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Summary: A class of stochastic age-dependent population with fractional Brownian motion and Poisson jump is considered. By using Itô formula, Cauchy-Schwarz inequality and Bellman-Gronwall-type estimates, a sufficient condition is established to guarantee the mean-square dissipativity of the system. Finally, it is shown that the mean-square dissipativity is preserved by the split-step backward Euler method and compensated backward Euler method under a step-size constraint.

MSC:
60H15 Stochastic partial differential equations (aspects of stochastic analysis)
65M12 Stability and convergence of numerical methods for initial value and initial-boundary value problems involving PDEs
92D25 Population dynamics (general)

Keywords:
global mean-square dissipativity; Itô formula; compensated backward Euler method; Bellman-Gronwall-type estimates