scientists [2]. Thus, a key challenge for conservation is to develop survey techniques to rapidly

and so identify priority habitats for protection. Despite pressing need, there is limited data to determine the effectiveness of rapid herptile surveying methods [3]. We carried out this expedition to determine which herpetological survey methods are most effective at sampling biodiversity during short term censuses. We set out to investigate the effectiveness of a variety of herpetological survey techniques in

assess herptile diversity,

measuring species abundance and richness, within an area of regenerating partially cleared rainforest surrounding the Manu Learning Centre (MLC). Four different survey techniques were used, Visual Encounter Surveys (VES), Offtransect VES (OVES), Pitfall Traps (PT) and Leaf Litter Plots (LLP). To assess the effectiveness of rapid assessment surveys in relation to long-term survey systems, we compared the

"During our time at the MLC, we carried out over 500 surveys,"

recorded species and abundance between rapid assessment techniques

(OVES and LLP), and long-term systems, (VES and PT). During our time at the MLC, we carried out over 500 surveys, both nocturnal and diurnal, which we used to assess the effectiveness of rapid assessment techniques. One of our objectives was to form connections between Exeter and Falmouth Universities and the MLC, to develop potential research collaborations between the institutions in the



future, leading to long-term research projects. In addition, through working with MLC we hope that our expedition, and those going in to the future, will develop a relationship with the local communities, communicating with them to determine what it is they want from the area, and how conservation might best work with the people of Manu National Park. We also aimed to produce a short film during the expedition, containing interviews with MLC staff and volunteers. This will be directed at the UK public, to help increase their understanding of the work being done in Manu, specifically the impact a small, student-led research team can have on herptile conservation. Distant mountains tower above the Amazon basin © Lewis Gillingham

"IT WAS ONE OF THE MOST STUNNING JOURNEY'S YOU COULD IMAGINE; MOUNTAIN PASSES, ANCIENT INCA BURIAL GROUNDS AND A NIGHT SPENT IN THE CLOUD FOREST, ALL FOLLOWED BY A BOAT JOURNEY THROUGH WHAT LOOKED LIKE A SET LIFTED STRAIGHT FROM JURASSIC PARK. I THINK IT WAS AT THIS POINT THAT EVERYONE COLLECTIVELY REALISED THAT WE WERE ACTUALLY IN THE AMAZON RAINFOREST."

## Meet The Team

Agraria La Molina participated in the surveys. An additional two students from Falmouth University were assigned to all media aspects of the expedition, documenting our research and photographing specimens.





Name: Lucy Twitcher Role: Team Leader Studying: Zoology Undergraduate

Name: Owen Greenwood **Role:** Scienific Director Studying: Masters by Research, Climate Change



Name: Becca Turley Role: Logistics Manager Studying: Zoology Undergraduate



Name: Maria Watson Role: Fundraising Officer Studying: Zoology Undergraduate





Name: Georgia Bardua Role: Kit Manager Studying: Zoology Undergraduate

Name: Dan Cottey-Hill Role: Health & Safety Officer

**Studying:** Geography Undergraduate





Name: Tom Clazie Flynn Role: Social Media Manager Studying: Marine & Natural History Photography Undergraduate

Name: Lewis Gillingham Role: Director of Media Studying:

Marine & Natural History Photography Undergraduate



#### Machu Plcchu Sunrise © Lewis Gillingham

13° 18' S, 71° 35'W,

**"THE FIRST NIGHT IN THE AMAZON WAS AN UNUSUAL ONE**, IT WAS BOTH MORE COMFORTABLE AND MORE UNNERVING THAN WE EXPECTED. LUCKILY, SOMEONE HAD GIVEN US THE ADVICE OF DROPPING THE MOSQUITO NETS DOWN BEFORE THE LIGHT WENT - BUT EVEN SO, KNOWING THAT YOU WERE SHARING A ROOM WITH A PLETHORA OF CREEPY CRAWLIES WAS UNSETTLING. HOWEVER, WAKING UP TO THE SOUNDS OF THE RAINFOREST MORE THAN MADE UP FOR THE COCKROACH SHOCK OF THE NIGHT BEFORE."

## Location

he Manu Learning Centre (MLC), is a research station based in a section of regenerating forest within the buffer zone of Manu Biosphere Reserve in the Peruvian Amazon. The MLC was used as a base from which to undertake our research. The rainforest surrounding the centre has been recovering from agricultural use for 50 years in some areas and appears to have recovered well, with over 100 species of reptiles and amphibians recorded, compared to the 287 species of reptiles and amphibians recorded in Manu itself.

There are three types of regenerating forest within the MLC Reserve; CCR (completely cleared regenerating), PCR (partially cleared regenerating) and SLR (selectively logged regenerating). All our surveys were conducted in PCR forest so we could compare findings from the same habitat.



16

Accomodation at the Manu Learning Centre © Lewis Gillingham

## Methodology

ur data was collected over a period of 4 weeks during the dry season in 2015 from 20th July to 16th August. Prior to this, a week was spent becoming familiar with the trails and techniques we would be using. We became practiced in handling, identifying and spotting amphibians and reptiles in the forest. We based our surveys around the already-mapped trails within the

reserve, using a combination of Pitfall Traps (PT), Leaf Litter Plots (LLP), Visual Encounter Surveys (VES) and

Off-transect Visual Encounter Surveys (OVES). There is extensive research involving these approaches (REF) and our choice of methods was based on these studies, as well as advice from experienced MLC researchers. Timeefficiency and resource restriction were key requirements. We used all the established amphibian transects and pitfall traps in the partially cleared area of forest (PCR), which had already been assembled by researchers at MLC. These were distributed among three forest paths; trail 1 (T1), trail 2 (T2) and trail 3 (T3), covering an approximate area of 4km2 (Figure 2). A large enough time gap was left between repeating transects to allow time for herptiles to recover from disturbance and return to a natural distribution. We are

"We caught one frog on our first survey, which doesn't sound like much but it felt like winning the lottery on your first go," the first research team to have conducted day time herpetological surveys within the reserve; most

herptiles in the reserve are nocturnal so we wanted to test whether day time surveys are a worthwhile practice at all. Day time surveys were performed between 8am and 1pm and night time surveys took place during darkness, from 6pm onwards. Powerful head torches were used by each observer during all night surveys to enhance visibility.



Surveys were carried out by two teams of four people, with two individuals per survey effort. VESs were conducted on 100m established transects, walking the distance over 25 minutes, with two spotters to locate individuals on the ground, and higher up in vegetation. OVES were carried out simultaneously in close proximity to the VES transects, but on the opposite side of the trail to avoid cross-over with VES transect paths. OVESs entailed walking for 25 minutes on a random uncleared path, using a tape measure to determine distance covered by the survey effort.

PTs made use of established pitfalls built by

the MLC, at 8 locations in the PCR forest. Each pitfall trap consisted of four buckets buried in the ground up to the brim; each connected approximately 180° to the next with 8m of tarpaulin fencing, which acts to guide small animals into the buckets. These were checked and emptied of water in the morning and any necessary adjustments were made to ensure effectiveness. PT surveys required searching the buckets daily for a week at a time, with two week intervals, to locate and identify any trapped individuals. Overall, the pitfall traps were surveyed 40 times, with 5 survey attempts at each of the eight locations.

For LLPs 5m2 quadrats were marked out using

a compass for bearings and a measuring tape, with care taken to not step inside the quadrat while doing so. Four members in a team would actively search for ten minutes across the quadrat, looking primarily in leaf litter, and also on any bushes and trees present.

The area was divided roughly into four equal sections for each member to search thoroughly from one end to the other.

team

day

to

time

expending equal effort throughout. An additional 5 minutes was also used

to walk back, double checking the ground for any disturbed animals. 40 leaf litter plots (20 day and 20 night) were undertaken between both teams within randomly selected predetermined areas throughout PCR forest. These locations were chosen in accordance with transect sites, and simple measures were taken to avoid interferences such as steep slopes, streams and exceptionally dense vegetation and set at least 50m apart. The selected areas of the quadrats were modified to a size which could be thoroughly and completely searched within a short amount of time. Gauntlets were worn by all participants to avoid insect or snake stings and bites.

During VESs and OVESs we recorded species, distance along transect, the finder and

identifier, substrate, height from ground, weather conditions and time of day. During PTs and LLPs we recorded species, finder and identifier, substrate, height from ground, weather conditions and time of day. During capture, different plastic bags were used to handle each amphibian to prevent the risk of cross contamination. If the individuals could be visually identified immediately, they were collected in a bag until

"We are the first research the end of the survey and have conducted herpetological then released, to avoid surveys within the reserve," encounter duplication. On

> occasions, the amphibians were photographed (dorsal side, ventral side, toe pads, inner thighs, back of thighs) following the survey and then released, to identify later on, or taken back to base camp for assistance from the MLC researchers.

> The frogs were never held for more than 24 hours and were always released in the location they were found. Any snakes that were encountered were only photographed from a distance of at least 2m and not handled.

In total, 228 transect and 228 off-transect VESs were performed, split equally over day and night, across 19 different transect locations in PCR forest.



Figure 2 A map of the trails at the Manu Learning Centre.

20



The Manu Learning Centre at Night © Lewis Gillingham

Nocturnal surveys encountered significantly more individuals than diurnal surveys (t477=9.261, p<0.0001; Figure 3). However, there was no significant difference in the number of individuals found between established surveys (VES) and rapid assessment surveys (OVES) (21=0.0244, p=0.876; Figure 4)





## Results

Five-hundred-and-thirty-six surveys were carried out in total over

a five week period.

Figure 3 The difference in number of individuals found in diurnal (D) and nocturnal (N) surveys in partially cleared regenerating rainforest, across all survey methods in the Manu Learning Centre during the dry season (July-August).

**Figure 4** Difference in number of individuals found between Off-transect Visual Encounter Surveys (OVES) and visual encounter surveys (VES) in partially cleared regenerating forest in the Manu Learning Centre during the dry season (July-August). There was no significant difference in number of individuals found between pitfall traps and leaf litter plots (t3=2.357, p=0.103) (Figure 5)



Survey Type

There was no significant difference in the number of individuals found in leaf litter plots between nocturnal and diurnal surveys (t45 = 0.783 , p=0.438). (Figure 6)



individuals found per survey effort for leaf litter plots between diurnal (D) and nocturnal (N) surveys in partially cleared regenerating forest at the Manu Learning Centre during the dry season (July-August).

We found a total of 23 species of amphibian, 19 of which were frogs, as well as one salamander and three reptiles. Lizards were difficult to capture and identifications were only included if they were certain. With snakes, a distance of two meters was kept for safety and photographs taken for identification.

# Amphibians



Adenomera andreae\*

Adenomera sp1





Dendropsophus parviceps

Dendropsophus sarayacuensis



Hypsiboas punctatus



Osteocephalus quixensis

Phyllomedusa tomopterna





Ameerega macero



Hypsiboas mucalatoralis



Osteocephalus castaneicola



Osteocephalus helenae





Phyllomedusa vaillenti



Pristimantis ockendeni



Pristimantis reichlei\*



Pristimantis altamazonicus



Pristimantis buccinator



Rhinella margeritifera



Rhinella marina



Scinax garbei



Bolitoglossa caldwellae

# Reptiles





Imantodes cenchoa



Lachesis muta\*



Pseudogonatodes guianensis\*

\*images unavailable at time of publication



# \*WE FINISHED SURVEYING AND WERE BEYOND DELIGHTED WITH THE RESULTS WE HAD. WE HAD FOUND AND IDENTIFIED 22 SEPARATE SPECIES OF FROG, INCLUDING PHYLLOMEDUSA TOMOPTERNA AND THE RECENTLY DISCOVERED AMAREEGA SP.1. WITH A WEEK LEFT AT THE MLC, WE CELEBRATED THE END OF THE SURVEYS BY THROWING OURSELVES INTO CAMP LIFE – WILD CAMPING IN THE JUNGLE, SUNRISE AT THE MIRADOR AND A HIKE UP TO THE CHURRO VIEWPOINT BEING PARTICULAR HIGHLIGHTS."



© Tom Clazie Flynn

# Discussion and Further Research

Ur survey efforts found no difference in the effectiveness of rapid assessment surveys in partially cleared regenerating forest, when compared to established survey efforts. As off-transect and on-transect visual encounter surveys showed no significant difference in the number of individuals they found, rapid off-transect surveys were no worse at finding amphibians and reptiles than cleared transects. Consequently, our findings showed that clearing transects was not a necessity for surveying amphibians and reptiles, and that the less disruptive and quicker method of surveying herptiles offtransect was an appropriate alternative.

The same was found for the comparison of pitfall traps and leaf litter plots. Our findings demonstrated that visual encounter surveys using a quadrat for rapid assessment produced similar biodiversity results to a pre-constructed pitfall trap. Perhaps unsurprisingly, due to the nocturnal activity of our chosen species', we found that transect visual encounter surveys produced significantly more findings at night.

By comparing the effectiveness of different techniques for surveying herptiles, we found that rapid assessment surveys could be used in lieu of long term techniques. This could provide rainforest researchers much greater scope in where they can survey and how much area they can cover. This in turn will allow more data to be gathered on herptiles, and thus further current datasets and knowledge.

Consequentially, future conservation efforts can draw on this material to implement informationbased management strategies [4]. Our study was only conducted in a small area of partially



cleared regenerating forest. Future studies could investigate the effectiveness of different methods in both selectively logged regenerating and completely cleared regenerating forest, both of which are present at the Manu Learning Centre. Also, the applicability of our findings to other regions and environments across the globe could be investigated, to establish whether there is variability in the effectiveness of techniques depending on habitat type.

Human induced activities, from urbanisation to global warming, are putting increasing pressure on herptile species [5]. Currently, 41% of all known amphibian species are classified as endangered [6], with almost a quarter more being data deficient [7]. Therefore, the need for more data on reptile and amphibians is paramount for their future conservation. To be able to prioritize their conservation and monitor the endangered populations requires the use of rapid biodiversity surveys,

Assembling a list of appropriate surveys can be particularly time consuming, due to the differences in techniques, available resources and habitats. Consequentially, the need for a comparison of the effectiveness of different rapid assessment techniques is essential for future conservation efforts. The Madre de Dios from the viewpoint or 'Mirador' about 500 metres from camp. © Lewis Gillingham

Internet Street Street Street Street

-----

25.00

A.

ARE

-----





Yellow Footed Tortoise © Tom Clazie Flynn

## Appendix

## **1. Expedition Planning Timeline**

#### May 2014

Lucy and Becca's first meeting with Ben Toulson (director of Fxpeditions)about setting up a new expedition. There had been no previous FXpedition to South America and we settled on Peru. We felt this was an important country for biodiversity, with Manu National Park and the Amazon Jungle.

#### June – August 2014

We had an interest in reptiles and amphibians and found that research on this group was lacking in comparison to other animals. Research centres were contacted, such as Cocha Cashu and the Manu Learning Centre (MLC). We asked for advice on relevant and beneficial research projects. Andrew Whitworth from the MLC was skyped and he suggested assessing the value of different herpetological (reptiles and amphibian) survey methods.

#### September 2014

Herpetological survey methods were researched and the expedition name, Mission Manu, decided upon. Preliminary proposal and budgets were also written and sent for approval by FXpeditions. Initial logistics planning with the MLC – agreed that accommodation and food would be provided to us at a reduced rate for independent researchers.

#### October 2014

## Team selection.

Initial FXpeditions presentation and emails were sent out to gauge interest. People were selected for interviews from a short written application, and six additional members chosen for our team. We wanted the team to be a mix of Exeter and Falmouth university students due to different specialties, such as an experience in filming and photography.

We had our first team meeting and the main roles within the team were chosen. Eg. Scientific director, Logistics, Media director, Social media, Kit Manager, Fundraiser, Health and Safety.

#### November – December 2014

The expedition logo was designed and our website created.

First fundraiser events were planned and carried out, such as the Traders craft market, and a cake sale on campus. We began writing grant applications and submitted them according to deadlines. Eg. RGS, ZSL, John Ball, Bill Wallace, Adventure fund, Gilchrist Trust, the University of Exeter and Les Halpin Expedition fund. We also began meeting with Chris Lowe, our expedition mentor.

#### January - February 2015

Deposit paid to the MLC – costs covered by first team contributions (£250 each) Fundraising was continued through a donations page, Indiegogo, with challenges set for when particular goals were reached Eg. £500 – Owen dyes hair pink, £700 – Maria listens to Justin Bieber for 24 hours, £800 – Dan waxes chest, £900 – 24 hours silence for Lucy, £1000 – Rebecca shaves off eyebrows.

Sponsors contacted for donations – TreeS and the Anglo-Peruvian society donated ID guides and £400.

#### March – April 2015

\*Changed one team member (Media Director) - Zala had other commitments to prioritise so position was re-advertised and filled by Lewis. More fundraiser events planned - a second cake sale and a St Patricks Day bar crawl around Falmouth.

Basic First Aid courses completed by team members. Final grant applications were submitted and the team interviewed by RGS. We received a £1000 grant from RGS, £5000 from the University of Exeter and Les Halpin Expedition fund, and £750 from the Gilchrist Trust.

Social media kicked off - Facebook, twitter and blog expedition pages.

£500 and £700 goals reached on Indiegogo, and further goals added. Eg.

£1100 – Lewis pierces nipple, £1200 – Tom tattoos a frog on his bum.

Two field assistants were searched for in Peru, the MLC helped with providing contacts.

#### May 2015

Last Indiegogo goals reached (£1200). Last personal contributions paid (£750).

Due to budget cuts we decided to reduce our time in the field by two weeks – we were advised that six weeks was still plenty of time for us to collect sufficient data.

Georgia and Dan completed their Adventure First Aid courses.

Logistical finalisations:

Full payment made to the Manu Learning
Centre – in country travel planned through them.
Flights booked

- Travel insurance taken out, also to cover **2. Logistics** gadgets eg. cameras, laptops

- Hostel rooms in Cusco for stays before and **a) Transport** after field work were booked.

Team members organised their own vaccinations and malaria tablets.

#### **June 2015**

Suitable field assistants from Lima University in Peru were found - Ana and Daniel. Final risk assessment, health and safety and logistics packs emailed to FXpeditions. Kit gathered from university lab and photography stores. Any missing items and the first aid kit were bought with expedition money. This was all shared out between the team for flights.

#### July 2015

Final personal preparations made.

Expedition updates sent out to donors and interested parties.

'Meet the team' posts uploaded and shared on Facebook Reptile and Amphibian ID guides of the local area printed out.

Transport to and around Cusco was arranged by ourselves. We flew to Cusco from London Heathrow and changed in Bogota, Colombia and Lima, Peru. Taxis were used around Cusco. Transport to our field site was organised through the MLC and was shared with two other volunteers on the way there and was just the team and a staff members travelling back.

#### b) Food and accommodation

Before fieldwork we stayed in hostels in Cusco and bought our own food, either in a supermarket or eating out in some of many cafes and restaurants. During fieldwork food and accommodation were provided for by the MLC. We stayed in rooms of four, living with the staff, volunteers and interns. Three meals a day were cooked for everyone at the MLC by kitchen staff. Sundays as the day off, were pancake days, while Saturday and Wednesday night had cake for pudding.

#### 3. Permits, insurance

No special permits were required. The MLC has a permit for collecting species from the field for a short time if need be. We caught frogs in the field for identification but released them

there when ID was possible. If it was not, which was more common at the beginning of the expedition, they were brought back to the MLC and were released in the same location the following day. Frogs were handled and kept in plastic, transparent bags and were sprayed inside with water to keep the humidity levels high. Snakes and lizards were not handled, but if found identified from a distance. The team had group travel insurance through Columbus Direct, with an extra addition of gadget cover of £7.50 for a £1000 cover on laptops, cameras and phones. The insurance also covered medical costs and personal accidents. Insurance for field assistants of \$50 each was paid to the MLC.

#### 4. Health and Safety

#### a) Medical Incidents

During our time in Peru, we experienced some medical issues, but we were fortunate that none of these were severe. Three team members had received wilderness first aid training, and everyone else had basic first aid training, two of which are qualified basic first aiders. Furthermore, staff members at the MLC were trained first aiders, and were able to give advice and medical attention when needed. Firstly, one member had a pre-existing problem with her knee. To manage this, she had bought a knee brace and insoles for her boots. Unfortunately,

the boots were misplaced shortly after we arrived, and thus, she was unable to go out into the field on some occasions. When suffering from pain in the field, she was able to take pain relief, and wore her knee brace. Additionally, one team member suffered from swollen lymph nodes, and thus travelled to the local town to visit the doctors. She was diagnosed as having a throat infection, and prescribed with antibiotics. Four team members had digestive troubles as a result of exotic foods, but we were mostly able to manage these issues effectively with our medical supplies, such as rehydration salts and Imodium.

However, one suffered badly for a couple of weeks. She went to the local hospital, where the doctor said she was dehydrated as a result of bacterial gastroenteritis and the associated digestive problems. She was placed on a drip to rehydrate them, and prescribed antibiotics and rehydration salts. Another team member experienced unexpected reactions to insect bites, with swollen blisters erupting where they rubbed on her boots. Fortunately, we were able to effectively manage this in the field with our medical supplies.

Due to the fact that our research involved handling amphibians, members team were unable to wear DEET on their hands. Consequentially, two people contracted botfly larvae, but these were effectively managed in the field and caused no further problems.

#### b) Marias hospital account

"I'd been feeling unwell for a few weeks, so I was advised to see a doctor at the local hospital in Salvacion, the only 'town' nearby. Being of a nervous disposition, Dan came along for moral support (and probably to make sure I actually went to see a doctor instead of kicking back and drinking cocona juice with banana cake), and we left the MLC shortly after breakfast. Breakfast itself was mainly spent frantically browsing my Spanish phrase book, desperately trying to piece together a few key phrases to describe my symptoms (you know, just in case their English was as bad as my Spanish, although I was assured some would be fluent...).

Asides from getting wet socks, the boat trip itself was probably the highlight of the day as the views, as always, were stunning. Salvacion is situated far higher than the river, and so it's a good 40-minute walk through jungle to the town, including the challenge of the biggest staircase I have ever seen leading up to it. Needless to say, everyone remembers the stairs to Salvacion, or at least their thighs do.

We arrived in Salvacion and were pointed in the direction of the hospital with the explicit not making it back on time).

instructions to be back at the MLC office by 11 to run down for an 11:30 boat. Off we went, enjoying the feeling of concrete under our feet for the first time in weeks. When we arrived outside the hospital we were met by a queue of about 30 locals sitting in rows under a marguee, this would have been the first clue to suggest we weren't going to be back on time - had we noticed it. An hour later, we were still sat in the queue to pay for an appointment with 11 o'clock quickly approaching.

A staff member of the MLC, Alice,

dropped by to see how far we'd gotten with our quest to see a doctor, clearly it didn't cross her mind we'd still be queueing outside and walked straight past us into the building asking for a pair of gringos (a derogatory Spanish term used with reference to non-Hispanic individuals - chiefly Americans), before getting pointed in our direction. An exchange of pleasantries and a glance at a watch later, it was clear we weren't making the 11:30 boat, so Alice ran off to try arrange for a later boat to pick us up with timing to be confirmed. Sometime after 12 we finally made the makeshift outdoor reception and paid to

see a doctor (although their lack of English made it impossible to ask how long it would take to be seen, this was clue number 2 as to us

12:30 rolled on by and we were still outside the paper. On my way out I collected Dan and we hospital queueing, so I decided to take a look went to find Jorje to show him the slip, which inside and try inform someone of our situation. I now know but didn't at the time, described a I took one step inside and was met by 30-40 list of tests (blood and faecal) to be carried out, disapproving glances of patients waiting to along with an antibiotic prescription. be seen. By this point I was almost certain I wouldn't be seen today, and went to Upon clarifying which tests would be performed, report the news to Dan. As I turned to leave I was ushered round the side of the building the building I was met by a surprisingly familiar to what appeared to be the pathology lab language - "Can I help you?". Rather fortunately, (although you could be forgiven for thinking it I believe I found the only English speaking was a glorified greenhouse). Of course, the lab member of staff in that hospital, Jorje, and yet technician didn't speak English either so by this as luck would have it he wasn't even a doctor. point I really wished I'd

He did, to his eternal credit,

manage to get me seen by a doctor by 1 o'clock. I was taken to the Accident and Emergency department. The nurse spoke no English, but we managed to muddle through a registration form with my less than poor Spanish.

Shortly after my number was called, nurse to a room with 5 beds laid side by side, I entered the doctor's office. Sitting on the other all occupied bar one and signalled to stay put side of a colossal desk was a rather large woman until she returned. And return she did, wielding with a stern look, who again, spoke no English a 1L bottle of saline solution and antibiotic, all (I started to see a pattern emerging here) but attached to a drip – my literal ball and chain for thankfully I had the scribbly piece of paper with the next few hours. my symptoms (she wasn't impressed with my With the drama that had ensued in the hours grammar, apparently). After a guick examination prior up to this I drifted off, lulled to sleep by and a flood of questions I could only answer thee dramatic music and exclamations of a after she'd mimed them out (pregnancy was an Spanish soap-opera and the frankly gripping interesting one) I was sent out with a slip of story of Gabriella and Manuel. In the mean

42

taken the Spanish GCSE option so I could at least pretend I wasn't an ignorant gringo – alas, I didn't and so I was. Both tests went relatively smoothly if we exclude the 4 attempts to pierce my vein and performing it with a used needle, minor details in this whole escapade. From here, I was escorted by a

and had gone to find some lunch and hit up an mile away. internet café. The poor sod really had no idea what he was in for on that day.

When I awoke, Eduardo (also from the MLC there and I'd see a boat waiting. office) had appeared informing us both that there was a boat at 2:30 - you can imagine he Nothing. wasn't overly pleased to find that I was unable to board due to still being anchored by a drip The beach was empty. I called out for Dan as that wasn't even a quarter empty. Some hours loud as I could, no reply. I'll admit at this point had passed, by this point I was really getting I had a little cry because not only was it getting into the tragic love story of Gabriella and Manuel dark, I had no head torch, very little phone even if I could only follow the plot

to see if he could stall the boat long enough for was better than sulking. me to amble down.

"not in a professional manner" over Facebook - before I got there. I sat and cried

time Dan decided that the show wasn't for him, graceful and could probably be heard from a

I finally reached the beach after a few wrong turns at 5pm, praying that Dan would still be

battery, Jaguars were known to prowl the beach loosely. As it turned out, the last boat would be at night and I was alone. Then, a boat. A BOAT. at 4 and as it didn't appear I'd be off the drip I had no idea whether it was MLC or a tourist any time soon; Dan ran down to the drop off site operator but I flagged it down anyway, anything

It wasn't the MLC. The two men operating the boat spoke no English and didn't appear to By the time I'd been let off the drip it was understand my horrendous attempt at asking already fast approaching 4 and I still had to be for a phone number for the MLC in Spanish, so discharged by Jorje and pick up my cocktail of off they went. I wandered back to the drop off antibiotics and rehydration sachets. Jorje also point, debating whether to wait and see if they used this time to ask about my marital status came back for me, or run back to Salvacion with and whether he could continue talking to me a phone as a torch and hope it didn't run out

not wanting to hang around, I agreed and ran. some more which inevitably led to the eureka When I said ran, I meant stumble. The antibiotic moment that got my sorry bum off that and bed rest had made me woozy, so my descent Peruvian beach. I speculatively sent a text to my down the great steps of Salvacion was less than friend James, who at the time was in England

explaining my situation in as few words as than usual. Extra days were allowed at the end possible pleading that he call the MLC office of our research period to complete any surveys in London to notify someone at one of the 3 which had had to be delayed or cancelled due offices in Peru. to unanticipated circumstances such as illness and weather. On occasions, teams had to return Thankfully he realised the text wasn't a casual early from surveying or reschedule completely joke and got me through to a woman from one due to heavy rainfall and thunderstorms which of the offices, I've never been so happy to hear presented a danger of tree falls. In addition, the the voice of another human being, much less extreme weather caused a lack of concentration one that was telling me a boat was on the way. and chances of spotting amphibians were The boat men that arrived didn't seem all dramatically reduced as they would seek shelter that pleased to be sent out again, but even a away from sight.

language barrier couldn't misconstrue how happy I was to see them. I hopped in the boat and shouted 'muchas gracias' as many times as my lungs would allow, I think they got the message. 25 minutes later I was back at camp and greeted by Ricardo on the beach, he explained that the previous boat couldn't wait any longer and it wasn't safe to leave Dan alone on the beach in case I didn't make it down there.

Apparently the plan was always to come back for me shortly after... I'm not so sure personally. But all's well that ends well I suppose, Carbonara for dinner made up for the ordeal somewhat."

## 5. Obstacles

2015 coincided with an El Niño event which may have prompted different weather conditions

## 6. Fundraising

## Income

Grants:	£6750	
Royal Geographical Society	£1000	
University of Exeter Halpin fund	±5000	
Gilchrist Trust	£750	
Sponsors:	£900	
Anglo-Peruvian Society	£200	
TReeS	£200	
Personal donor	£500	
Fundraising:	£1663.11	
Cake sales	£481.93	
Bar crawl	£101.10	
Indiegogo fundraising page	£1080.08	
Own Contributions:	£8000	
8 x £1000 contributions	£8000	
TOTAL	£17,313.11	



-	penditure
Tra	aining:
Int	ernational travel (flights):
Su	bsistence and travel to base (inclusive payment
M	anu Learning Centre):
Ho	stel costs (one day either side of fieldwork):
Lo	cal counterparts / guides:
Ins	surance:
Ins	surance provider:
Fie	eld equipment*:
Fil	m / photography*:
Fir	st aid kit
~	her



£375 (first aid – basic and expedition)
£7940.38
£8043.80
£158.88
Payment in the form of food and accommodation (included in subsistence)
£587.45
Columbus
±32
£40
£70
65.60 (insurance for field assistants)
£17,313.11

## Bibliography

[1] J. W. Gibbons, D. E. Scott, T. J. Ryan, K. A.
Buhlmann, T. D. Tuberville, B. S. Metts, J. L.
Greene, T. Mills, Y. Leiden, S. Poppy and C. T.
Winne, "The Global Decline of Reptiles, Déjà Vu
Amphibians," BioScience, vol. 50, no. 8, pp. 653-666, 2000.

[2] T. A. Gardner, M.A.Ribeiro-Junior, J. Barlow,
T. S. Avila-Pires, M. Hoogmeod and C. A.
Peres, "The value of primary, secondary,
and plantation forests for a neotropical
herpetofauna.," Conservation Biology, vol. 21,
no. 3, pp. 775-787, 2007.

[3] J. R. Vonesh, J. C. Mitchell, K. Howell and A. J. Crawford, "Rapid assessments of amphibian diversity," in Amphibian ecology and conservation: A handbook of techniques, C. K.
D. Jr., Ed., New York, Oxford University Press Inc.
, 2009, pp. 263-280.

[4] B. E. Young, K. R. Lips, J. K. Reaser, R. Ibáñez,
A. W. Salas, J. R. Cedeño, L. A. Coloma, S. Ron,
E. L. Marca, J. R. Meyer, A. Muñoz, F. Bolaños, G.
Chaves and D. Romo, "Population declines and
priorities for amphibian conservation in Latin
America," Conservation Biology, vol. 15<sup>°</sup>, no. 5,
pp. 1213-1223, 2001.

[5] T. J. Beebee and R. A. Griffiths, "The amphibian decline crisis: A watershed for conservation biology?," Biological Conservation, vol. 125, pp. 271-285, 2005.

[6] S. L. Pimm, C. N. Jenkins, R. Abell, T. M.
Brooks, J. L. Gittleman, L. N. Joppa, P. H. Raven,
C. M. Roberts and J. O. Sexton, "The biodiversity of species and their rates of extinction,
distribution, and protection," Science, vol. 344,
no. 6187, 2014.

[7] IUCN, IUCN Red List Categories and Criteria:Version 3.1, Second ed., Gland, Switzerland;Cambridge, UK: IUCN, Gland, Switzerland, 2012.