

Project Update: January 2018

From March to June, 2017 we sampled a total of 199 woody plants (822 leaves) belonging to seven families: Annonaceae, Burseraceae, Capparaceae, Erythroxylaceae, Euphorbiaceae, Fabaceae and Verbenaceae. The main representative species were *Pityrocarpa moniliformis* (43 plants), followed by *Poincianela microphylla* (30) and *Trischidium molle* (16) belonging to Fabaceae. The Euphorbiaceae family was the second most representative, being *Jatropha mutabilis* (22 plants), *Croton tricolor* (12) and *Cnidoscolus obtusifolius* (9) the most represented species (Table 1 - Annex).

Poincianela microphylla and *Pityrocarpa moniliformis* are the species which have the highest frequency of leaf damage (Table 1). Otherwise, species of the Euphorbiaceae family, presented low frequency of leaf damage, even despite of the high individuals abundance. The most important types of leaf damage were chewing, leaf mining, sap-sucking and rasping. The incidence of gall was observed only in two plants of *C. obtusifolius*.

Additionally, the richness and the distribution of herbaceous plants in the Catimbau National Park vary according to the rainfall gradients and, consequently, the density of woody plants, according to a recent study of Vieira et al. (2017 *Unpublished data*). The data also point out variations on the taxonomic composition of herbs, with an imbalance in the representativeness of some herbaceous plant. Many plant families are poorly represented (with only one genus or specie) whereas others have greater variety and distribution throughout the PARNA-Catimbau. Thus, we decided to include herbaceous plant in our project due these discrepancies in distribution and composition of this plant's group. It is possible that the herbaceous plant community of PARNA-Catimbau could be structured by interactions by herbivorous insects, once several species recorded by Vieira et al. (2017) are unpalatable to goats and cattle. In that way, we expect to broaden the understanding of the effectiveness of herbivorous insects as plant community builders in various plant strata.

We sampled the herbaceous plants in 16 fixed plots (20 x 20 m) of the Long-Term Ecological Project (PELD-Catimbau). These plots promote the exclusion of large herbivorous mammals as goats and cattle, and due to the absence of trampling, guaranteed the maintenance of the herbaceous stratum. These areas are subject to similar rainfall conditions as the other set of plots (rainfall variation of 564 to 917 mm). At this stage, we selected five quadrants of 0.25 m², in which we intent to identify the most frequent and abundant herbaceous plants. In each quadrant, we marked three to nine young and expanded leaves, in which we performed weekly photographic records throughout June 2017, totaling four records per leaf. We will perform leaf damage analysis following the same methods described for woody plants.

We sampled 313 leaves belonging to 36 morphotypes of herbaceous plants, of which we already identified eight species (22%). The material collected for exsiccates will be compared to UFP Herbarium collection of the Federal University of Pernambuco and Vieira et al. (2017) species collection. We sample, mainly, the genera *Herissantia* spp. (Malvaceae), *Richardia* spp. (Rubiaceae) and *Commelina* spp. (Commelinaceae). We also observed that the most frequent type of damage

was caused by chewing insects, followed by miners and indefinite forms and some possible pathogens. We recorded galls on just one individual of *Herissantia* spp.

Plots	P04	P08	P10	P14	P15	P16	P17	P20	P21	P22	P23	P28	P29
Rainfall (mm)	591	578	647	540	510	555	940	653	843	552	785	787	762
CAD index	0.292	0.432	0.437	0.221	0.509	0.537	0	0.130	0.272	0.086	1	0.655	0.426
<i>Annona leptopetala</i> (Annonaceae)	-	0	-	-	-	0	1	-	0	-	0	-	-
<i>Bauhinia acuruana</i> (Fabaceae)	1	-	-	0	-	-	-	1	-	0	0	-	1
<i>Trischidium molle</i> (Fabaceae)	1	1	0	0	1	1	-	1	1	0	0	1	-
<i>Pityrocarpa moniliformis</i> (Fabaceae)	1	1	-	1	1	1	1	1	1	1	1	-	-
<i>Poincianela microphylla</i> (Fabaceae)	1	1	-	1	1	1	-	1	1	1	1	1	-
<i>Croton heliotropiifolius</i> (Euphorbiaceae)	-	-	1	-	0	-	-	-	-	-	-	-	-
<i>Croton nepetifolius</i> (Euphorbiaceae)	1	1	1	1	-	-	-	-	-	1	-	-	-
<i>Croton tricolor</i> (Euphorbiaceae)	-	-	0	-	-	-	-	-	-	-	-	-	1
<i>Erythroxylum revolutum</i> (Erythroxylaceae)	0	-	-	0	-	-	-	-	1	0	-	-	-
<i>Piptadenia stipulacea</i> (Fabaceae)	-	-	-	-	-	-	-	1	-	-	-	-	-
<i>Cnidocolus obtusifolius</i> (Euphorbiaceae)	-	0	1	0	-	-	-	-	-	1	1	-	-
<i>Neocalyptocalyx longifolium</i> (Capparaceae)	1	-	0	-	-	-	-	-	1	-	0	1	-
<i>Commiphora leptophloeos</i> (Bursaceae)	-	-	1	-	1	-	-	-	-	-	-	-	-
<i>Jatropha mutabilis</i> (Euphorbiaceae)	-	-	-	0	1	0	-	0	-	0	-	0	0
<i>Lippia gracilis</i> (Verbenaceae)	-	-	-	-	0	-	1	-	-	-	-	-	0
<i>Senegalia baiensis</i> (Fabaceae)	-	-	-	-	-	-	-	-	1	-	-	1	0
<i>Senegalia piauihensis</i> (Fabaceae)	1	-	-	-	-	-	-	0	0	1	-	-	1

Table 1 - List of species and frequency of leaf damage per plot (0) without damage; (1) with damage; (-) species not sampled. P04 to P29: Plots of Long-Term Ecological Project (PELD-Catimbau). Rainfall (mm). Chronic Anthropogenic Disturbance (CAD) index: close to 0 (less disturbed); close to 1 (more disturbed).



Figure 1. Some of the typical landscapes of the Catimbau National Park. ©Genivaldo Silva.



Figure 2. Sampling of herbaceous plants in plots of goat and cattle exclusion. We marked from three to nine leaves per quadrant (dimensions of 0.25 m²). Note the difference between the herbaceous stratum on and off the plot. ©Genivaldo Silva



Figure 3. Leaves of *Poincianela microphylla* (Fabaceae) and *Trischidium molle* (Fabaceae) in white and millimeter background (scale of 1 cm). ©Janete Andrade