**Methodology**

The location that I took camera trap data from was the Amana Sustainable Development Reserve. It is one of the largest tropical rainforest reserves in South America. It is recognized for being a source of biodiversity and its communal effort to preserve its pristine habitat. Characteristics of this area includes a lake and two rivers that flood the landscape seasonally. It is one of the few reserves that is inhabited by village settlements inside the reserve. The villagers do log and hunt in this area but at a very regulated rate to ensure preservation of the land. There are also patches of land that is completely untouched by villagers and researchers. In this study we used the software program R to filter through a large group of data to look at different covariates and its connections with terrestrial Amazonian mammals. To start I translated all the mammal names from Portuguese to English and made a new data set that only included the terrestrial mammal detections. I used R to count 64 camera sites in total. Then I determined the camera site that the most detections we collected. I also determined from a data table which species were detected the most and least. Then I set the columns that included the latitude and longitude coordinates of each camera trap site and set them as coordinates to be ready to plot. I downloaded the map of the area where the collection was taken and plotted a map with the camera sites coordinates marked. Then I extracted elevation from the data (elev). Then I downloaded a table that included the survey information which included the cameras, coordinates, and the dates in which mammal detections were recorded. From this I was able to discern that the camera trap survey ran for four months from December 2013 to April 2014. Then I ran through the data and hunted for dates that fell outside of the four-month survey and marked them as errors. I edited the dates and replaced them with dates that made more logical sense. Then I applied a histogram maker function and extracted the camera trap records for one species and assigned it to an object to be better utilized in coding. Then I established effort as an observed covariate (eff) and assigned my site covariates and my data to an unmarked frame using the library package unmarked to the object (umf). Then I used this object and ran a null model and calculated occupancy and detection probability. Next, I combined the station and coordinates together to make a new object and fixed the camera station names to match the names from the other data set. Then I applied the package Raster to set up my site covariates. I downloaded multiple site covariates that then extracted and utilized in models to see the best correlation for my data from my site location. These site covariates included forest cover (ct\_forcov), elevation (ct\_elev), water surf levels (ct\_wat), NPP production (ct\_prod), the human foot-print index (ct\_fp), camera distance from roads (road). cameras distance from rivers (river) and the calculation of forest patch (patch) and (disj). These covariates were chosen as it effected all four sites being studied in this project. I then used those models to look and see if there was any correlation between the presence of Paca and the site covariates models.

**Results**

Comparing the correlation of Paca to the different unit covariate models the distance to river proved to be the best model. Further looking at combinations of different covariates, only models that were combined with the (river) covariate ranked above the null model. Looking at the top model it shows to have a negative trend as shown by the graphic (fig 1) Graphical user interface, chart, line chart

Description automatically generated in correlation to Paca occupancy in the reserve. Paca are rodents that make their borrows near large bodies of water. It would make sense to assume that as the distance to the river increases the probability of Paca occupancy decreases. The other combined models were only a few points away in AIC. There was just one covariate that could not be tested with this data. The human footprint covariate would not run in R. Looking at the data there is very little variability, so it is possible because there is so little data R could not properly process it. The Amana Sustainable Development Reserve is very pristine and although there are people living inside the reserve, they have strict guidelines they follow. There are certain variables that I would like to observe if this project was taken further. Perhaps a better way to test human effects on this reserve would be to measure the distance of known settlements in the area and compare them with the occupancy probability of Paca. Researching further into what different factors affect the distribution of mammals like Paca could lead to revelations when it comes to conservation of an important source of biodiversity. The Amana reserve has taken many precautions when it comes to conservation. To know what factors effect terrestrial mammals could help better improve their tactics.