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Nika Lazaryan* (lazaryans@vcu.edu), Richmond, VA , and **Hassan Sedaghat**, Richmond, VA. *Periodic and Chaotic Solutions in the Survival Region of a Second Order Exponential Difference Equation with Allee Effect.*

We study the second-order difference equation

$$x_{n+1} = x_{n-1}^\lambda e^{a-bx_n-x_{n-1}}$$

with $a > 0, \lambda > 1, 0 < b < 1$. For a range of positive parameter values a, b, λ we show that the above equation exhibits Allee type bistability: solutions from certain set of initial values converge to zero, while others do not. We focus on identifying the *survival region* - the subset in the space of initial values that lead to solutions that do not converge to zero. Moreover, we provide sufficient conditions on parameter values that lead to periodic and chaotic solutions in the survival region. (Received August 31, 2016)