

“BEATING YOUR NEIGHBOR TO THE BERRY PATCH”

REVIEW

The author has provided a detailed response to the reviewer comments and has performed a number of useful improvements to the manuscript. The author does a nice job on highlighting the limitations of the model and points out places where additional improvements could be made to expand the model’s scope. One area where I had some concern in the previous version was whether the mixed strategy Nash equilibrium (NE) was truly unstable (even though the author’s analysis was very good). The new simulations demonstrate convincingly that the mixed strategy NE is both unstable and yet still predicts the qualitative behavior in the model. The author did an excellent job addressing my remaining comments and also the comments of the other reviews in my opinion. I have a few remaining very very minor comments.

SPECIFIC COMMENTS

- page 11 “dynamics may be chaotic”. Given that its notoriously difficult to distinguish deterministic chaos from stochastic time series, I think its safer to attribute the noise in the time series simply to stochasticity, which is of course definitely present.
- In the response, the author that “AD uses a “smart” model of mutation, which perturbs a mutant’s fitness in a direction that increases its fitness”. This isn’t true. Mutations are often assumed to have a normal distribution around the resident trait value and its the selection gradient that creates the deterministic trajectory in the direction of increased mutant fitness. I mention this because one could, as Dr. Massol suggests, use AD to see quantitatively just how the mixed strategy evolves. This kind of analysis might be the place where cycling could be observed.
- On point 29 of the response, I want to clarify what I meant in my previous review if its of use. Theorem 2 of BC78 says that for two mixed strategy ESSs, one can’t be contained within the support of the other. My comment refers to their proof on page 113, which uses Theorem 1. Then Theorem 2 powers Theorem 3.