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Bifurcations in A Discrete Time Model Composed of Beverton-Holt Function and Ricker Function.

This talk will discuss rigorous analysis for a two parameter discrete-time model composed of the Ricker function and Beverton-Holt function. This model was proposed by Lewis and Li [Bull. Math. Bio. 74 (2012), 2383-2402] in the study of a population in which reproduction occurs at a discrete instant of time whereas death and competition take place continuously during the season. We will present analytical results proving the existence of a period-doubling bifurcation curve in the model that divides the two-dimensional parameter space into a region of stability and a region of instability. We will demonstrate through numerical bifurcation diagrams that regions of periodic cycles are intermixed with the regions of chaos. We will also present an analytical result on the global stability of the model. (Received January 30, 2015)