

Local stability implies global stability in the Ricker competition model

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In [2] and [3] the authors investigated the local stability of the equilibrium points of the logistic competition model and the Ricker competition model, respectively. It was shown that in each model, the coexistence equilibrium point is locally asymptotically stable if the parameters lie in a certain stability region in the parameter space.

We conjectured in [1] that in this stability region, the coexistence (positive) equilibrium is indeed globally asymptotically stable with respect to the interior of the first quadrant. The proof of this conjecture follow a complex set of tools. It includes singularity theory of planar maps, the notion of critical curves, one-point compactification of the positive quadrant, the dynamics of the local slow manifold of the coexistence fixed point and the global unstable manifold of the exclusion fixed point.

In this talk we will focus our attention in the dynamics of the manifolds. We will present the principal tolls that we use to show global stability of the coexistence fixed point.

References

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