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Asymptotic properties of a stochastic Lotka-Volterra cooperative system with impulsive perturbations. (English) Zbl 1314.92151

Nonlinear Dyn. 77, No. 3, 807-817 (2014).

Summary: A stochastic Lotka-Volterra cooperative system with impulsive effects is proposed and concerned. The existence and uniqueness of the global positive solution are investigated. The pth moment and the asymptotic pathwise properties are estimated. Finally, sufficient conditions for extinction and stability in the mean are presented. Our results show that the impulse does not affect the properties if the impulsive perturbations are bounded. However, if the impulsive perturbations are unbounded, then some properties could be changed significantly.

MSC:

92D25 Population dynamics (general)
34D05 Asymptotic properties of solutions to ordinary differential equations
34C11 Growth and boundedness of solutions to ordinary differential equations
34F05 Ordinary differential equations and systems with randomness

Keywords:

stochastic perturbations; cooperative system; impulsive effects; extinction; stable in the mean

Full Text: DOI

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