Fwd: Major Revisions requested HYDR-D-22-00442

Profa Dianne Michelle Alves Silva <diannenuven@gmail.com>
Thu 4/27/2023 7:02 AM
To: Murilo Sversut Dias <msdias@unb.br>

---------- Forwarded message ---------
De: **Hydrobiologia (HYDR)** <em@editorialmanager.com>
Date: ter., 1 de nov. de 2022 às 17:24
Subject: Major Revisions requested HYDR-D-22-00442
To: Dianne Michelle Alves Silva Nuven <diannenuven@gmail.com>

Dear Mrs. Nuven,

We have received the reports from our advisors on your manuscript, "Land use effects on the structure of trophic networks from Neotropical fish", which you submitted to Hydrobiologia.

Based on the advice received, the Editors feel that your manuscript could be reconsidered for publication should you be prepared to incorporate major revisions. When preparing your revised manuscript, you are asked to carefully consider the reviewer comments which are attached, and submit a list of responses to the comments. YOU ARE KINDLY REQUESTED TO ALSO CHECK THE WEBSITE FOR POSSIBLE REVIEWER ATTACHMENTS!

In order to submit your revised manuscript, please access the journal's website:

Your username is: dianne
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Note: When uploading your revised files, please make sure only to submit your editable source files (i. E. Word, tex).

We look forward to receiving your revised manuscript before 16 Dec 2022.

With kind regards,
Springer Journals Editorial Office
Hydrobiologia

COMMENTS TO THE AUTHOR:

Guest-editor comments
We have received the reports from our advisors on your manuscript, "Land use effects on the structure of trophic networks from Neotropical fish", which you submitted to Hydrobiologia.

Based on the advice received, I feel that your manuscript could be reconsidered for publication should you be prepared to incorporate major revisions, I recommend that you carefully consider reviewer 2 comments. When preparing your revised manuscript, you are asked to carefully consider the reviewer comments which are attached, and submit a list of responses to the comments.

Best regards

Franco Teixeira de Mello

Reviewer #1: General Comments to the authors
This is an interesting study about the anthropogenic effects on the trophic networks structure of Neotropical stream fish. Specifically, authors propose to evaluate the role of land use changes (pastures or cropland) on network structure (e.g., modularity, nestedness, links density).
I think the manuscript is well written and the conceptual framework is clearly developed. I have some minor comments, mainly about the analysis of the data, that I expect could improve the manuscript.

1. Line 43. "This nestedness pattern…." Why this? Which is the nestedness pattern that authors refer? Homogenization and reduction in network complexity?

2. Link density and the average number of links per species is the same, not?

3. About table the table S3 that has the classes of anthropic impact on land use, the rows should sum 100%?

4. I am not sure if Figure 2 support effect of land use on network metrics. There are a lot of dispersion in the data. Maybe a logistic regression between the probability of been nestedness (1) or modular (0) along the land use gradient could show the results more clearly. Complementary, a box-plot analysis
showing the range of values of network structure along the gradient of land uses could be interesting.

5. In addition, weighted matrices could be used to network structure estimations and then to the analysis.

Reviewer #2: Comments to the Authors

This study analyses how changes in land use affect the food web structure of different freshwater fish trophic networks among several sampling points in Brazil. To this aim, the authors gathered dietary information from 49 articles. From these studies, the authors estimated several network metrics related with the complexity and stability of the food webs. Additionally, the authors estimated the anthropogenic impact on riparian vegetation in each sampled site as the percentage of non-natural land-cover and evaluated its effect on food web structure and complexity.

In general terms, I find that this study focuses on a relevant issue regarding the impact of anthropogenic activities on the stability and structure of ecological networks, and therefore has the potential to make a relevant contribution to the field of food webs and conservation.

However, in its current form, the manuscript does not fulfil the requirements needed for publication. I detail below three main issues that the authors may want to consider. They range from writing to methodology. However, my major concern is that the discussion and conclusions are highly speculative and are based on results that lack statistical support.

1) Speculative discussion supported on results with lack of statistical support
The authors detected a negative and statistically significant relationship between network modularity and link density with land use gradient. These results are used to suggest that there is a reduction in the number of specialist species and an increase in the number of generalist consumers. However, the authors tried to reinforce this hypothesis based on the relationships observed for nestedness and trophic specialization, which are not statistically significant and showed low effect size. It seems to me that the results are not robust enough to support the idea stated by the authors. In order to address this issue, the authors may consider: (i) analyzing if a nested pattern may also be detected among rows or columns since the metric NODF allows to perform these estimations; (ii) estimating the degree of turnover of specialist and generalist species using a beta diversity metric among sites. Finally, the reduction in modularity along the gradient of land use could also
emerge because of changes in the structure of body size of both predators and prey. If, for example, the distribution of body size of prey changes from being aggregated to continuous, the diet of consumers is expected to change from modular to nested. I suggest the authors include to the discussion how land use could potentially affect the structure of food webs considering not only the diversity of prey but also their size.

2) Not accurate estimation of the anthropogenic impact on each sampling site and lack of discussion of some methodological decisions and their potential limitations
If I understood well, the authors estimate the anthropogenic impact only considering the loss of natural land-cover across sites. I find this criterion not properly correct, since there is an implicit assumption that the categories of land use identified by the authors have the same impact on the communities. For example, assuming two sites
with 10% of non-natural cover, the impact on the food web structure should be higher if it is an urban area compared to a crop land. I think that including the relative weight of each anthropogenic impact to the estimation of the land use gradient may improve the results of the study. On the other hand, the authors decided to estimate the land use gradient considering a buffer area of 500m even though they tested different buffer lengths. This decision needs to be better justified and authors should discuss the potential consequences of it.

3) Awkward writing structure
Overall, I find that the structure of the introduction is messy, alternating between sections more related with network theory and the structure of ecological networks, and sections that describe the impacts of land use on ecological communities. I suggest the authors reorganize the introduction to make it more concise and straightforward to the point. Moreover, I detect several writing mistakes and style inconsistencies that could have been avoided with a more comprehensive review of the manuscript before its submission.

Minor comments

ABSTRACT
L13-15: The hypothesis should be presented in a more comprehensive way, explicitly including the mechanisms by which land use intensity is expected to affect food web structure.
L19-20: Define clearly what network complexity means (how was it estimated). Additionally, results are presented only for modularity and link density but those related with nestedness, trophic specialization and number of links should also be described.

INTRODUCTION

L28-38 I find that devoting an entire paragraph to introduce the concept of network, its representation, etc. is unnecessary in the context of this study. I suggest reducing these explanations to the minimum and devote more attention to the central point of the study.

L40-44: The connection between nestedness and human effects on network structure in not clear. Please, clarify.

L44-46: This point should be clarified. L51-52: Please, clarify.

L69: What does "more complex networks" mean? This point should be clarified. L83: Change "reduce" to "reduces"

L84: Change "increase" to "increases" and "change" to "changes"

L85-91: It seems to me that this is the main idea that leads the study, connecting the expected impacts of land use on the structure of food webs. Therefore, it should be presented before in the introduction in a more direct way.

L92: Anthropogenic effects of what? Please, clarify.

L93-95: I find these questions well presented.

L93: Change "are" to "is"

L97: Change to "more complex ... and specialized ... networks"

L92-101: In order to present the expected effects of land use on network structure, the authors stated two different hypotheses. This seems unnecessary since the set of predictions are complementary (i.e. along a gradient in resource diversity and supply, networks are expected to be more modular and less nested). Please, reduce the two hypotheses to a single one.

MATERIALS AND METHODS

L107: Please, specify the other terms of interest included in the search

L125-127: Consider rephrasing to something like "...while the links between them represent trophic interactions"

L132: Change to "The number of species (nodes), is defined..."

L174-177: If I understood well, the method used to standardize the metrics associated to network structure retains both the total number of nodes and links when the observed matrix is randomized. If this is the case, I wonder how a standard value for number of links can be obtain, since the algorithm does not change this parameter. This point requires more clarification.

L178: Change "strongly" to "significantly".

RESULTS

L231: Change the comma for a period when reporting the number of total trophic interactions

L234: Remove "and".

L238: Change "then" to "than".

L241-250: The description of the relationship between each variable and land use should match the order of the plots presented in Figure 2. In addition, and following the coherence of figure 2, the plot corresponding to Number of species should not show the regression line since the trend is not significant.

L560-564: The order of the plots does not match the caption of the figure

SUPPORTING INFORMATION

Table S1: What does "Network size" refer to? Clarification is needed.

Table S2: This table is confusing. Are the values p-values? If yes, I suggest the authors change them for the Z-score values.

Table S5: Should the sum of each row not sum 1 since they are proportions?

Table S6: The authors define "number of links" as the total number of links observed in a local food web (L136-137 in the ms). Why does this variable have decimals? Should it not be a variable with positive integer values?