JAMES RENNIE BEQUEST

REPORT ON EXPEDITION/PROJECT/CONFERENCE

Expedition/Project/ Conference Title: Monitoring Biodiversity in the Pacaya-Samiria National Reserve, Peru

Travel Dates: 9/6/17- 28/7/17

Location: Pacaya- Samiria National Reserve, Loreto, Peru

Group member(s): Josephine Gibberd

Aims: To become practiced in field survey techniques and to collect data on various species of the western Amazonia flooded forest habitats for conservation purposes.

OUTCOME (not less than 300 words):-

Funding from the James Rennie Bequest allowed me to travel to Peru this summer, in order to spend four weeks volunteering as a research assistant for the conservation organisation Operation Wallacea in the Pacaya-Samiria National Reserve. This reserve, in the Loreto region of Peru, is a hotspot for biodiversity within the Amazon river basin. Since it was created, the reserve has played an important role in shaping conservation management strategies in Peru, and in South America in general. In past decades, the reserve has moved towards a community-based conservation approach where local people co-manage the reserve and its resources. The biodiversity monitoring programme at the site has been essential in demonstrating that this approach is much more effective than previous strategies that excluded local people from the reserve and resulted in conflict, and is now the favoured approach throughout Peru and the Amazon basin.

The area where we were based floods annually and is known as a *varzea* habitat. In the past years this flooding has become extreme, with very intense years and very low, drought years, thought to be caused by climate change. The project at the site has two aims: to track the effects of these changes on animal populations, and any impact this might have on local people; and to collect data to set hunting quotas for people from the reserve, to ensure that hunting is sustainable and the reserve can carry on supporting its communities into the future. The site itself is located on the Samiria river. There are ten transects located around the site, ranging from 2-3km in length and which encompass diverse habitat types: permanently flooded forest, open understory, riverine, palm groves, *liana* or vine forest and levy habitat, which does not flood and is the refuge of terrestrial mammals during the high-water season.

For my first two weeks at the site, I was trained and participated in a huge range of biodiversity surveys. These consisted of: terrestrial transects, mist-netting, aquatic transects for river dolphins and for wading birds, catch per unit effort fish surveys, caiman surveys, point-count macaw surveys, giant river otter surveys, river turtle surveys, butterfly surveys, frog surveys, fishing bat surveys, habitat surveys and camera trapping. This incredibly valuable practical experience was accompanied by a series of lectures on Amazon biogeography, conservation management strategies, field techniques and the wealth of

species found in the area. During this period, I assisted on three surveys a day, usually starting around 6 or 7 am and finishing at 10 or 11pm.

After two weeks, the opportunity to assist an undergraduate dissertation student in her project arose and I volunteered to be trained in primate behaviour surveys. This involved walking through the forest along a transect searching for primates. When a group was spotted, an observer focussed on an individual and watched them for 2 minutes, narrating observations to a partner, who input the data using an app designed for the purpose by one of the biologists working on the project. We would do this for as many individuals as we could before they moved on and then take information about the habitat they were spotted in, such as habitat type, the height of trees in the area, height of the monkey and what, if anything, the monkey was feeding on. I absolutely loved these surveys. Only a few people completed the training and so we were often a small group, 3 or 4 people, walking through the rainforest. This allowed us to be quieter and see a lot more and I spent a lot of time observing red howler monkeys, brown-faced capuchins, squirrel monkeys, saddle-backed tamarinds and sometimes woolly monkeys. My time with primate surveys also allowed me to see giant river otters and a harpy eagle, both of which are so rare in the area that every sighting is recorded by the project.

I also enjoyed joining a masters student on her soil surveys. These were particularly interesting because she is investigating how much carbon dioxide is released by soil in different habitat types, and if this is affected by the flood intensity. It's thought that climate change will result in the reduction of the Amazon through conversion of southern regions to savannah and that, given the forest's value as a carbon sink, this will exacerbate climate change. If climate change also causes more intense flooding in western Amazonia and this causes increased release of carbon dioxide from flooded forest, then there could be a second negative feedback cycle to consider in modelling how the earth will react to climate change.

For the last two weeks, research assistants chose which surveys they wished to focus on and I chose to mostly do terrestrial transects, mist-netting and primate behaviour surveys.

Terrestrial transects involved walking through the forest along a transect and recording the GPS location and distance from the transect of any primates, mammals or game birds observed. This data will then be used by the project to work out densities for these species, useful for setting hunting quotas and for monitoring the recovery of terrestrial mammals, of which some species were nearly decimated during the 2012 floods.

Mist-netting is a method used to survey understory birds, which are indicators of forest health. Nets of very fine mesh about 2 metres high and 10 metres long, 10 nets are erected at a site for five days and opened in the early morning and in the evening for surveys. Birds can't see the nets, fly into them and get caught. The nets are checked at least every half hour, any birds are removed from the net and then ringed, weighed and measured. I learnt how to hold small birds properly and securely and how to take measurements such as wing, bill and tarsus length.

I have gained so much from my time with Operation Wallacea, both academically- with invaluable practical experience of field work with a huge range of surveying techniques, and personally- from working as part of a close team of scientists and research assistants in one of the most biologically diverse places in the world. I have loved my time on the project and I am extremely grateful for the assistance of the James Rennie Bequest.