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Stochastic Nicholson's blowflies delayed differential equations. (English) Zbl 1408.34067
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Summary: In this paper, we consider a class of stochastic Nicholson's blowflies delayed differential equations. Firstly, we obtain the existence and uniqueness of the global positive solution with nonnegative initial conditions. Then the ultimate boundedness in mean of solution is derived under the same condition. Moreover, we estimate the sample Lyapunov exponent of the solution, which is less than a positive constant. In the end, an example with its numerical simulations is carried out to validate the analytical results.

MSC:

- 34K60** Qualitative investigation and simulation of models involving functional-differential equations
- 34K12** Growth, boundedness, comparison of solutions to functional-differential equations
- 92D25** Population dynamics (general)
- 60J65** Brownian motion

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Keywords:

stochastic delayed differential equation; Brownian motion; ultimate boundedness; Itô formula

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