The manuscript “Riparian forest restoration as sources of biodiversity and ecosystem functions in anthropogenic landscape” assess the effect of two biodiversity dimensions (taxonomic and functional) on multiple ecosystem functions (e.g. decomposition, litter and soil fertility) in a restoration context of riparian forests.

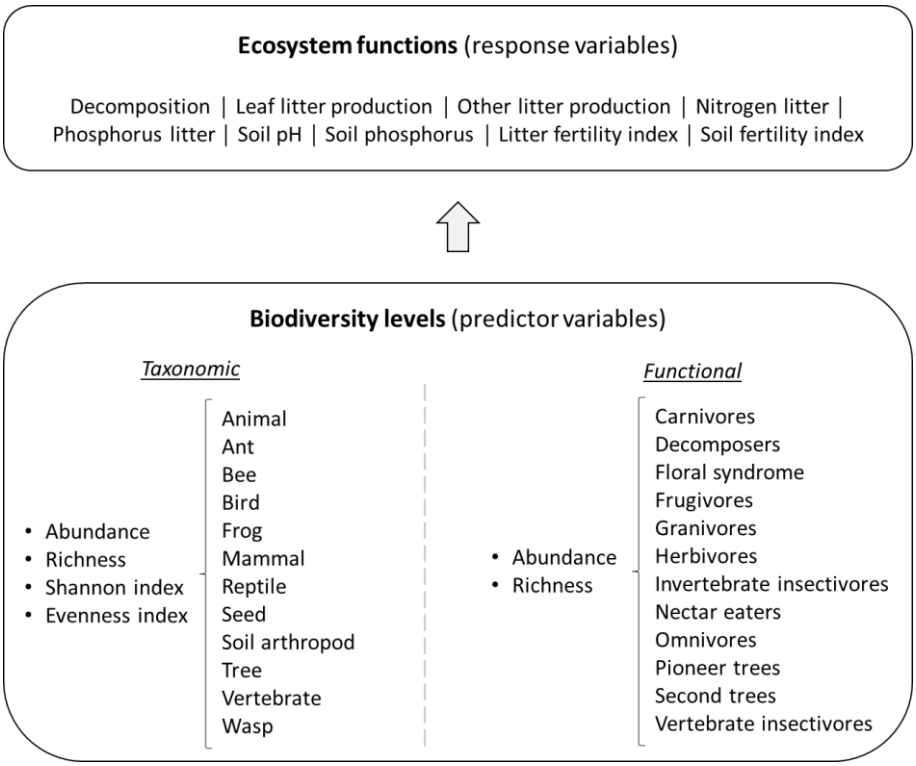
The introduction is setting the scene for this study, but I believe it could be more effective. Indeed, I am wondering what does the paragraph L92-103 bring as you do not focus in your study on the use of real-world experiment data through models (e.g. of species interactions or of metacommunity). Maybe you can add into the paragraph L77-91 some ideas of the paragraph L92-103 in a shorter way as you talk about the advantages of long-term experiments. In the same way, I found that the paragraph L49-58 has redundant ideas with the paragraph L104-115. Overall, I suggest you to review the order of the paragraphs (and the main idea that each supports) and the link between them. For example, you can keep your first paragraph (L43-48) about the global state of habitat loss/fragmentation and biodiversity decline then state that among all habitats on earth, tropical (riparian) forests are one of the most ecosystems vulnerable to deforestation (relying on data of habitat loss). In a second paragraph, you can give information/properties about tropical riparian forests and the consequence of biodiversity loss on ecosystem functioning (this takes the ideas of paragraphs L49-58 and 104-115). Then, you can continue with your current paragraphs L59-66, L67-76 (that I would combine), L77-91, and L116-123.

Concerning the methods, I found that essential information is missing to fully understand what is considered and what is made. Indeed, L163 you stated that highly correlated variables were removed but how many and which variables? Maybe, you can list them L164 and add a correlation plot in the supplementary material. In addition, before indicating that you performed a variable selection procedure selection, please indicate what model have you used and why. It seems to me that you used a lasso regression, but I am not sure and I do not know it very well. Therefore, it is important to give basic information about it to understand your choice to use this statistical method. In addition, I am wondering if you have considered correlated variables in your model and if so, does this affect your results?

Concerning the results, you manage a lot of information due to the high number of predictors and response variables. Maybe, this section could be more effective if for each section of biodiversity level (taxonomic and functional), you are not organized your results by ecosystem functions but rather by comparing the positive and negative effects of biodiversity metrics between ecosystem functions. For example, you can begin by the global percentage of biodiversity variables that have positive or negative effects on ecosystem functions and give the ecosystem functions associated with the higher percentage of positive or negative effects. In a second time, you could just present, for each ecosystem function, the three biodiversity variables having the higher positive effect and the three ones having the higher negative effects on ecosystem function and compare them between the nine ecosystems functions. For example: “The richness of soil arthropod is one of the first three taxonomic biodiversity metrics having higher positive effect on decomposition, leaf litter and other litter production, while this is one of the three metrics that has important negative effect on phosphorus litter”. Maybe you can add the coefficient estimate values in parentheses to see the variability of the effect according the ecosystem function. You can also say that: “Tree taxonomic level has important positive effect on leaf litter and nitrogen (Shannon index for both ecosystem functions) while this has important negative effect on phosphorus litter (abundance), pH (abundance), phosphorus soil (Shannon index), soil fertility (abundance, Shannon index, and richness), and litter fertility (Shannon index)”.

I find the discussion section relatively long, which renders some of the interesting bits less visible. In addition, you have two big sections (4.1. and 4.2) that are not equivalent in length and in section 4.1. some paragraphs are focused on specific ecosystem functions while others are focused on specific biodiversity group which makes the final understanding and identification of the points of interest difficult.

The Figures (2, 3, and S1) are illegible as too small. In addition, the figures are not well ordered (Figure 1 is p39; Figure 2 – p36; Figure 3 – p37; and Figure S1 – p38). I will put the supplementary figures in your supplementary information (for the moment only material) word-file. In addition, the figures 1/2/3/S1 use a lot of abbreviations that are not defined, please define it in the supplementary information file. Maybe for the figure 1, you can avoid using abbreviations and simplify the figure. Here is an example:



Besides, why did you separate the invertebrate insectivores and the vertebrate insectivores and not do so for the other functional groups?

The supplementary material must not repeat information that already appear in the manuscript. Please remove the redundant information in your supplementary material file. In addition, it will be interesting to visualize the environment of the five sites. Maybe you can add pictures of the sites in the Figure S1 if you have ones. Moreover, you describe different data collection protocols but at the end, we do not know what data/variables/metrics are then used for the study. I advise you to add a summary table listing for each protocol (soil parameters, etc…), the collected data/metric used for the study and their associated unit/definition and if this is related to biodiversity levels (taxonomic and/or functional) or to ecosystem functioning. At last, during your animal and plant data collection, I am wondering if all individuals are identified at species level or not? because this may explain your contrasted results according the different animal/plant groups. Overall, a lot of "." appear throughout the supplementary material file making the reading difficult. Please fix this.

Specific comments:

L52-53: what means “a complex process at multiple vertical levels”? Please, be more explicit about this.

L121: give more information about what animal and plant taxonomic groups were studied.

L120-122: remember that this is the effect on multiple ecosystem functions.

L127: You can remove the abbreviation “(HPP)” as this is not used within your manuscript.

L128: Add Figure S1 with Table S1.

L129: You can remove the abbreviation “AW” as this is not used within your manuscript.

L134-136: What are the characteristics of the fifth site? In addition, please cite the relevant supplementary tables associated (i.e. tables S1 and S2).

L149: please give more information (maybe in supplementary material) how are computed indexes of litter-quality and soil-fertility.

L144-145: Maybe organized the sampling methods of your supplementary material by these four categories: plants, vertebrates, invertebrates and ecological processes.

L147-149: maybe give units of each ecosystem function

L152-153: why specify "seed rain"?

L153: I advise you to tell more about what metrics you used for diversity in the methods because I only understand that you computed Shannon index and evenness index a few lines later.

L153-154: How have you defined functional groups?

L160: “(3)” must be “(2)”.

L161: “(4)” must be “(3)”.

L163: “four” must be “three”.

L167: what models have you fitted?

L173: missing “)” after “(1996)”.

L175: coefficients of what?

L176: what does “*lambda*” correspond to?

L177-178: “making it useful for both inference and planning” of what?

L191: For me, you do not use land use data in your analyses, I have trouble understanding how the site dissimilarities can be well defined by the differences in land use.

L193-194: I do not understand what you mean, please rephrase.

L196: “were associated with decreases in the richness” must be “were associated with high richness” if I understand well the Figure S1a.

L201: “were related to increases in the richness” must be “were related to high richness”.

L203-204: “being related to decreases in richness” must be “being related to low richness”.

L208: What do you mean by “scale of sampling”? Is it the two biodiversity levels? Please be homogeneous in the terms that you used.

L215-221: For me this paragraph has some information related to the method section and to the figure legends.

L216: “x axis” must be “y-axis”

L217: “y-axis” must be “x-axis”

L218-219: I do not understand the end of the sentence. Is “next to the coefficient estimate point” necessary?

L222-315: sometimes you used “taxonomic-biodiversity predictors”, sometimes “taxonomic biodiversity predictors”. Please be consistent.

L251: What is “β-values”?

Figure S1: Although the sites are colored in different shades of gray, it is a bit difficult to tell them apart. Perhaps also put a different shape according to the sites in addition to the color.

The scripts and raw data are not available to the reader (e.g. repository link/DOI or appendix).