Project Update: November 2018

Overhunting is the leading driver of anthropocene defaunation resulting in an "empty forest" syndrome that alters ecological interactions and downgrades critical forest ecosystem services. These ecological disruptions can promote dramatic impacts on wildlife populations, local livelihoods, tropical forest regeneration and carbon stocks. Despite the immense hunting pressure in western Amazonia, during the 20th century mainly to feed the global trade of skin and fur, local faunas do not exhibit any regional-scale extinctions. This situation provides an excellent model to understand the process of functional extinction of large-bodied vertebrates with local decrease of its densities.

This study has been undertaken along the Central Juruá River, the second largest whitewater tributary of the Amazon River. Fieldwork has been conducted within and outside two extractive reserves containing a large-scale mosaic ranging from severely hunted to completely non-hunted areas. Médio Juruá Extractive Reserve (RESEX Médio Juruá) is located on the left bank of the river and Uacari Sustainable Development Reserve (RDS Uacari) on the right side. The highest level of hunting pressure takes place near the town of Carauari (c. 24,000 people), the largest urban center in the region and the town of Itamaraty (c.11,000 people).

As explained in our previous update, in the first year of the project we selected and established 30 sample units on the study area (Figure 1). Each sample unit contains a 0.25 ha plot for tree and palms survey and inside that a 100 x 5 m area for sapling survey. Also paired with the tree plot we established a camera trapping grid (20 CTS per/plot- 16 on the ground and four in the canopy). On these 30 sample units we started with plants tagging, DBH measure and we established camera trap grids at 10 sites.
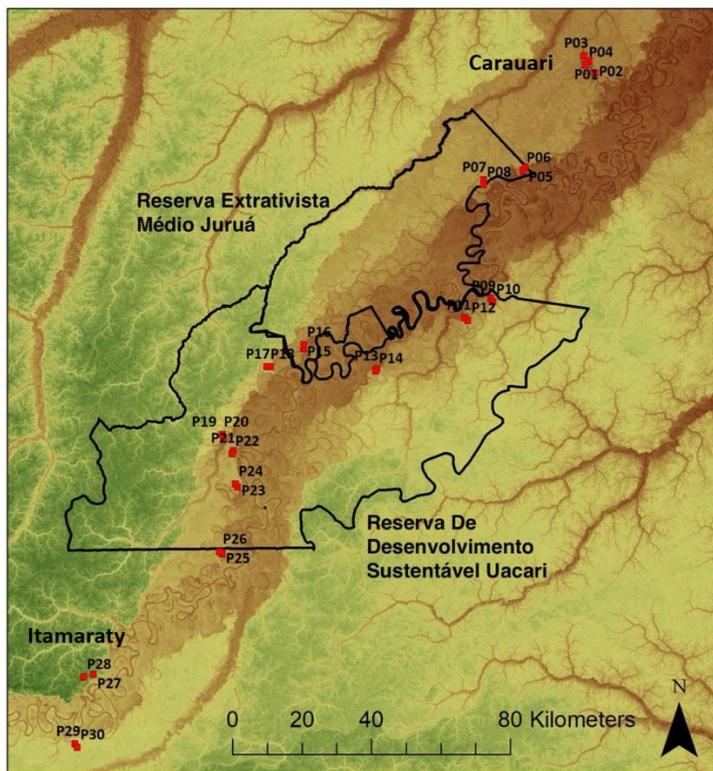
Figure 1. Study area at Médio Juruá River, Amazonas, Brazil. Red squares represents our 30 sample units.

Plant survey
Data collection from the 2nd year project started in May 2018 and is going to finish in December 2018. So far, we already measured and tagged all trees and saplings in our 30 plots; that means a total of 4,807 trees, 2,587 palms, and 6,008 saplings surveyed. Besides that, we identified 97% of plants at species level and 2.5% at genus level, we have just 19 specimens not identified yet. For individuals that was not possible be identified at species level in the field we collect samples and sent for a botanist for identification. So far, we have 814 species of plants from 64 families. Furthermore, carbon storage estimation has been done by measuring 22 tree heights/plot, 297 tree heights already measured, collecting wood core samples from plants species more abundant (more than 10 individuals recorded, which means 262 species), 200 samples already collected.

Figure 2: On the left the botanist identifying saplings species on the field, in the middle: the field assistant collecting wood core, on the right: height tree measure using inclinometer.

Animal survey
The camera trapping grid was installed at 26 plots. The remaining four plots will have installations by early December 2018. I am right now processing all pictures and videos to identify the fauna species. The pictures processing for 22.6% of the cameras was finalised and until now we have 6,035 valid records of which 45 species of mammals and 10 species of birds. Before finishing data collection and all plant identification is really difficult discussing about defaunation effects on mammal communities, plant regeneration and carbon storage. However, at a first view we did not record collared peccary (*Pecary tajacu*) or tapir (*Tapirus terrestris*) at sites more hunted in Carauari town. On the other hand, we had abundant records for spiny rats (*Proechimys* spp.). This pattern will be better evaluated after performing statistical analysis (after January, 2019).

As part of our project we have two undergraduate students conducting personal projects. One is working with tree inventory at the sites of *Riozinho* in the town of Carauari and also is being responsible for the confection of exsiccates for the local herbarium. Another student is doing a bird's inventory at Carauari town. Both are preparing material to develop environment education at the municipality.
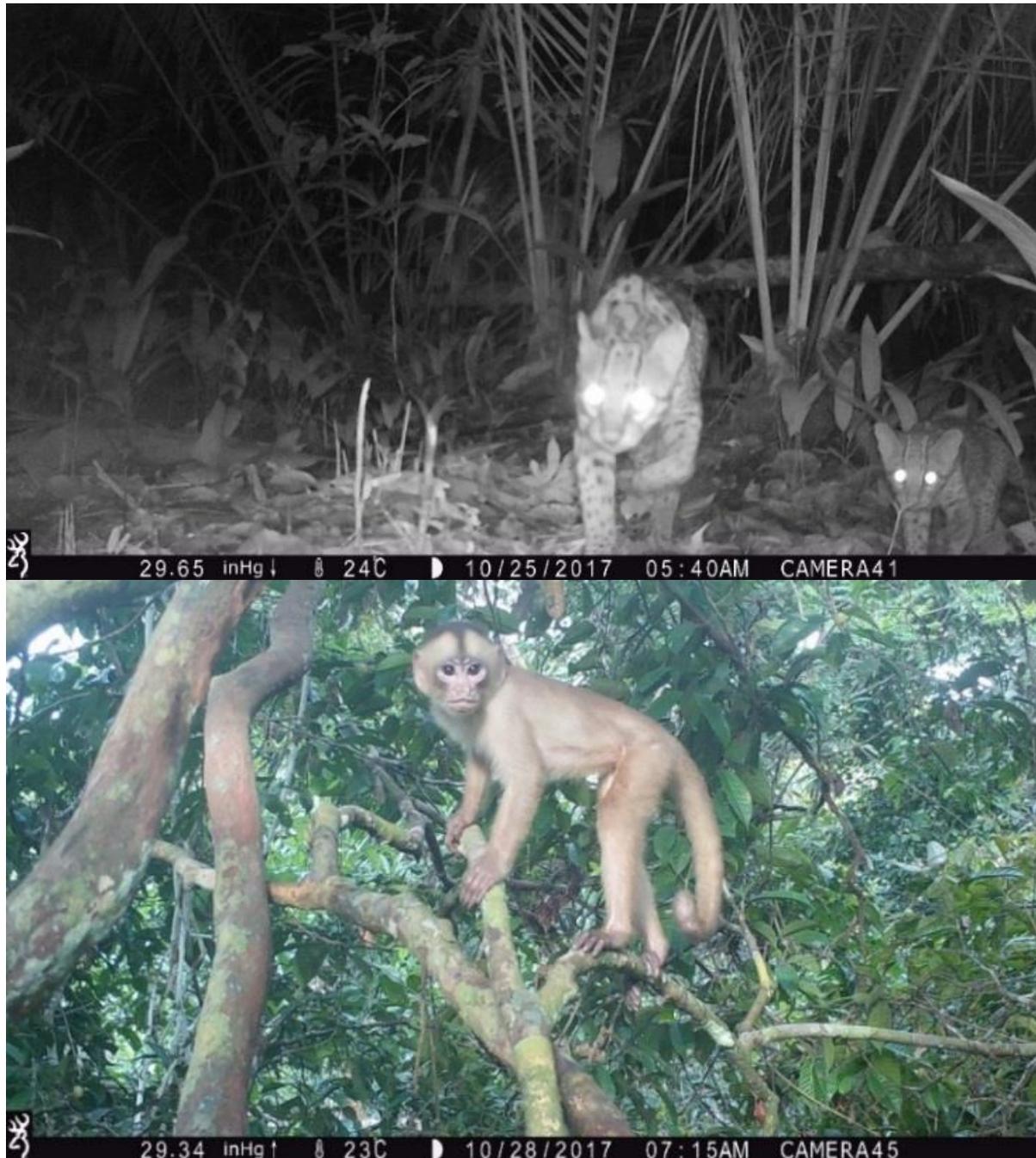

Figure 3. Above: record of Ocelot (*Leopardus pardalis*) from camera trapping grid on the ground, Bellow: record of *Cebus unicolor* from camera trapping grid at canopy.

Figure 4: Left: Spiny rat (*Proechimys* spp.)

Figure 5: Collared peccary (*Pecari tajacu*)