

# Your review report

## Manuscript

**Spatial distribution of gyrodactylid *Gyrodactylus pseudorasbora* on topmouth gudgeon *Pseudorasbora parva* in South China**

## Feedback for the author(s)

### Review file(s)

No files added.

### Comments to the author(s)

Xinyi Zeng with co-authors provided a report on the distribution of *Gyrodactylus pseudorasbora* on the fins of a topmouth gudgeon from the Huixian karst wetland in South China. This host is a well-known invasive fish of European waters. Having said that, I should point out that the used statistical approach to analyse data is largely incorrect.

Concerning variance ( $S^2$ ) and mean-square value ( $S^2/X$ ), I would like to point out that according to the recommendations of Rozsa et al. (2000 DOI: 10.1645/0022-3395(2000)086[0228:QPISOH]2.0.CO;2) and more recently Shvydka et al. (2018 DOI: 10.1515/helm-2017-0054), the mean abundance and intensity should be supplied with confidence intervals (95% CI). Similarly, the prevalence value should be presented as an obtained value in percentage with confidence intervals (see Zelmer 2013; DOI: 10.1645/GE-3168.1). To obtain 95% CI for the mean you should use the bootstrap method (preferably BCA), which is now available in most statistical softs (PAST, SPSS, qp3, R etc.).

The used method for the evaluation of parameter  $k$  is not accurate as it can produce unreliable estimates when  $m$  is large,  $K$  is small or sample sizes ( $n$ ) are low. A more accurate estimate of  $K$  can be obtained by applying maximum-likelihood techniques to the frequency distribution of parasites within a host population (Wilson et al. 2002 Heterogeneities in microparasite infections: patterns and processes)

The ANOVA test could be applied only to the analysis of normally distributed dependent variables, while it is well known that the abundance of parasites is overdispersed, and usually fit the negative binomial distribution. Moreover, the clumped distribution of *Gyrodactylus pseudorasbora* from topmouth gudgeon also reported in the present study. For such type of data nonparametric statistical methods should be applied, namely Kruskal-Wallis, Wilcoxon tests, GAM models.

In the case of the study of different factors on prevalence values GLM with the binomial family of distribution can be used.

I recommend checking the distribution pattern of the interesting dependent variable first and then choosing the appropriate method of analysis. In case if data fits the normal distribution only then ANOVA could be applied.

Table 1 is titled as “One-way variance analysis of the mean intensity...” but it seems that it contains pairwise effect sizes between means

Table 2 is unclear. What effects were tested there? Moreover, it will be better to present at least the F, t or Z value supplied with p.

Table 3. Frequency distribution is better to illustrate in the form of boxplots or histograms

Figs 1 and 2 are uninformative because all medians lay on the x-axis, i.e. have zero values

The paper should go in one sense line through the text. Surprisingly, the discussion section was launched from seasonal distinctions in parasite dynamics, while results describe distribution patterns on fins and different groups of hosts. The section on the effect of temperature on parasite dynamics is out of context and should be removed.

The discussion section suffers from the absence of the last paragraph on the conclusion and further perspectives.

Some comments also present in the manuscript

## Confidential feedback for the Editor

Your recommendation

- *Revise*

Is the study design appropriate to answer the research question (including the use of appropriate controls), and are the conclusions supported by the evidence presented?

- *No, but these points can be addressed with revisions*

Please rate the novelty of the research on a scale of 1-5 (1=not at all novel and 5=extremely novel)?

- *2*

Is the presentation of the work clear, with regards to language and grammar?

- *Acceptable*

Does the title of this paper clearly reflect its content?

- *Yes*

Does the abstract sufficiently reflect the content?

- *Yes*

Are the keywords representative of the research?

- *Yes*

Does the introduction present the purpose of the investigation and is the purpose supported by the pertinent literature? • *Yes*

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Are the methods described sufficiently to allow the study to be repeated by other parties? • *No*

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Are [Research Resource Identifiers](https://www.rrids.org/) (RRID) included where applicable? • *Not applicable*

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Is the use of statistics and treatment of uncertainties appropriate? • *No, it isn't*

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Are the images in this manuscript (including electrophoretic gels and blots) free from apparent manipulation? • *Not applicable*

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Are the table and figures well designed and necessary? • *No*

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Are the references provided appropriate and up to date? • *Yes*

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**Confidential comments to the Editor**