

Conditions for the existence of a convergence stable strategy in a discrete size-structured population model

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In this work, we analyze the adaptive dynamics associated with nonlinear discrete models with a primitive projection matrix P such that decomposes as a sum of a transition matrix plus a fertility matrix. As evolutionary trait we consider a transition vector formed by probabilities of moving among classes.

In particular, using that this kind of models without cost has a neutral evolutionarily stable strategy [3], we obtain the necessary and sufficient conditions for the singular strategy to be convergence stable for a two dimensional size-structured population model. After that, we generalize this result for the case $n=3$. In this case, we have to consider two transitions instead of one, and pass from an one dimensional trait space to a two dimensional one.

References

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