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H Sedaghat* (hsedagha@vcu.edu), Department of Mathematics, Virginia Commonwealth University, Box 842014, Richmond, VA 23284-2014. *Reducing the order of a second-order difference equation with application to a biological model.*

Under certain conditions on parameters a second-order difference equation of type

$$x_{n+1} = x_n^{a_0} x_{n-1}^{a_1} e^{\alpha_n - b_0 x_n - b_1 x_{n-1}}$$

can be decomposed or factored into a system of two first-order difference equations. I explore these conditions generally for higher order difference equations and then use the results to determine the global dynamics of solutions in the plane of a special case of the above equation that appears in a biological population model. (Received September 21, 2010)