

# Review of: "Exploring the Impact of Reaction-Diffusion on an Ecological Diversity Mathematical Paradigm for Understanding Hantavirus Infection Dynamics"

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Potential competing interests: No potential competing interests to declare.

The paper is interesting from a practical point of view. Besides that positive comment, the authors need to revise the paper based on the following major comments:

- The abstract needs to be revised to include the aim of the research, the results, and the different methods to obtain those results in 3-5 lines. This section is the gate of the paper. It can't be longer.
- Nomenclature must be added to the paper, as well as all units of each variable and mathematical parameter.
- Please explain every expression in the mathematical model.
- The mathematical equations must be numbered; otherwise, it is very difficult to follow the mathematical developments.
- In the first two equations, what is  $i$  and  $s$ ? Are they indices? If yes, please let us know what the lower and upper limits are.
- The diffusion one rodent is too simple. To the best of my knowledge, these equations are a PDE system.
- How did you decide that  $(0, 0)$  is an equilibrium point that needs stability analysis?
- In the numerical experiment section, what exactly mathematical model did you solve? And what numerical package did you apply?
- The following papers can be added to the current research:
  - 1: Sun, G.-Q., Jusup, M., Jin, Z., Wang, Y., & Wang, Z. (2016). Pattern transitions in spatial epidemics: Mechanisms and emergent properties. In *Physics of Life Reviews* (Vol. 19, pp. 43–73). Elsevier BV. <https://doi.org/10.1016/j.plrev.2016.08.002>
  - 2: Nave, Op. (2020). Modification of Semi-Analytical Method Applied to System of ODE. In *Modern Applied Science* (Vol. 14, Issue 6, p. 75). Canadian Center of Science and Education. <https://doi.org/10.5539/mas.v14n6p75>
- The discussion section must be extended extensively. The analysis of the figures is presented very poorly.
- The main comment on this paper is the connection between the theoretical part and the application of the theoretical part. Please explain these connections in detail.