

GLOBAL DYNAMICS OF A DELAYED RICKER MODEL

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Consider the following discrete population model

$$x_{n+1} = x_n e^{a-x_n-k},$$

where a is a positive parameter and k is a positive integer. This model is a delayed version of the original Ricker model, which was introduced by Bill Ricker in 1954. S. Levin and R. May conjectured in 1976 that for the delayed Ricker model, local stability of the nontrivial equilibrium implies global stability. Based on rigorous, computer aided calculations and some analytical tools, we prove the conjecture for the case when $k=1$.