Evolution of predator-prey systems described by a Lotka-Volterra equation under random environment

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Abstract: In this paper, we consider the evolution of a system composed of two predator-prey deterministic systems described by Lotka-Volterra equations in random environment. It is proved that under the influence of telegraph noise, all positive trajectories of such a system always go out from any compact set of int R_+^2 with probability one if two rest points of the two systems do not coincide. In case where they have the rest point in common, the trajectory either leaves from any compact set of int R_+^2 or converges to the rest point. The escape of the trajectories from any compact set means that the system is neither permanent nor dissipative. ?? 2005 Elsevier Inc. All rights reserved.

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