

## Round #3

### Decision

by Samraat Pawar, 2020-01-25 08:58

Manuscript: <https://doi.org/10.1101/276592> version 3

### Second decision on manuscript

Dear Quévieux et al,

Thank you for your responses. I understand that the Supp Info issue is hard to resolve. Let's leave it at that.

However, I am still unsure about how you got the scaling constants for search (what you call "attack") rate and handling time. Table 1 gives what seems to be a very low value for  $a$  (given that it is in units of year<sup>-1</sup>), and no value for  $h_j$ . The SI does not clarify either. You cite "Arbitrary" for the source of these parameterizations, which suggests that the model results are insensitive to these parameterizations. However, the sensitivity analysis is directly on the values of  $a_i$  (and none for handling time), not the scaling constants or exponents.

Can you please clarify the sources and derivations (being explicit about the unit conversions if relevant) of the parametrizations of  $a_i$ , and sensitivity of the results to  $h_j$ ?

Thanks,

Samraat

*Dear Samraat,*

*1- We chose arbitrarily the scaling constants  $a$  and  $\beta$  of attack rates and density dependent mortality rates respectively because we did not find values from the literature leading to a satisfying species persistence. We choose  $\beta$  and  $a$  to ensure a reasonable species persistence and time variability of species biomasses, we could have chosen any values satisfying these two criteria according to Fig. S3-4A and B in the supporting information. We now specify it in the caption of table 1.*

*“The values of  $\beta$  and  $a$  are set arbitrary to ensure a reasonable species persistence and time variability of species biomasses (See Fig. S3-4 in the supporting information).” (l.258)*

*We also corrected the legend of figure S3-4 and the text (L.1113-1137) that were misleading, now they clearly specify we performed the sensitivity analysis on scaling constants.*

*2- We changed equation (2) by using its version from the supporting information to make the role of allometric scaling in the calculation of handling times clearer. The maximum ingestion rate was taken into account to calculate the handling time (see the section “Handling time” in appendix S1) and this is now visible in the main text (the former  $h_i$  was actually calculated from  $y_i$  and arbitrary chosen). As in Brose et al. (2006), the maximum ingestion rate follows a quarter-power law and we now detail it in the main text l.185 and in equation (4e). The table 1 summarising all the variables and parameters has also been updated. As the allometric scaling constant  $y$  was not arbitrary set (we took its value from Brose et al. 2006) we did not test the sensitivity of our results to its values.*

*We hope these changes make the equations of the model and our sensitivity analysis clearer.*

*Best regards,*

*Pierre Quévieux, on behalf of the authors*