Review of: "Ecological diversity, structure and exploitation of rattan stands according to a disturbance gradient around the Nkoltang forest, Estuary province of Gabon"

Ruth B. Rauber[1]

1 Instituto Nacional de Tecnología Agropecuaria

This work is highly relevant. The authors propose the evaluation of the exploitation and health status of rattan species around the surrounding forests of the Nkoltang area. Rattan is a very important economic resource for the region. For that reason, the evaluation of the ecological status of the resource is a fundamental contribution to sustainable management policies. However, I propose some important aspects of the manuscript that must be considered.

Main comments:

- The authors indicate that "this paper is a contribution to the knowledge of the exploitation and health status of rattan species according to a gradient of disturbance around the surrounding forests of the Nkoltang area." However, when they present the sampling sites, they describe them indicating that there are numerous differences in the floristic composition of the sites from one another. How can the authors be sure that the results they observe are due to the disturbance gradient and not to biotic conditions and/or environmental factors other than disturbances?

- How do the authors measure the level of disturbance? How do they define it?

- For all results presented: All results must be shown with the corresponding statistical analysis. From figure 3 to figure 5: bars must be constructed with means and the corresponding error bars. From table 2 to table 7: data must be shown as the mean with the corresponding statistical analysis. Without the corresponding statistical analysis, no conclusions can be drawn. I suggest that the results should be reevaluated; based on the statistical analysis, the tables and graphs should also be reconstructed and, based on this, the conclusions should be reformulated. Conclusions cannot be revised without the results of the statistical analyses.

Other comments:

- What are EAAs, EAAs, AEZ 4.?

- What does it mean that "The vegetation of the environment is anthropogenic."?

- What is NTFP?

- What does it mean that "The zero point of the disturbance gradient in the Nkoltang Forest was delineated from the buffer

zone of the Akanda Protected Area." and why is it relevant to the work methodology?

- I suggest homogenizing the languages and presenting the figures in English.

- Throughout the manuscript, there is a lot of text that does not seem to be strictly related to the study, which makes reading difficult and somewhat tedious. For example, in the Introduction, the paragraphs.

"Among the few studies that have assessed the diversity, population distribution, and dynamics of rattan stands in the forests of Southwest Asia is that of Watanabe and Suzuki (2008), which found in four forest types in Borneo and Java (representing six plots of 4.82 ha in total) that there was a significant positive correlation between rattan stands and trees in the diversity of rattan plant species and that the correlation decreased for mixed dipterocarp forests (for rattans with the Shannon-Wiener diversity index, H′ = 2.87-3.34) to alluvial forests (1.96), lowland forests (1.43), and peat marsh forests (1.34). The density of rattan stems (ha-1) decreased from the low mountain (5,997), mixed dipterocarp (598-992), and alluvium (592) to peat marsh forests (162).

Similarly, Ruppert *et al.* (2017) found that rattan (family *Calamoideae*) was more abundant in all marsh patches. However, rattan diversity (H′) was highest in the dipterocarp plot (D: H′ (2011)1,79; H′ (2013)1,84) in the Segari Melintang Forest Reserve (Peninsular Malaysia). The Bray-Curtis indices of rattan abundance had the highest similarity in the swamp during the years 2011 and 2013: parcel BC (2011) 0.484, BC (2013) 0.262.

In the Guinea-Congo forests of Central Africa, a variety of rattan species is also found and has the highest level of endemism of rattan species. The rattan species of the genus: *Eremospatha,* Laccosperma *and Oncocalamus*, are considered endemic and therefore restricted to this forest (Vorontsova *et al* ., 2016). Approximately twenty-two (22) rattan species have already been inventoried in the West and Central African regions so far (Sunderland, 2001; 2012), of which 19 of these species are found only in Cameroon (Gonmadje *et al.*, 2018)."

These have interesting information, although they do not provide a theoretical framework strictly for the work done by the authors.

Results section:

- Figure 2: As I understand it, this figure represents the following information: of all rattan individuals surveyed, what percentage was found in each environment. I think it would be more informative to show a graph of the mean number of individuals and their standard deviation for each environment.

- Is the value of $p < 0.05$ the significance limit or the value of the analysis result? Authors should indicate the p-value of the analysis.

- The authors state that "Stem abundance varies with habitat (Figure 2)." However, they subsequently indicate that according to the analysis of variance, there are no significant differences. So, it would not be correct to indicate that there are differences in abundance by environment.

- The authors state that "The study of the specific abundances of rattan stems reveals that the proportions of the different

species vary according to the environments surveyed (Figure 3)." However, this figure does not show the variability of the data set. It is not possible to conclude that there are differences without the corresponding statistical analysis.

- Subsequently, the authors state that "One-way analysis of variances reveals that the specific abundances of rattan stems show a significant difference between

the undisturbed environment and the other two compartments (P < 0.05).". For what species? For all? Authors must show specific results.

- I suggest showing the cutting pressure as the mean of the cut stems value related to the total stems for each site and comparing the cutting pressure among sites with a variance analysis.

- Regeneration of rattan stands in different environments: The authors state: "The

distribution of the different stages of regeneration of young plants varies according to the environments surveyed." However, this affirmation must not be made without a statistical analysis.

This last observation is for all the variables analyzed. It is not possible to make a conclusion without the corresponding statistical analysis.

With respect to the conclusion section: it is not possible to revise because I consider that the results must be reanalyzed before making the conclusions.