

Abstract

The Madre de Dios region of Peru is one of the most biodiverse regions in the world. It is home to many endemic species that have populated all the layers of the rainforest. Increased human encroachment has impacted the distribution of fauna in the region. During a week-long study at Inkaterra Reserva Amazonica, mammal species and their vertical stratification were recorded. Through field observations and a camera trap, 13 species of mammals were identified in all the layers of the forest but the emergent layer. The primate order was identified the most and the canopy layer held the most mammals. This citizen science observational study can better inform the global community on mammal species in the Amazon Rainforest.



Figure 1. Brown Agouti



Figure 2. Footprint- Jaguar (*Panthera onca*)

Introduction

We stayed and studied at the Inkaterra Reserva Amazonica (IRA) lodge maintained by the Inkaterra Association. Inkaterra Reserva Amazonica is located along the North bank of the Madre de Dios river about 15 km east of Puerto Maldonado, Peru. This highly diverse part of the Amazon rainforest is home to over 1200 species of flora and fauna. There is a total of 100 different mammal species registered at this reserve. (1) The class Mammalia first started as small creatures scurrying through the forest floor. After the extinction of the dinosaurs, mammals have evolved to take residence in the trees, underwater, and in the skies. The purpose of this observational study was to catalog mammal species in the region and document which layers of the forest they inhabited. The rainforest is stratified into five different layers: emergent layer, canopy layer, understory layer, shrub layer, and floor level. Their vertical stratification in the rainforest is one indicator of evolution in this class of animals.

Methods

This week-long study abroad trip included excursions to different locations along the Madre de Dios River. These excursions involved walks through different tropical biomes, such as terra firma forest, wetlands, and lakes. During these excursions, visual and audio cues signified a mammal's presence. These included branches moving, animal calls, and tracks on the ground. Once a mammal was spotted, it was photographed and identified with the help of our guides. The surrounding flora was used to distinguish the different layers of the rainforest. In addition to field observations, a camera trap was set up. The location of the camera trap was determined by field guides and included a portion of the trail that mammals were expected to pass through. The camera was attached to a tree and left for four days to capture pictures using a motion sensor. This observational study can be categorized as a form of citizen science. Citizen science is a form of research that is open to anyone and contributes to the greater scientific community. By uploading data to iNaturalist, the data is accessible to a global audience and further advances conservation efforts in the region.



Figure 3. Squirrel monkey



Figure 4. Spider monkey

Results

Canopy Layer

- Howler monkey (*Alouatta seniculus*)
- Spider monkey (*Ateles belzebuth*)
- Brown-throated three-toed sloth (*Bradypus variegatus*)
- Brown capuchin (*Cebus apella*)
- Saddleback tamarin (*Saguinus fuscicollis*)

Understory Layer

- Night monkey (*Aotus sp.*)
- Brown capuchin (*Cebus apella*)
- Squirrel monkey (*Saimiri sciureus*)
- Southern Amazon red squirrel (*Sciurus spadiceus*)

Shrub Layer

- Common opossum (*Didelphis marsupialis*)
- Greater sac-winged bat (*Saccopteryx bilineata*)

Forest Floor

- Amazon bamboo rat (*Dactylomys dactylinus*)
- Brown Agouti (*Dasyprocta variegata*)
- Brazilian rabbit (*Sylvilagus brasiliensis*)

Discussion & Conclusion

Throughout our week in Peru, we identified 13 species of mammals. We further found tracks and remains of 3 more species. 6 different species of primates were spotted. The primates were the easiest to spot and identify due to their visibility in the trees. We spotted other species of bats and rodents; however, they were difficult to identify and photograph. These species were not seen long enough to be identified by our guides. Mammal species were found in all levels of the rainforest canopy except for the emergent layer. Most of the species were found in the canopy layer.

Some notable limitations to this study include time and resources. Being in Peru for one week with a single camera trap made it difficult to document many species. The camera trap did not capture any identifiable mammals after 4 days. Of course, it is never a guarantee to capture good images, but additional cameras and days in Peru would greatly increase the odds.

More research is needed in the Amazon rainforest, and mammals should be a large part of this. Human encroachment in the form of new roads, mining, and deforestation has a negative effect on these animals. Keystone species such as the tapir are critical for many plants in the rainforest. As many mammals are endangered or almost endangered, research into their interactions is crucial.



Figure 5. Juvenile Brown capuchin monkey

Acknowledgements

Our observational study of mammals would not have been possible without the help of our field guides, Pedro and Gustavo. They were very helpful in identifying several mammal species as we spotted them. We must also thank the entire Inkaterra organization for the opportunity to study in Peru, along with providing knowledge on conservation in the Amazon. Also Fr. Stephen Mitten who mentored throughout our time in Peru

References:

ANNOTATED CHECKLIST OF THE MAMMALS OF CUZCO AMAZÓNICO
Museum of Natural History - The University of Kansas Lawrence
Neal Woodman, Robert M. Tim, Rosa Arana C., Victor Pacheco, Cheryl A. Schmidt, Errol D. Hooper & Cecilia Pacheco
December 6th, 1991 | Number 145 | Pages 1-12
Osborne, Patrick L. *Tropical Ecosystems and Ecological Concepts*. Cambridge University Press, 2012.